



Visva-Bharati

Santiniketan 731235

INDIA

**SELF-STUDY REPORT**

**Part - C**

**Vol. 4**

**Evaluative Report of the Departments**

Submitted to  
National Assessment and Accreditation Council  
2014

## **C O N T E N T S**

### **SIKSHA-BHAVANA**

<b>Biotechnology</b>	<b>1</b>
<b>Botany</b>	<b>21</b>
<b>Chemistry</b>	<b>53</b>
<b>Environmental Studies</b>	<b>81</b>
<b>Mathematics</b>	<b>96</b>
<b>Integrated Science Education and Research Centre (ISERC)</b>	<b>129</b>
<b>Physics</b>	<b>150</b>
<b>Statistics</b>	<b>174</b>
<b>Zoology</b>	<b>184</b>
<b>Computer and System Sciences</b>	<b>246</b>

### **RABINDRA-BHAVANA**

**( INSTITUTE OF EDUCATION )**

<b>Rabindra Bhavana</b>	<b>280</b>
<b>SWOC Analysis</b>	<b>296</b>

## **BRIEF PROFILE OF SOME ANCILLARY DEPARTMENTS**

<b>Pearson Memorial Hospital</b>	<b>315</b>
<b>Granthana Vibhaga</b>	<b>319</b>

## **ENCLOSURES**

<b>Modular Syllabus</b>	<b>320</b>
<b>Remedial Coaching</b>	<b>352</b>
<b>Ph.D. Ordinance (a few copies attached)</b>	<b>354</b>
<b>Internal Complaints Committee (ICC) for Prevention of Sexual Harassment against Women at Workplace (PSHWW)</b>	<b>357</b>

## Evaluative Report of the Department of Biotechnology

1. **Name of the Department :** Biotechnology
2. **Year of establishment :** 1997 (Supported by DBT, GOI from 2004)
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :**  
PG, Ph.D.
5. **Interdisciplinary programmes and departments involved:** Yes.  
The Department was started as a Centre under school of Life sciences in 1997 and was taught and managed by the faculties of the Department of Botany & Department of Zoology fully up to 2002 and subsequently partly until 2009 as there were only two faculties of the Centre for Biotechnology from 2002 to 2005, and from 2009 four more joined; in the year 2013 the Centre was upgraded to a Department.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:**
  - a) Ongoing Bilateral collaboration with the Department of Biology, University of Rome, Tor Vergata on “Biotechnology and nanotechnology of cultural heritage”, Coordinator from Visva-Bharati: Prof. S.P. Adhikary, 2011-2014.
  - b) MOU with Bose Institute, Kolkata on Biotechnology for rural development since 2013 which involve research collaboration and also in extension programmes.
7. **Details of programmes discontinued, if any, with reasons:**  
Biotechnology teaching programme at M.Sc. level started from 1997 with the coordinated effort of the Department of Botany and Department of Zoology, however, it was fully supported by the DBT-HRD grant and the students admitted were those who qualify through combined entrance examination conducted by JNU. Since it gave an all India character to the Department, the course with students admitted from the examination through Visva-Bharati entrance test was discontinued from 2005.
8. **Examination System:** Semester and Choice Based Credit System
9. **Participation of the department in the courses offered by other departments:** Yes.  
The faculties of the Department taught “Cell Biology” course to the 5 year integrated course of Physical sciences of the University from 2009 to 2012.

**10. Number of teaching posts sanctioned, filled and actual (Professors / Associate Professors / Asst. Professors / others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	1	1	1
Associate Professors	2	2	2
Asst. Professors	4	4	4
Others	Nil	Nil	

**11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Dr. S.P. Adhikary  
**Qualification** : Ph.D., D.Sc.  
**Designation** : Professor  
**Specialization** : Microbiology; Bioprocess Engineering  
**No. of Years of Experience** : 33 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04 (Awarded), 01 (Submitted), 04 (Working)
- b) **Name** : Dr. Amit Roy  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Molecular Biology; Genetic Engineering  
**No. of Years of Experience** : 12 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 01 (Awarded), 01 (Submitted), 05 (Working)
- c) **Name** : Dr. T. Chaudhuri  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Virology, Cell Biology  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03 (Working)
- d) **Name** : Dr. Nilanjana Das  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Biochemistry IPR  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students**

- guided for the last 4 years : 02 (Working)
- e) **Name** : Dr. Jolly Basak  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : BiochemistryBioinformatic  
**No. of Years of Experience** : 05 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04 (Working)
- f) **Name** : Dr. Narottam Dey  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Plant Biotech Biostatistics  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04 (Working)
- g) **Name** : Dr. Samiran Saha  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Immunology, Animal Biotechnology  
**No. of Years of Experience** : 04 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 01 (Working)
12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors:**  
a) Prof. Sanghamitra Raha – Senior Professor of Saha Institute of Nuclear Physics, visiting Professor through UGC XIIth plan merged scheme.
13. **Percentage of classes taken by temporary faculty — programme-wise : N.A.**
14. **Programme-wise Student Teacher Ratio :**  
a) PG (2012-2014) – 4:1  
b) PG (2013-2015) – 3:1
15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	-	Nil	Nil
Administrative Staff	-	1 (Casual Staff)	1

Others	-	3 (Contractual)	3
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**16. Research thrust areas as recognized by major funding agencies:**

Thrust area identified and approved by DST-FIST: Understanding stress adaption mechanism in plants, animals and microbes; other areas are project based as approved for financial support by UGC, CSIR, DST, DBT and MOEF for projects of faculties.

**17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:** Extramural funding through projects received by the faculty: [Total amount approximately 2 crores and 45 lakhs]; Details, faculty wise received given below:

**Prof. S.P. Adhikary, PI:**

- Name of the project: "Molecular taxonomy of stress tolerant cyanobacteria and characterization of stress proteins and antioxidant defence systems in selected anhydrobiotes." Sponsored by Department of Science and Technology, Govt. of India(2010-2013). Rs. 29 lakhs.
- Name of the project: "Taxonomy capacity building project on Algae-AICOPTAX." Sponsored by Ministry of Environment and Forests, Govt. of India; Ongoing All India coordinated project since September 2003; East zone coordinator: S.P. Adhikary. (Project completed on 31<sup>st</sup> March 2012). Rs. 32 Lakhs.
- Name of the project: DST-SSD entitled "Development of seaweed liquid fertilizer formulation for pulses and vegetable crops and its popularization for development of entrepreneurship in rural areas." sponsored by Department of Science and Technology, Govt. of India (2010-2013). Rs. 12.75 lakhs.
- International collaboration on "Biotechnology and nanotechnology of Cultural Heritage" between Prof. S.P. Adhikary, Visva-Bharati, India and Prof. Patrizia B. Albertano / Dr.Laura Bruno, Department of Biology, University of Rome, Tor Vergata, Italy (2011-2013).
- Dr. B.P. Pal National Environmental Fellowship award project on Biodiversity by MOEF, Govt. of India to Prof. S.P. Adhikary. (2012-2014). Rs. 12 Lakhs

**Dr. A. Ray, PI:**

- Name of the project: "Screening and characterization of antimicrobial compound(s) from *Ceriops decandra*, a beneficial mangrove plant from Indian Sundarban estuary." Sponsored by UGC, New Delhi (2011-2014). Rs. 9.15 Lakhs

**Dr. Nilanjana Das, PI:**

- Name of the Project: "Age and reactive species mediated modification of

macromolecules and its physiological consequences in Yeast (*Saccharomyces cerevisiae*)." Sponsored by DST, Fast Track project, Govt. of India (2010-2013). Rs.18.76 Lakhs.

- b) Project entitled "Evaluation of age associated alterations in anti-oxidative defense in *Saccharomyces cerevisiae* and its role in accumulation of oxidative stress." Sponsored by CSIR (2013-2016). Rs. 28.05 lakhs.
- c) Minor project entitled "A study on the probable reasons behind selective susceptibility of proteins to age and oxidative stress using bioinformatics tools." Sponsored by UGC. Rs. 1.2 Lakhs.

**Dr. J. Basak, PI:**

- a) Name of the project: "cDNA-AFLP to identify differentially expressed genes in *Vigna mungo* upon inoculation with Mungbean Yellow mosaic Indian virus." Sponsored by DST, Fast Track Project, Govt. of India (2012-2015). Rs. 24 Lakhs.
- b) Name of the Project: "Identification and characterisation of *Phaseolus vulgaris* micro RNAs differentially expressed in biotic stress condition by deep sequencing of small RNA transcriptomes." Sponsored by DBT, Govt. of India (2012-2015). Rs. 44.12 Lakhs

**Dr. Narottam Dey, PI:**

- a) Project entitled: "Biochemical and molecular profiling of West Bengal folk rice germplasm with reference to abiotic stress tolerance." Sponsored by DST, Govt. of West Bengal (2010-2013). Rs 10.27 lakhs.
- b) Project entitled: "Alle mining of stress tolerance in traditional and wild relatives of rice *Oryza sativa* Linn." Sponsored by UGC (2011-2014). Rs 8.99 lakhs

**Dr. Samiran Saha, PI:**

- a) Project entitled: "Therauptic and immunomodulatory potential and mechanism of action of *Tinospora* spp. Against visceral leishmaniasis," Sponsored by UGC (2013-2016). Rs. 13.19 Lakhs.

**18. Inter-institutional collaborative projects and associated grants**

a) **National collaboration:** Nil

b) **International collaboration:**

With University of Rome "Tor Vergata" and Visva-Bharati (Indian side PI: Prof. S.P. Adhikary) on Biotechnology and nanotechnology of cultural heritage, 2009-2011; renewed: 2012-2013)

**19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE, DBT, ICSSR etc.; total grants received: DST-FIST Grant for the period from 2012-2017: Rs. 45 lakhs**



**20. Research facility / centre with**

- a) **State recognition:** Nil
- b) **National recognition:** The Department is supported by DBT-Govt. of India for HRD in M.Sc. Biotechnology, and the students who qualify the All India combined entrance examination in Biotechnology by JNU are admitted in the programme on the basis of merit-cum-choice of the students.
- c) **International recognition:** Nil

**21. Special research laboratories sponsored by / created by industry or corporate bodies:** With the support of the M.Sc. Biotechnology programme by the HRD division of the Dept. Biotechnology, Govt. of India special laboratories were strengthened at the Department.

**22. Publications:**

- a) **No. of papers published in peer reviewed journals (national/international):** – Total publications during 2010-2013 = 39;  
National = 19; International = 20
- b) **Monographs:** – One (J. Cramer, Stuttgart)
- c) **Chapters in Books:** – during 2010-2013= 10

**2010**

- i) Rath, J. and Adhikary, S.P. Biodiversity of Chilika lake, east coast of India in diversity of lower plant Eds. Gupta, R.K. and Kumar, M. IK International Publishing House Pvt. Ltd., New Delhi, pp.121-136, 2010.

**2011**

- i) Sethi, S.K. and Adhikary, S.P. Rhizobium biofertilizer: Retrospect and prospects. In: Microbial Biotechnology and Ecology. Eds. Vyas, D., Paliwal, G.S., Khare, P.K. and Gupta, R.K., Daya Publishing house, New Delhi., pp. 1-28, 2011.
- ii) Bidisha Bagh, Amit Roy and Santanu Ray: Fluoride toxicity through drinking water in Birbhum district, West Bengal – its adverse effects & bioremediation” by in Proceedings Vth World Aqua Congress, 2011 Volume – IV: Adaptive and integrated water management. Editor: Dr. Sanjay Rana.

**2012**

- i) Dey, N. Adoption of Proper Strategies for Lowering the Green House Gas (Carbon Dioxide, Methane) Emission from Rice Fields. Sustainable Agricultur edited by Kazi, M.B. Rahim, Debashis Sarkar, Bidhan Chandra Roy. New Delhi Publishers, New Delhi, 2012 .
- ii) Sethi, S.K. and Adhikary, S.P. Azotobacter: A plant growth promoting

- Rhizobacteria used as biofertilizer. In. Dynamics Biochemistry, Process Biotechnology and Molecular Biology. Global science books, Japan, pp.68-74, 2012.
- iii) S.P. Adhikary, Development of Biofertilizer formulations for rice cultivation: a success story in a village in the Ganjam district of Odisha. In. Proc. National seminar on New Frontiers in Plant science Research for sustainable development. Ed/ S.K. Nayak, P.N. Auto. College, Khurda, Odisha, Pp. 141-150, 2012.
  - iv) S.K. Ratha, Misra, N., Panda,P.K. and Adhikary, S.P. Cyanotoxins: an overview of their impact on human health. In. Microbial toxins and toxigenic microbes. Eds. V.D. Pandey and S.K. Singh, Studium Press, LLC, pp. 425-464, 2012.
  - v) Dey N. Biodiversity and Biotechnology: Impact on sustainable Rice production. Book chapter in "Biodiversity-The natural Wonder" ISBN: 978-93-80663-61-6. Page No: 63-74, 2012.
  - vi) Dey N, Role of Biotechnology and Genomics in Sustainable Rice Production. In Ecoconservation and Sustainable Living. Narosa Publishing House, New Delhi. India (ISBN 978 1-8487-216-3) Chapter 14 Page-162-166, 2012.

### 2013

- i) Maiti S, Basak J and Pal A. Current understanding on plant R-genes/proteins and mechanisms of defense responses against biotic stresses. In: Review of plant pathology, Ed. B. N. Chakraborty. Vol 6, 2013 ISMPP publications (in press).
- d) **Edited Book:** – Nil
- e) **Books with ISBN with details of publishers:**  
Daya Publications, New Delhi; Pointer Publications, Jaipur, Rajasthan.
- c) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):** 39
- d) **Citation Index – range/average:** Last 5 years: Range = 4 to 762; Average = 171
- e) **SNIP:** N/A
- f) **SIR:** N/A
- g) **Impact Factor – range/average:** 2010-2013: Range:0.3 to 4.98; Average = 3.03
- h) **H-index:** All publications of the following faculty as follows: Prof. S.P. Adhikary (21); Dr. T. Chaudhuri (21); Dr. N. Das (8); Dr. J. Basak (4), Dr. S. Saha (4).

- 23. Details of patents and income generated:** One patent approved (in collaboration with IICB, a CSIR National Institute, Kolkata).
- 24. Areas of consultancy and income generated:** Nil
- 25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**
- Prof. S.P. Adhikary visited (a) Commenious University, Bratislava, Slovakia under SAIA Fellowship for one month, 2010; (b) Biological Research Centre of Hungarian Academy of Sciences, Szeged for one month, 2011 under INSA-HAS Academic exchange.
  - Dr. Narottam Dey visited University of West Hungary for three months, 2012 under INSA-HAS Academic exchange.
  - Dr. Nilanjana Das will be visiting University of Edinburgh, Scotland for one month, 2013 under INSA-UK Academic exchange program.
- 26. Faculty serving in**
- National committees:**  
**Prof. S.P. Adhikary**
    - Member of CSIR NMITELI Project on Biofuel from marine micro-algae (2011-2013)
    - Member for evaluation of research projects in Biotech of UGC (2011-2012)
    - Member of Research Advisory Board of ICAR Institute- National Institute of Abiotic stress management at Baramati, Maharastra.
    - Member of the committee for Jawaharlal Nehru best thesis award in Agriculture and Allied Sciences of ICAR, 2011-2012.
    - Member of the committee for Swami Sahajananda Saraswati best extention scientist award in Agriculture and Allied Sciences of ICAR, 2013.
  - International committees:**
  - Editorial Boards:**
  - Any other (please specify):**
- 27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**
- There is no Academic staff college at Visva-Bharati; hence not conducted any UGC/ASC refresher or orientation course in the field of Biotechnology. However the faculties participated in these programmes for career improvement, and Prof. S.P. Adhikary has delivered lectures as resource person in ASC at Sambalpur University, Utkal University, University of Burdwan and North Bengal University during the last 4 years.

**28. Student projects:**

- a) **Percentage of students who have done in-house projects including interdepartmental projects:** 100% (this a part of the DBT sponsored course curriculum)
- b) **Percentage of students doing projects in collaboration with other universities / industry / institute:** (Nil; In-house project under the supervision of a teacher of the Dept. is a must as per DBT)

**29. Awards / recognitions received at the national and international level by****a) Faculty:**

- i) Fellow of the National Academy of Agricultural Sciences (FNAAS), 2009
- ii) Dr. B.P. Pal National Environmental Fellowship Award for Biodiversity by the Ministry of Environment and Forests, Govt. of India , 2010
- iii) Fellow of National Environmentalists Association (FNEA), 2010.
- iv) “Life time achievement award in Phycology” conferred with a medal and citation by KIA, Chennai at the National conference on Algae and Algal Products at Satyabama University, Chennai on 22<sup>nd</sup> September 2011.
- v) Prof. Harihar Pattnaik memorial Award in Environmental science (for contribution in the field-Phycology) by Orissa Botanical Society at Ravenshaw University, Cuttack on 22<sup>nd</sup> December 2012.
- vi) Prof. S.P. Adhikary Professor, visited Biological Research Centre, Szeged, Hungary under INSA-Hungarian Academy of Sciences bilateral exchange programme, for 4 weeks in 2011 and University of West Hungary under Indo-Hungarian EEP through UGC for 15 days in January 2014..
- vii) Dr. Narottam Dey Assistant Professor, visited Institute of Agricultural Research, Martoonvasar, Hungary under INSA-Hungarian Academy of Sciences bilateral exchange programme, for 3 months in 2012.
- viii) Dr. Nilanjana Das, Assistant Professor visited Scotland under INSA- UK bilateral exchange programme for one month in 2013.

**b) Doctoral / post doctoral fellows:**

- i) Mr. Sudipta Kumar Das, doctoral student under Prof. S.P. Adhikary visited Commenius University at Bratislava. Slovak Republic for 10 months under SAIA fellowship to work in collaborative mode with Prof. Lubomir Kovacik on algae of alpine lakes and comparing with the lakes of eastern Himalayas.
- ii) Mr. Dhanesh Kumar, doctoral student under Prof. S.P. Adhikary visiting Institute of Botany, ASCR, Trebon, Czech Republic for 9 months under an Indo-Czech Fellowship to work in collaborative mode Dr. H. Lukavsky.

**c) Students:**

Seven students obtained fellowship through INSA-NASI to carry out summer projects at CCMB, Hyderabad, IICT, Hyderabad, BHU, TIFR and JNU during 2011, 2012 and 2013 for eight to ten weeks.

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

- a) National seminar of Diversity and Biotechnology of Cryptogams, December 3 to 5, 2010 in collaboration with Department of Botany, Visva-Bharati; Funding CSIR, New Delhi
- b) Regional workshop-cum training programme to farmers and entrepreneurs on organic farming at Village Maniakati, Dist Ganjam, Orissa, October 27 and 28, 2010; Funding; dst, New Delhi
- c) National workshop-cum training to farmers and entrepreneurs on Seaweed liquid fertilizer for pulses and vegetable crops in collaboration with soil testing lab of Palli Siksha Bhavana at Visva-Bharati from 27 to 28 February 2011, Funding: DST, New Delhi.
- d) National seminar on Science and Nature: Tagore's vision and its relevance on behalf of the Siksha Bhavana, Visva-Bharati on 12<sup>th</sup> and 13<sup>th</sup> February 2011 on the occasion of celebration of 150<sup>th</sup> year birth anniversary of Gurudev Rabindranath Tagore, the founder of Visva-Bharati, Funding: CSIR and Visva-Bharati
- e) Seminar cum workshop on "Seaweed liquid fertilizer for entrepreneurship development" for farmers, SHGs, NGOs, agriculture officials and students at KVK, Krishi Siksha Bhavana, Sriniketan, Visva-Bharati on 19<sup>th</sup> and 20<sup>th</sup> November 2012 ; Funding: DST, New Delhi
- f) National seminar on Recent advances in rice genomics and biotechnology, 23 to 24 March 2013; Funding: XIIth plan scheme, VB.
- g) Seminar on Food security in GM crops, 31<sup>st</sup> October 2013. Funding: DST, Govt. of West Bengal under Science popularization programme.
- h) National seminar on Frontiers in Algology and Algal Biotechnology, NCFAAB 2013 from November 15 to 17, 2013; Funding: DBT, DST, CSIR, Govt. of West Bengal and VB under XIIth plan merged scheme

**31. Code of ethics for research followed by the departments:**

As per MHRD guidelines.

**32. Student profile programme-wise:**

Name of the program (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
PG 2010-12	Students qualified in All India examination of JNU are admitted	4	5	100	100
PG 2011-13		5	5	100	100
PG 2012-14		3	6	100	100
PG 2013-15		5	6	100	100
Ph.D. Course Work 2012	23	7	4	Not applicable	
Ph.D. Course Work 2013	19	4	3	Not applicable	

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
PG (2010-12)	Nil	Nil	100%	Nil
PG (2011-13)	Nil	Nil	100%	Nil
PG (2012-14)	Nil	30%	70%	Nil
PG (2013-15)	20%	40%	60%	Nil
Ph.D (2011-12)	Nil	Nil	100%	Nil
Ph.D (2012-13)	10%	30%	60%	Nil
Ph.D (2013-14)	10%	40%	50%	Nil

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

- Civil Services/Defense services: NIL
- NET: 2011:7; 2012:2; 2013:1
- SET/RET-VB: 2011: 12; 2012:11, 2013:9
- GATE: 2011:10, 2012:7; 2013:3

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	Not Applicable
PG to M.Phil.	Not Applicable
PG to Ph.D.	2010: 88%

	2011: 70% 2012: 55% 2013: 33%
Ph.D. to Post-Doctoral	2 (Two)
Employed	No campus placement provision
<ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	
Entrepreneurs	1 (One)

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	None
from other universities within the State	71.4
from universities from other States	28.6
from universities outside the country	None

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:** All the faculties of the Department have been awarded Ph.D., and one with D.Sc. but before joining the Visva-Bharati service as faculty and all the faculties with Ph.D. degree during the assessment period.

**38. Present details of departmental infrastructural facilities with regard to**

- a) **Library:** Books in seminar library of the Department = 575
- b) **Internet facilities for staff and students:** Available
- c) **Total number of class rooms:** 2 (one class room and one seminar room with computer and internet)
- d) **Class rooms with ICT facility:** No
- e) **Students' laboratories:** One General laboratory
- f) **Research laboratories:** Five (along with sitting desk of seven teachers)

**39. List of doctoral, post-doctoral students and Research Associates:**

- a) **Doctoral list from the host institution/university – One\***
- b) **From other institutions/universities – 21**

Sl. No	Name of the student	Presently enrolled	Title of the thesis
1	Bidisha Bagh	Ph.D. Awarded, 2012	Fluorosis in Birbhum district, West Bengal - its cause, effect, influencing factors and remedial measures
2	Vinod Kumar Gupta	Submitted Ph.D.	Study of antimicrobial activities in

Sl. No	Name of the student	Presently enrolled	Title of the thesis
		thesis, 2013	the extracts of mangrove plants of Sundarban estuary
3	Prabuddha Srakar	Course work completed, registered in 2010	Cloning and partial characterization of a gene encoding phosphoketolase from <i>Temitomyces clypeatus</i>
4	Bhabani Prasad Bag	Course work completed, registered in 2010	Comparative modeling and molecular docking studies of agonists and antagonists with native and in-silico mutant structures of Serotonin receptors to design novel inhibitors.
5	Aritra Simlai	Course work completed, registered in 2012	Studies on the antimicrobial activities of <i>Ceriops decandra</i> , a mangrove plant from Indian Sundarban estuary
6	Nitin Keshari	Course work completed, registered in 2012	Stress tolerant cyanobacteria colonizing stone monuments and characterization of their antioxidant defence system
7	Dhanesh Kumar*	Course work completed, registered in 2012	Cyanobacteria in biological soil crust and characterization of their adaptation to water stress
8	Debabrata Mohanty	Course work completed, registered in 2012	Biotechnological aspects of seaweed I; liquid fertilizer (SLF) and its application in agricultural productivity
9.	Madhumanthan Mukherjee	Course work completed, registered in 2012	Age- and oxidative stress mediated modifications in <i>Sacharomyces cerevisiae</i>
10	Padmalochan Hembram	Course work completed, registered in 2012	Transcriptome profiling of drought and salinity stress responsive genes from <i>Phaseolus vulgaris</i>
11	Rajib Roychoudhury	Course work completed and registered in Feb. 2013	Genetic Analysis in rice ( <i>Oryza sativa</i> L.) with special reference to Agromorphology, Quality and Abiotic stress Tolerance



Sl. No	Name of the student	Presently enrolled	Title of the thesis
12	Joydip Karmakar	Course work completed and registered in Feb. 2013	Molecular profiling of selected Rice landraces for Abiotic Stress Tolerance and characterization of associated Plant Growth Promoting Microorganisms
13	Showkat Ahmed Ghanie	Course work completed and registered in Feb. 2013	Studies of Molecular Genetic Diversity in Rice with reference to Salinity Stress.
14	Padmalochan Hembram	Course work completed; registered for Ph.D. in Sept. 2013	Transcriptome profiling of salinity and drought stress responsive genes in <i>Phaseolus vulgaris</i>
15	Nibedita Chakraborty	Course work completed; registered for Ph.D. in Sept. 2013	Transcriptome profiling of <i>Vigna mungo</i> upon mugbean yellow mosaic virus infection
16	Nisha Patwa	Course work completed; registered for Ph.D. in Sept. 2013	Identification and characterization of <i>Phaseolus vulgaris</i> micro RNAs under biotic stress.
17	Sonali Bej	Course work completed; registered for Ph.D. in Sept. 2013	Study of the epigenetic changes in <i>Phaseolus vulgaris</i> under salinity stress.
18	Amrita Paul	Course work completed; registered for Ph.D. in Sept. 2013	Genetic diversity and population structure of West Bengal rice landraces.
19	Moumita Choudhury	Course work completed; registered for Ph.D. in Sept. 2013	Study of biological activities of <i>Avicenia alba</i> , a mangrove plant of Sundarbans
20	Pratyusha Dey	Course work completed; registered for Ph.D. in Sept. 2013	Characterization of selected mangrove plants through genetic and biochemical profiling

Sl. No	Name of the student	Presently enrolled	Title of the thesis
21	Sanchita Banerjee	Course work completed; registered for Ph.D. in Sept. 2013	Cloning and partial characterization of a gene encoding cellobiose dehydrogenase from <i>Termitomyces elypeatus</i>

In addition to the above 21, Nine students have been qualified in the VB-RET examination to be enrolled for Ph.D. at the Department of Biotechnology in August 2013. Of these three have passed M.Sc. from the host Institution in 2013. They will be registered for Ph.D. and take course work at the Department for one semester, and after successful completion will be finally enrolled with the title of thesis for Ph.D. under the supervision of a teacher of the Department.

- 40. Number of post graduate students getting financial assistance from the university:** All the students admitted in the course receive @ Rs.3000/- per month towards studentship from Department of Biotechnology, Govt. of India.
- 41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** Not applicable as no new programmes were undertaken during the last 5 years.
- 42. Does the department obtain feedback from**
- faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Yes. The teaching and research activities of staff are monitored by the Head of the Department, assessed every year and reported to the authority confidentially.
  - students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** The feed back was obtained every year from the out-going students at the end of 4<sup>th</sup> semester. The areas which need improvement are discussed in the Board of studies and appropriate action is taken to incorporate the feedbacks of the students on the curriculum and teaching.
  - alumni and employers on the programmes offered and how does the department utilize the feedback:** The alumni of the Department are very few, as the Department is new with a intake of average of 10 students per year, and they are all carrying out research in different national Institutes and Universities of India, The Department is in touch with almost all of them and they are helping our students for placement in Summer training and for research work after completion of their course.
- 43. List the distinguished alumni of the department (maximum 10):**  
The Department is a new one, with 7 batches with DBT supported programme passed

out from 2004-05; All of them are either pursuing Ph.D. in other institutions or have taken jobs in private and Govt. sectors, but have not have a mark as a distinguished alumni.

**44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**

Every year several experts from diverse disciplines of Biotechnology are invited from across India, with an average of 7 to 8 for delivering special lectures and interacting with the students and research scholars; and also 7 seminars/workshops were organised by the Department. The external experts who delivered lectures/ interacted with the students during the period of Assessment are:

Prof. H.D. Kumar, BHU, Varanasi, Dr. A.C. Banerjee, East Bengal Chemicals, Kolkata; Prof. S.C. Kundu, Dept. Biotech., IIT, Kharagpur; Prof. U.C. Banerjee, NIPER, Mohali, Prof. N. Anand, Univ. Madras, Chennai; Prof. L.C. Rai, CAS Botany, BHU; Dr. M.K. Maiti, IIT, Kharagpur, Prof. R.K. Sen, IIT, Kharagpur; Prof. G. Subramanian, Ex. Director, NFMC, BDU, Trichi, Dr. Laura Bruno, Univ. Rome, Italy; Dr. R. Constgri, Univ. Of Messina, Sisily; Prof. Lubomir Kovacik, Commenious University, Bratislava, Slovak Republic; Prof. A.K. Tripathy, BHU, Varanai, Prof. A. Kumar, BHU, Varanasi, Prof. Sumita Jha, Univ. Calcutta, Prof. Rintu Banerjee, IIT, Kharagpur, Prof. G.B.N. Cahini, Utkal University, Bhubaneswar; Dr. K.c. Gupta, Director, IITR, Lucknow; Prof. A.N. Lahiri Majumdar, Bose Institute, Kolkata; Prof. A.K. Rai, Head, CAS Botany, BHU, Varanasi.

**45. List the teaching methods adopted by the faculty for different programmes:**

The method of teaching followed in the class room are mostly through black board or interactive boards. For special lectures LCD project with power point and /or overhead projectors are used.

**46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**

Feed back on the subject taught are monitored through questionnaire in the class, in addition to internal assessment for continuous evaluation of the program to assess whether the objectives are fulfilled.

**47. Highlight the participation of students and faculty in extension activities:**

Visva-Bharati, with its Sriniketan campus is consistently carrying out social and extension activities in rural sector, especially in the field of agriculture in many of its adopted villages. We the faculties of Biotechnology and students are regularly interacting with the people in the rural areas, unemployed youth and NGOs for transfer of technology developed in the field of bio-and organic fertilizer for sustainable agriculture. Such activities are carried out with funding from societal projects of DST

and DBT, Govt. of India.

**48. Give details of “beyond syllabus scholarly activities” of the department:**

The students and research scholars with the guidance of faculties are taken regularly to visit different National Institutions and industries to interact with the scientists / Entrepreneurs in their field of their interest. They are also taken to study tour to different parts of India for sample collection, studying the biodiversity and to know the cultural traditions of different regions of our country.

**49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** The progress of the Department regarding the research output of faculties, their accreditation being nominated into different committees, the students qualification in National level tests like NET/GATE/RET/SLET and their placement is being evaluated each year by the Department of Biotechnology, Govt. of India in the annual course-coordinators meeting. Suggestion by experts are made each year for further upgradation and increasing the efficiency of the out put of the course through DBT support.

**50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**

- a) Identifying the microorganisms colonizing the heritage structures of cultural importance, their stress adaptation potential and possible measures for their control for conservation of monuments.
- b) Biodiversity assessment of freshwater and marine algae in the eastern region of India, including North eastern region, and their hotspots in eastern Himalayas and Indo-Burmese tract; culture of potential species for bioprospecting.
- c) Bioactive compounds in the salt adapted mangrove plants of Sundarbans for drug development.
- d) Genomics and proteomics to find out the host- *Vigna mungo* and its pathogen, Yellow bean mosaic India virus interaction.
- e) Genetic profiling of rice land races of West Bengal using molecular markers.
- f) Antioxidant defense enzymes in relation to aging taking *Saccharomyces cerevisiae* as the model organism.
- g) Response of commonly used stimulants on the action of Leshmaniasis.
- h) The research in relation to these fields of science have been published in several journals with impact factor as well as peer reviewed journals with ISSN number.

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC)**

**of the department:****a) Strengths:**

- i) Biotechnology education in Santiniketan in the Birbhum district of West Bengal, an University founded by Rabindranath Tagore for imparting education in a rural setup for benefit of under privileged people (is a Central University of national importance since 1951) – DBT support is a tribute to the vision of Tagore to impart most up-to-date science education for rural masses.
- ii) Several students from across India had the opportunity to undertake Biotechnology studies at Santiniketan which is also known for its rich cultural heritage thus in addition to learning this most advanced science subject, students other states, because of the DBT support, have the opportunity of imbibing the cultural traditions of our country while studying at this great Institution.
- iii) Several of our students are now working abroad, in several reputed national laboratories and also appointed in companies across India perpetuating the knowledge they have gained by studying in Santiniketan.
- iv) With support of DBT the Centre for Biotechnology was able to establish good laboratory facilities for the benefit of the post graduate students as well as research scholars including also of the other Departments and Centres.
- v) The Department is in the process of strengthening its facilities showing the visibility of the importance of Biotechnology education in rural India, especially in the eastern region of India.

**b) Weaknesses:**

- i) Space: The Department, a relatively new one established in 1997 has inadequate space to cater to the need of the 7 faculties, 20 students per year and more than 25 research scholars.
- ii) The Department do not have any permanent supporting staff like office assistant, store keeper, laboratory assistant/technician/ laboratory attendant, peon and sweeper etc., hence the staff of the Department and the Head are devoting much of their precious time in the Department with day to day official works including purchase matters which is curved from their research assignments.
- iii) There are no student common room, Ladies toilet, Departmental library, Departmental seminar room, a room dedicated to computer and internet facility for the students etc. which is hindering o the personal interaction with the students.
- iv) A Central instrumentation laboratory which is essential, as the Department

has many sophisticated equipments purchased from DBT support, FIST as well as various projects of the staff members. This is lacking hence research scholars are forced to work on shift basis.

- v) Animal house, plant tissue/cell culture and Fermentation cum bioreactor facility are essential parts of biotechnology teaching and research, which we could not provide due to unavailability of designated space/room, hence is also a major constraint.

**c) Opportunities:**

- i) Strengthening Biotechnology teaching in a rural set-up in Birbhum, a backward region of West Bengal.
- ii) Entrepreneurship development in biotechnology sector for empowerment of rural people, Women and un-employed youth.
- iii) Teaching Biotechnology to school and Higher secondary students through the expertise of the Department.
- iv) Transfer of technology through regular extension programmes especially in the agricultural sector with the help of well structured KVK existing at Sriniketan of Visva-Bharati.
- v) With the technology developed Visva-Bharati faculty can focus the output in National and International levels.

**d) Challenges:**

- i) To develop state-of art laboratory for Biotechnology teaching and research at Visva-Bharati.
- ii) Finding out the channels and modus-operandi to develop out-reach activities for rural people and empowering them.
- iii) Effective student-teacher-industry mobility, collaboration and technology transfer for student placement.
- iv) Focussing the achievements in the areas of research by the faculties and developing international collaboration with MOUs for mutual benefit with regard to scientific output and external funding for research.
- v) Motivating the students trained at the Department to become entrepreneurs.

**52. Future plans of the department:**

- a) To establish a culture collection of cyanobacteria and microalgae isolated from stressed habitats, hot spots, rice fields and freshwaters of eastern India and screening of potential species for bioprospecting and use in industry.
  
- b) To establish a strong centre for networking with rural people for technology

transfer in agriculture sector as per the vision of its founder, Rabindranath Tagore in his Sriniketan experiments.

- c) Organising regular seminars and workshops for students of all levels involving schools and colleges of the rural areas of Birbhum for upgrading their scientific skill and motivating them to basic and applied sciences.

## Evaluative Report of the Department of Botany

1. **Name of the Department :** Botany
2. **Year of establishment :** 1964 for Undergraduate  
1967 for Postgraduate
3. **Is the Department part of a School/Faculty of the university?** Yes
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** UG, PG, Ph.D.
5. **Interdisciplinary programmes and departments involved:** Yes (Allied Courses at UG level with Chemistry, Zoology and Statistics; PG level with Integrated Science and Ph.D. programme with all Science and Agriculture Departments)
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** In our Ph.D. programme faculties from other universities or institutes may act as co-supervisors.
7. **Details of programmes discontinued, if any, with reasons:** Nil
8. **Examination System:** Choice Based Credit System (since 2011-12)
9. **Participation of the department in the courses offered by other departments:** Yes (Allied Courses at UG level with Chemistry, Zoology and Statistics; PG level with Integrated Science and Ph.D. programme with all Science and Agriculture Departments)
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	3	3	8
Associate Professors	7	6	2
Asst. Professors	10	9	8
Others	-	-	-



**11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Sudhendu Mandal  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Biosystematics, Palynology & Aerobiology  
**No. of Years of Experience** : 34 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 09
- b) **Name** : Sukanta Kumar Sen  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Microbiology  
**No. of Years of Experience** : 31 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 07
- c) **Name** : Samit Ray  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Phycology  
**No. of Years of Experience** : 28 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 07
- d) **Name** : Kashinath Bhattacharya  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Environmental Biology  
**No. of Years of Experience** : 29 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 08
- e) **Name** : Nirmalya Banerjee  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Cytogenetics & Plant Biotechnology  
**No. of Years of Experience** : 24 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 10

- f) **Name** : Rup Kumar Kar  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Plant Physiology & Biochemistry  
**No. of Years of Experience** : 28 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 06
- g) **Name** : Narayan Chandra Mandal  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Mycology & Plant pathology  
**No. of Years of Experience** : 26 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 12
- h) **Name** : Swadesh Ranjan Biswas  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Molecular Biology  
**No. of Years of Experience** : 16 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- i) **Name** : Subrata Mondal  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Taxonomy, pollination biology, palynology and floristic  
**No. of Years of Experience** : 16 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 08
- j) **Name** : Chowdhury Habibur Rahaman  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Pharmacognosy & Plant Anatomy  
**No. of Years of Experience** : 13 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 11

- k) **Name** : Soma Sukul  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor II  
**Specialization** : Pteridology  
**No. of Years of Experience** : 12 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- l) **Name** : Jnanendra Rath  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Phycology  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- m) **Name** : Adani Lokho  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Angiosperm Taxonomy  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- n) **Name** : Hema Gupta (Joshi)  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Plant Ecology  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- o) **Name** : Bomba Dam  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Microbiology  
**No. of Years of Experience** : 6 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03

- p) **Name** : Surendra Kumar Gond  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Mycology and Plant Pathology  
**No. of Years of Experience** : 1 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- q) **Name** : Satish Kumar Verma  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Biochemistry  
**No. of Years of Experience** : 1 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- r) **Name** : Nandalal Mandal  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Cytogenetics  
**No. of Years of Experience** : 1 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors:**  
a) Prof. A. N. Lahiri Majumdar, Bose Institute, Kolkata  
b) Prof. Anupam Dikshit, Lukhnow
13. **Percentage of classes taken by temporary faculty — programme-wise : 5% at PG level**
14. **Programme-wise Student Teacher Ratio :**  
a) UG – 102/18  
b) PG – 88/18  
c) Ph.D. Course Work – 54/16
15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	7	7	7

Administrative Staff	2	2	2
Others	-	-	-

**16. Research thrust areas as recognized by major funding agencies:**

- a) Applied and industrial microbiology
- b) Metagenomics (population and functional)
- c) Microbial ecology including phosphate solubilization
- d) Antimicrobials from plants and probiotic microorganisms
- e) Food safety and preservation
- f) Phycology, ecophysiology, bioprospecting, cyanobacteria
- g) Plant biosystematics
- h) Palynology, aerobiology and allergen detection
- i) Chemotaxonomy, ethnobotany and pollination biology
- j) Signal transduction and gene expression
- k) Pharmacognosy, ethnobotany, medicinal plants diversity and their bioprospecting
- l) Diversity and ethnobotanical survey of pteridophytic flora
- m) Bioremediation and phytochemical studies of pteridophytes
- n) Study the effects of ultra high dilution substances on seed germination and plant growth
- o) Forest ecology
- p) Plant tissue culture
- q) Seed physiology
- r) Stress physiology of plants

**17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:**

**a) National :**

Name of the faculty	Funding Agency	Total Grant received (in lakhs)	Project Title
Prof. Sudhendu Mandal	BSI	9.73	Taxonomic revision of the <i>Acanthaceae</i> group
Prof. Sukanta	UGC	10	Exploration of soil

Name of the faculty	Funding Agency	Total Grant received (in lakhs)	Project Title
K. Sen			microorganisms for quality compost production
Prof. Kashinath Bhattacharya	UGC	12.8	Identification and immunochemical characterization of fungal spore allergens of West Bengal
Prof. Kashinath Bhattacharya, Dr. Chowdhury Habibur Rahaman & Dr. Hema Gupta Joshi	West Bengal Biodiversity Board.	4.56 (for 1 <sup>st</sup> phase)	Preparation of People Biodiversity Register of Birbhum District, West Bengal.
Prof. Samit Ray	CSIR	20	Morphological and Chromosomal variations in <i>Chara fibrosa</i> complex
Prof. Nirmalya Banerjee	UGC	8.0	<i>In vitro</i> propagation and conservation of some rare and endangered species of <i>Vanda</i> and assessment of their genetic fidelity through molecular techniques
Prof. Rup Kumar Kar	UGC	10.6	Interaction of reactive oxygen species and ethylene in regulating axis growth during seed germination
Prof. Narayan C. Mandal	UGC	6.95	Exploitation of free-living phosphate solubilizing rhizobia for

Name of the faculty	Funding Agency	Total Grant received (in lakhs)	Project Title
			improvement of soil fertility and promotion of plant growth
	CSIR	22.5	Assessment of Anti-Fungal Activity of the Extracts of a Plant of North East Institute of Science & Technology (CSIR) and Searching for its Probable Mechanism of Action
	DBT	34.1	An Ethno-Botanical Survey of Indigenous Angiosperm Flora of Tripura and Assessment of Antimicrobial Potentials of those Plants
Prof. Swadesh Ranjan Biswas	CSIR	20.0	Mechanism of bile inhibition of nisin mediated antimicrobial activity of <i>Lactococcus lactis</i> W8
	UGC	9.0	Molecular investigation in to the carbon source-mediated transcriptional regulation of nisZ gene in <i>Lactococcus lactis</i> W8
Dr. Subrata Mondal	UGC	11.65	Pollination Ecology of Some Species of Euphorbiaceae
Dr. Chowdhury Habibur Rahaman	UGC	11.58	Inventorization and Documentation of Ethnomedicinal plants

Name of the faculty	Funding Agency	Total Grant received (in lakhs)	Project Title
			from Laterite zone of West Bengal with reference to Bioprospecting of selected plant species.
	W.B. State DST	5.0	Studies on Medicinal & Aromatic Plants of Birbhum district, and documentation of status, habitat and local uses of plant species
	W.B. State DST	16.19	Quantitative Ethnobotany, Conservation Priorities and Sustainable utilization of Medicinal Plants of Birbhum district, West Bengal with reference to Biological activity studies of some lesser known root drugs
Dr. Soma Sukul	UGC	11.0	Study of Pteridophytic flora and its Ethnobotany in rarh region, West Bengal
	Asiatic Society	10.0	Homeopathic potencies, their Spectroscopic characteristics and their effect on proteins
	Dr. Bholanath Chakraborty Memorial Trust	10.0	A study of the mechanism of action of homeopathic potencies through plant models



Name of the faculty	Funding Agency	Total Grant received (in lakhs)	Project Title
Prof. Samit Ray & Dr. Jnanendra Rath	UGC	7.47	Algal diversity of East Calcutta wetland, Ramsar site and evaluation of its phycoremediation potential
Dr. Jnanendra Rath	DST	30	Molecular taxonomy of stress tolerant cyanobacteria and characterization of stress proteins and antioxidant defense systems in selected anhydrobiotes
Dr. Jnanendra Rath & Prof. Samit Ray	CSIR	20	Prospecting chemical components from Cyanobacteria to deal with UV Radiation
Dr. Bomba Dam	SERB	23.9	Shift in microbial community structure in poultry (chicken) gut along its growth phase with special emphasis to their antibiotic resistance capability
Dr. Surendra Kumar Gond	UGC	6	Bioprospecting of endophytic fungi from <i>Rauvolfia serpentina</i> for reserpine and antimicrobials from West Bengal, India

b) **Internation:** Nil

- 18. Inter-institutional collaborative projects and associated grants**
- a) National collaboration:**
- i) Botanical Survey of India, Kolkata
  - ii) Bose Institute, Kolkata
- b) International collaboration:** Nil
- 19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:**
- |                             |           |          |
|-----------------------------|-----------|----------|
| a) DST-FIST (till 2009)     | level – I | 35 lakh  |
| b) UGC-DRS (2008-2013)      |           | 54 lakh  |
| c) DST-FIST-II (Identified) | level – I | 150 lakh |
| d) UGC-DRS                  | level-II  | 100 lakh |
- 20. Research facility / centre with**
- a) state recognition :** Nil
- b) national recognition:** Research facility created out of DST-FIST and UGC-DRS grants
- c) international recognition:** Nil
- 21. Special research laboratories sponsored by / created by industry or corporate bodies:** Nil
- 22. Publications:**
- a) No. of papers published in peer reviewed journals (national/international):** – 75/101
- Sudhendu Mandal : 11/6  
 Sukanta Kumar Sen : 2/15  
 Samit Ray : 9/3  
 Kashinath Bhattacharya : 2/6  
 Nirmalya Banerjee : 5/9  
 Rup Kumar Kar : 3/6  
 Narayan Chandra Mandal : 11/13  
 Swadesh Ranjan Biswas : 6/4  
 Subrata Mondal : 3/10  
 Chowdhury Habibur Rahaman : 16/5  
 Soma Sukul : 4/6  
 Jnanendra Rath : 0/6  
 Adani Lokho : 1/3  
 Hema Gupta (Joshi) : 2/2  
 Bomba Dam : 0/12  
 Surendra Kumar Gond (2012-2013) : 0/13

- Satish Kumar Verma : 0/8  
Nandalal Mandal : 1/0
- b) Monographs:** – Nil
- c) Chapters in Books:** – 26/07  
Sudhendu Mandal : 17/0  
Sukanta Kumar Sen : 1/0  
Samit Ray : 2/0  
Nirmalya Banerjee : 5/0  
Rup Kumar Kar : 2/0  
Narayan Chandra Mandal : 3/1  
Subrata Mondal : 3/0  
Jnanendra Rath : 4/0  
Surendra Kumar Gond (2012-2013) : 2/0  
Satish Kumar Verma : 1/0  
Nandalal Mandal : 1/0
- d) Edited Book:** – 04  
Sudhendu Mandal : 2/0  
Samit Ray : 1/0  
Kashinath Bhattacharya : 1/0
- e) Books with ISBN with details of publishers:**  
12/1 from VDM verlag, Germany  
Sudhendu Mandal : 7/0  
Sukanta Kumar Sen : 3/0  
Samit Ray : 1/0  
Kashinath Bhattacharya : 3/0  
Narayan Chandra Mandal : 0/1
- f) Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.): 12/57**  
Sudhendu Mandal : 1/1  
Sukanta Kumar Sen : 2/7  
Samit Ray : 0/2  
Kashinath Bhattacharya : 0/3  
Nirmalya Banerjee : 0/2  
Rup Kumar Kar : 1/4  
Narayan Chandra Mandal : 3/5  
Swadesh Ranjan Biswas : 1/4

Chowdhury Habibur Rahaman : 1/0  
 Soma Sukul : 0/4  
 Jnanendra Rath : 0/6  
 Bomba Dam : 0/11  
 Surendra Kumar Gond (2012-2013) : 0/13  
 Satish Kumar Verma : 0/7

**g) Citation Index — range / average: Nil/0-78**

Sudhendu Mandal : 56 (0-11)  
 Sukanta Kumar Sen : 430 (0-38)  
 Kashinath Bhattacharya : 68(0-18)  
 Nirmalya Banerjee : 102 (0-31)  
 Rup Kumar Kar : 17 (0-8)  
 Narayan Chandra Mandal : 65 (0-39)  
 Swadesh Ranjan Biswas : 82 (0-56)  
 Subrata Mondal : 3 (0-3)  
 Soma Sukul : 5 (0-4)  
 Jnanendra Rath : 15 (0-5)  
 Bomba Dam : 130 (1-49)  
 Surendra Kumar Gond (2012-2013) : 119 (0-43)

**h) SNIP: N/A**

**i) SIR: N/A**

**j) Impact Factor — range / average: 0 to 1.0/1.0 to 11.8**

Sudhendu Mandal : 1.0 to 5.09  
 Sukanta Kumar Sen : 0-3.0  
 Samit Ray : 0.5-2.0  
 Kashinath Bhattacharya : 1.51 – 3.1  
 Nirmalya Banerjee : 0.0-2.5  
 Rup Kumar Kar : 2  
 Narayan Chandra Mandal : 0-5.17  
 Swadesh Ranjan Biswas : 1.62 -3.0  
 Subrata Mondal : 0.97-1.125  
 Chowdhury Habibur Rahaman : 0-0.8  
 Jnanendra Rath : 0-3.110  
 Hema Gupta (Joshi) : 0-0.75  
 Bomba Dam : 1.52 - 13.23  
 Satish Kumar Verma : 0.029-3.27

**k) h-index:**

Sudhendu Mandal : 6  
 Sukanta Kumar Sen : 14  
 Kashinath Bhattacharya : 6  
 Nirmalya Banerjee : 6  
 Rup Kumar Kar : 3  
 Narayan Chandra Mandal : 3  
 Swadesh Ranjan Biswas : 4  
 Subrata Mondal : 1  
 Chowdhury Habibur Rahaman : 1  
 Soma Sukul : 1  
 Jnanendra Rath : 3  
 Bomba Dam : 7  
 Surendra Kumar Gond (2012-2013) : 7

23. **Details of patents and income generated:** Nil  
 24. **Areas of consultancy and income generated:** Nil  
 25. **Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**

**National :**

**Prof. Sudhendu Mandal**

- a) As a Member of the technical Advisory Committee (TAC) visited Indian Statistical Institute, Kolkata.
- b) As an External Member of the Board of Studies in Botany visited North Eastern Hill university, the University of Burdwan and Gourbanga University.
- c) As an External Expert Member visited Bose Institute, Kolkata.
- d) As an External Expert Member visited different Universities and Institutions for selection to the posts of Lecturer/Reader/Assistant Professor/Associate Professor/Professor.
- e) **As Expert Member of the QRT of Sorghum (ICAR, Govt. of India, New Delhi)**, visited and inspected the following universities/institutes for All India Coordinated Sorghum Improvement Project of Govt. of India : (i) Directorate of Sorghum Research, Hyderabad (A.P.); (ii) Acharya N.G. Ranga Agricultural University, Palem (A.P.); (iii) Maharana Pratap University of Agriculture & Technology, Udaipur (Rajasthan); (iv) Dr. Panjabrao Deshmukh Krishi Vidyapith, Akola (MS); (v) Marathwada Agricultural University, Parbhani (MS); (vi) Nimbkar Agricultural Research Institute, Phaltan (MS); (vii) University of Agricultural Sciences, Dharwad (Karnataka); (viii) Tamil Nadu Agricultural

University, Coimbatore (TN); (ix) CCS Haryana Agricultural University, Hisar (Haryana); (x) Navsari Agricultural University, Surat (Gujarat).

**Prof. Sukanta Sen**

- a) Institute of Biodiversity and Sustainable Development, Manipur

**Prof. Narayan Chandra Mandal**

- a) National Institute of Technology, Durgapur
- b) Department of Pharmaceutical Technology, Jadavpur
- c) Department of Botany, Gauhati University, Guwahati

**International :**

**Prof. Sudhendu Mandal**

- a) Visited the Universities for Central Department of Botany, Tribhuban University, Kirtipur, Kathmandu, Nepal.
- b) Visited the UDLAP (Universidad de las Americas Puebla), Cholula, Mexico.
- c) Visited the Komarov Botanical Institute of Russian Academy of Sciences, St. Petersburg, Russia.

**Prof. Sukanta Sen**

- a) Department of Food Science Technology, Widya Mandala Catholic University, Surabaya, Indonesia

**Prof. Rup Kumar Kar**

- a) Centre for Agricultural Research, Martonvasar, Hungary
- b) University of Pecs, Hungary
- c) University of Szeged, Hungary
- d) Biological Research Centre, Szeged, Hungary

**Dr. Bomba Dam**

- a) Max Planck Institute for Terrestrial Microbiology, D-35043 Marburg, Germany. Received **Alexander von Humboldt** Research Fellowship for Postdoctoral Researchers during May 2010 to April 2012
- b) Max Planck Institute for Terrestrial Microbiology, D-35043 Marburg, Germany. Received Max Planck Postdoctoral Research fellowship FOUR times for the period, may-June 2013 (~1 month), October-November 2012 (20 days), May-June 2012 (1 month), and February-April 2010 (3 months)

## 26. Faculty serving in

## a) National :

	Name of Committee	Serving As/ Role	Serving Since/ Duration
<b>Prof Sudhendu Mandal</b>			
1	Technical Advisory Committee of ISI	External Member Expert	2009
2	QRT of Sorghum of ICAR	Expert Member	2012
3	Indian Aerobiological Society	President	2003-2007
4	Birbhum Banabani Chetana Udyog	President	2008
5	Indian Science News Association	Secretary	2006
6	Plant Physiology Forum	Vice-President	2012
7	West Bengal Academy of Science & Technology	Treasurer	2012
8	RAC West Bengal Science & Technology	Expert Member	2008
<b>Prof. Sukanta Sen</b>			
1	Assam University	Life Science School Board	2010-2012
2	Kalyani University	Microbiology Research Board	2009
3	The Burdwan University	Biotechnology, Board of Research Study	2009
4	Vidyasagar University	Board of Research Study	2011
<b>Prof. Kashinath Bhattacharya</b>			
1	Indian Aerobiological Society	President	2012
2	Indian Science Congress 2015	President: Environmental Sciences	2015
<b>Prof. Nirmalya Banerjee</b>			
1	Research Advisory Committee, Department of Microbiology, Burdwan University	External Member	2010
2	Board of Research Studies, Department of Botany, Burdwan University of Burdwan, Burdwan	External Member	2011
3	PG Board of Studies, Tripura University,	External Member	2014

	Name of Committee	Serving As/ Role	Serving Since/ Duration
	Tripura		
4	Ph.D. Committee, Department of Botany & Forestry, Vidyasagar University, Midnapur	External Member	2013
5	PG Board of Studies, Department of Microbiology, Burdwan University	External Member	2012
6	Admission Co-ordination Cell, Visva-Bharati	Advisor	2011
<b>Prof. Narayan Chandra Mandal</b>			
1	Commission of Scientific and Technical Terminology, GoI, for preparing Botany Glossary in Hindi and other regional languages	Expert Member	2012
2	Board of Studies, Plant Protection, Kalyani University	External expert member	2009
3	M. Tech. Programme, department of Biotechnology, NIT, Durgapur	External Expert member	2012
4	Board of Research Studies, University of Gour Banga	External Expert member	2013
5	Biosafety Committee, NIT Durgapur	External Member	2011
b) <b>International :</b>			
<b>Prof. Sudhendu Mandal</b>			
1	International Association for Aerobiology, The Netherlands	Member	
2	British Aerobiology Federation, London, UK	Member	
3	Palynology Specialists Group of the Linnaean Society of London, U.K	Member	
<b>Prof. Kashinath Bhattacharya</b>			
1	GEO Task US09-01a: Earth Observation Priorities for Human Health: Aeroallergens SBA (Sponsored by NASA). Group Leader: Hillel Koren, University of North Carolina, USA.	Core Member	2009



	Name of Committee	Serving As/ Role	Serving Since/ Duration
2	INDSUBIO (Indian Sub-Continent Biomization) Project under the auspices of Bristol Research Initiative of the Dynamic Global Environment (BRIDGE) headed by Prof. Sandy Harrison	Member	2008
<b>Dr. Subrata Mondal</b>			
1	ICPBR (International Commission on Plant-Bee Relations), Canada.	Member	2013
c) <b>Editorial Boards :</b>			
<b>Prof. Sudhendu Mandal</b>			
1	Current Science	Member	
2	Science & Culture	Member	
3	Nucleus	Member	
4	International Journal Mendel	Member	
5	Everyman's Science	Member	
6	Bangladesh Journal of Botany	Member	
7	Indian Journal of Landscape systems and Ecological studies	Member	
8	Brazilian Journal of Microbiology	Member	
9	Journal of Medicinal Plants	Member	
<b>Prof. Kashinath Bhattacharya</b>			
1	Indian Journal of Aerobiology	Member	2008
2	Everyman's Science	Member	2014
<b>Prof. Nirmalya Banerjee</b>			
1	Columban Journal of Life Sciences	Member	2010
2	Biospectra	Member	2010
<b>Prof. Rup Kumar Kar</b>			
1	World Journal of Agricultural Science (IDOSI)	Member	2007
2	Journal of Theoretical and Experimental Biology (Elius Academic Publishers)	Member	2007
<b>Dr. Subrata Mondal</b>			

	Name of Committee	Serving As/ Role	Serving Since/ Duration
1	Indian Journal of Plant Sciences	Member	2013
<b>Dr. Soma Sukul</b>			
1	Sukul Institute of Homeopathic Research	Member	2007
2	Clinical and Experimental Homeopathy	Member	2010
<b>Dr. Adani Lokho</b>			
1	Souhardya Publications	Member	2013
<b>Dr. Bomba Dam</b>			
1	Microbiological Research, Elsevier	Member	2013
2	Microbes and health	Member	2012
<b>Dr. Narayan Chandra Mandal</b>			
4	African Journal of Biotechnology	Member	2011-13
d)	<b>Any other (please specify)</b>		
<b>Prof Sudhendu Mandal</b>			
1	Selection Committee member for selection of Professor, Associate Professor and Assistant Professor of different Universities	Expert Member	
2	Ph.D., M.Phil., and M.Sc. examiner of 25 universities	Member	
<b>Prof. Sukanta Sen</b>			
1	Selection Committee member for selection of Professor, Associate Professor and Assistant Professor in different Universities	Expert Member	2009-2013
<b>Prof. Nirmalya Banerjee</b>			
1	Selection Committee member for selection of Professor, Associate Professor and Assistant Professor in Tripura University, Dibrugarh University, Gauhati University, Vidyasagar University, Utkal University	Expert Member	2009-2013
<b>Prof. Samit Ray</b>			
1	Board of Examiner, University of Burdwan, Kalyani University, University of Gour Banga	Member	2009
<b>Dr. Subrata Mondal</b>			
1	Board of Examiner, Burdwan University	Member	2009

	Name of Committee	Serving As/ Role	Serving Since/ Duration
2	Board of Examiner, Vidyasagar University	Member	2010
3	Board of Examiner, Kalyani University	Member	2011-2013
4	Board of Examiner, North Bengal University	Member	2009-2012
5	Board of Examiner, Tripura University	Member	2011-2012
<b>Dr. Chowdhury Habibur Rahaman</b>			
1	Major Research Project Evaluation Committee, Department of Sc. & Technology, Govt. of West Bengal	Expert Member	2010
2	Board of Examiner, University of Burdwan, Kalyani University, University of Gour Banga, Tripura University	Member	2009
<b>Dr. Narayan Chandra Mandal</b>			
1	Evaluation of Major Research Projects of ICMR, CSIR, DBT (GoI), and DST (WB)	Expert Member	2009-2013
2	Selection Committee member for selection of Professor, Associate Professor and Assistant Professor in Kalyani, North Bengal and Burdwan Universities	Expert member	2010-2013
3	Adjudicator of Ph.D. theses of several Universities of India	External expert	2009
4	Supervised Summer Fellow(s) of Indian Academy of Science	Guide	2013

**27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**

Our faculties are regularly participated in different Refresher, orientation Courses and in Workshops to improve their academic performances.

**Chowdhury Habibur Rahaman**

Refresher Course from Academic Staff College, Burdwan University (2009)

**Soma Sukul**

Refresher Course in Life Science from Academic Staff College, Kolkata (01/02/2010 to 20/01/2010)

**Jnanendra Rath**

Refresher Course in Madras University (01/2/2013 to 21/2/2013)

Orientation Course in North Bengal University (09/08/2011 to 05/09/2011)

**Adani Lokho**

Refresher course in Botany, ASC NEHU- Shillong (17/03/2011 to 6/04/2011)

Orientation course, ASC Burdwan University (03/09/2011 to 30/09/2011)

National workshop on “Hands-on Training on Techniques used in Biotechnological Research” at NEHU, Shillong (28/02/2011 to 12/03/2011)

**Hema Gupta (Joshi)**

Orientation course, ASC Burdwan University

Workshop in IIT Bombay

**Bomba Dam**

Orientation course from Academic Staff College, Burdwan University (03/06/2014 to 30/06/2014)

**28. Student projects:**

- a) **Percentage of students who have done in-house projects including interdepartmental projects:** 100% for PG courses
- b) **Percentage of students doing projects in collaboration with other universities / industry / institute:** 7-10% (varies from year to year)

**29. Awards / recognitions received at the national and international level by****a) Faculty:****Prof. Sudhendu Mandal**

- i) Received S.C. Dutta Memorial Award, 2014
- ii) Recieved *Millenium Plaques of Honour and a Cash Prize* from the Hon'ble Prime Minister of India, Dr. Monmohan Singh at the Inaugural Session of the 96<sup>th</sup> Indian Science Congress at NEHU, Shillong on 3<sup>rd</sup> January 2009.
- iii) Recieved *Professor E. P. Odum Gold Medal* by the International Association for Ecological Communication at the International Conference on 27<sup>th</sup> June 2009.
- iv) Bapuji Educational Association, Davangare, honoured as distinguished scientist for his contribution to Indian Aerobiology at the 16<sup>th</sup> NCA on National Symposium on Applications of Biotechnology in Environmental Management and Medicine, 2010.

**Prof. Sukanta Sen**

- i) Fellow of National Environmentalist Association
- ii) Fellowship of the Year Award – 2013, national Environmental Science

Academy

**Prof. Kashinath Bhattacharya**

- i) Fellow of The West Bengal Academy of Science
- ii) Fellow of the Indian College of Allergy, Asthma & Immunology
- iii) Fellow of Aerobiological Society of India

**Prof. Rup Kumar Kar**

- i) Visiting Scientist under INSA Bilateral Exchange Programme, 2014

**Dr. Subrata Mondal**

- i) **Best paper presentation** in the 16<sup>th</sup> national conference on Aerobiology, held at Davangere, Karnataka; 19-21 Nov.2010

**Dr. Chowdhury Habibur Rahaman**

- i) Fellow of MSET & ICCB (Madhawi Shyam Educational Trust & International Consortium of Contemporary Biologists) Ranchi- 834009, Jharkhand, India.

**Dr. Soma Sukul**

- i) Gold medal from Homeopathic Health and Medical Society on the occasion of 8<sup>th</sup> International Conference, Khulna, Bangladesh, 2014

**Dr. Bomba Dam**

- i) Alexander von Humboldt Research Fellowship for Postdoctoral Researchers
- ii) Young Scientist Award, DST-SERB

**Dr. Jnanendra Rath**

- i) BIF (Boeringer Ingelheim Fund) Fellow, Germany
- ii) Alumni of UNITER, Japan
- iii) LOBOME Awardee
- iv) Awarded Raman Post Doctoral Fellowship to visit USA for one year by UGC, New Delhi

**b) Doctoral / post doctoral fellows:**

**Sayani Mukherjee**

- i) 1<sup>st</sup> Prize in National conference on Biodiversity and its Conservation, February 16-17, 2013

**Ranjan Ghosh**

- i) Received best Poster award in UGC sponsored National Seminar on 'Exploitation of Biofertilizers and Biopesticides for Sustainable Development of Modern Agriculture' organized by the Department of Botany, Bankura Christian College from 18.02.2011 to 19.02.2011. He has been awarded with Best Poster-award.

**Soma Barman**

- i) Awarded best poster prize in Food Microbiology section in 53<sup>rd</sup> Association of Microbiologists of India, KIIT, Bhubneswar

**Trina Chakraborty**

- i) Awarded the P.H. Gregory Gold medal for her research work in the 17<sup>th</sup> National conference of Indian Aerobiological Society on Impact of airborne Microbes held at MAEER's Atrs, Commerce & Science College, Pune, Maharashtra from 13 – 15 December, 2012.

**Sipra Roy**

- i) Awarded Third Prize in oral paper presentation in the 17<sup>th</sup> National conference of Indian Aerobiological Society on Impact of airborne Microbes held at MAEER's Atrs, Commerce & Science College, Pune, Maharashtra from 13 – 15 December, 2012.

**Soumi Naha**

- i) ICCR-Commonwealth Fellowship

**Uday Das & Bandana Pradhan**

- i) Awarded best paper presentation certificate for their research work in a poster session of 16<sup>th</sup> West Bengal State Science & Technology Congress held at Burdwan University, Burdwan, West Bengal during 28<sup>th</sup> Feb. – 1<sup>st</sup> March, 2009.

**Sathi Saha**

- i) Awarded best paper presentation certificate for her research work in a poster session of XXI Annual conference of Indian Association for Angiosperm Taxonomy & National Seminar on “*Biodiversity Conservation and Climate Change*” held at CSIR – Institute of Minerals and Materials Technology (IMMT), Bhubaneswar, Odisha, during 2-4<sup>th</sup> December, 2011.
- ii) FEMS Young Scientist Award 2011

**c) Students:****Debabrata Laha**

- i) DAAD Fellowship, Tubingen University, Tubingen, Germany

**Nargis Parvin**

- i) DAAD Fellowship, Ludwig Maximilian University, Munich, Germany

**Soumya Biswas**

- i) Erasmus Mundus fellowship, Germany
- ii) Participated in 27<sup>th</sup> Antarctic Expedition organized by Govt. of India

**Rajib Mukherjee**

i) South Korean Fellowship, DAEGU University

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:****Seminar :**

- a) National Science Seminar Series organized by Siksha-Bhavana, Visva-Bharati on 27<sup>th</sup> March 2014
- b) National Symposium on “Advances in Plant Sciences, Agri-Biotechnology & Food Security” on 10<sup>th</sup> April 2009 (Prof. M.S. Swaminathan, FRS inaugurated the Symposium).
- c) National Seminar on “Rabindranath and Jagadish Chandra” on 22<sup>nd</sup> August 2009, Prof. Bikash Sinha, FNA inaugurated the seminar.
- d) National Seminar on “Advances in Life sciences” 2011.
- e) National Seminar on “Jagadish Chandra, Rabindranath, Prafulla Chandra and National Integration” on 26<sup>th</sup> February 2012.
- f) National conference on Biodiversity and Natural Resource sponsored by UGC. 2010
- g) National Symposium on “Advances in Plant Sciences Agri-Biotechnology and Food Security”. Organised by Plant Physiology Forum, Kolkata, AICBA, New Delhi and Visva-Bharati, April 10, **2010**
- h) National Conference on “Utilization of plant and microbial resources”, Organised by Department of Botany, Visva-Bharati, Santiniketan: 17-18 March, **2012**.

**Workshop :**

- a) Visva-Bharati sponsored Workshop on “Plant diversity: Utilization and Climate change” organized by Department of Botany, Siksha-Bhavana, Visva-Bharati during 20 -21<sup>st</sup> march, 2014.
- b) Residential Field Training Programme on “*Identification of Common Plants*” organized by West Bengal Biodiversity Board, Department of Environment, Govt. of West Bengal in collaboration with Botanical Survey of India, GOI & Visva-Bharati, and held at Department of Botany, Visva-Bharati during 22-24<sup>th</sup> March, 2014.
- c) Workshop on People’s Biodiversity Register of Birbhum district, West Bengal organized by Department of Botany, Siksha-Bhavana, Visva-Bharati in collaboration with West Bengal Biodiversity Board, Kolkata held on 8<sup>th</sup> January, 2012.

- d) UGC sponsored workshop on Medicinal Plants - Biodiversity, Sustainable Utilization and Cultivation organized by Department of Botany, Siksha-Bhavana, Visva-Bharati during 14 -15 th January, 2012.
- e) UGC sponsored workshop on Biofertilizer and Biopesticides organized by Department of Botany, Siksha-Bhavana, Visva-Bharati during February, 2012.
- f) National Seminar cum Workshop on “Probing Biology: *In vivo*, *in vitro* and *in silico*” Organised by Department of Botany, Visva-Bharati, Santiniketan and Department of Biophysics, Molecular Biology and Bioinformatics: 3-4 December, 2011.
- g) UGC sponsored workshop on “Medicinal plants- Biodiversity, sustainable utilization and cultivation”, Organised by Department of Botany, Visva-Bharati, Santiniketan: 14-15 January, 2012

**31. Code of ethics for research followed by the departments:**

- a) All research if performed after proper approval from Bioethic committee/Biosafety Committee
- b) Priority is given to conserve nature and its resources

**32. Student profile programme-wise: Date provided for 2013-2014**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
UG	1200	14	20	-	-
PG	200	21	23	-	-
Ph.D. Course Work	40	5	7	-	-

**33. Diversity of students: Data provided are for 2013-14**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
UG	20	77	10	3
PG	45	50	5	0
Ph.D. Course Work	70	20	10	0

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

- a) NET – 14
- b) SET – 5



- c) Civil Service/ Defense Service – 2/Nil  
 d) GATE - 30  
 e) Other Competitive Examination/Government Service – 134

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	95%
PG to M.Phil.	Not Applicable
PG to Ph.D.	25%
Ph.D. to Post-Doctoral	10%
Employed	
• Campus selection	5
• Other than campus recruitment	82
Entrepreneurs	5 %

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	6
from other universities within the State	61
from universities from other States	33
from universities outside the country	Nil

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	2 (two)
Ph.D.	
D.Sc.	
D.Litt	

**38. Present details of departmental infrastructural facilities with regard to**

- a) **Library:** We have departmental seminar library containing more than 3,000 text books and reference books.  
 b) **Internet facilities for staff and students:** Yes  
 c) **Total number of class rooms:** Three laboratories for practical classes and three Lecture rooms  
 d) **Class rooms with ICT facility:** We have one class room and one seminar room equipped with modern facilities like projector, sound system etc. One computer

room with internet facility is also available for the use of students.

- e) **Students' laboratories:** Three laboratories for general classes and eight other laboratories for special paper classes
- f) **Research laboratories:** All the faculties have their own research laboratories except newly appointed two faculties. Their laboratories are under construction.

**39. List of doctoral, post-doctoral students and Research Associates:**

**a) Doctoral list from the host institution/university –**

Awarded during last 4 years

- i) Abhijit Ghosh
- ii) Abira Choudhury
- iii) Arijit Mukhopadhyay
- iv) Asit Chandra Mandal
- v) Bandana Pradhan
- vi) Dola Boral
- vii) Gorachan Bishayee
- viii) Iesita Pan
- ix) Janojit Roy
- x) Jaydeb Gangopadhyay
- xi) Kakali Biswas
- xii) Madhumita Majumder
- xiii) Manojit Debnath
- xiv) Mir Musaraf Hussain
- xv) Poulami Jana
- xvi) Pritam Chattopadhyay
- xvii) Rajat Chakraborty
- xviii) Rajkumar Chakraborty
- xix) Sandhimita Mondal
- xx) Sandipan Chatterjee
- xxi) Shampa Dutta
- xxii) Sheuli Chatterjee
- xxiii) Sikha Mandal
- xxiv) Sofia Yousuf
- xxv) Soma Chakraborty
- xxvi) Soumi Naha
- xxvii) Subrata Raha
- xxviii) Sucheta Das
- xxix) Sutapa Choudhury
- xxx) Swagata Ghosh

- xxxi) Trina Chakraborti  
xxxii) Vivekananda Mandal

b) **From other institutions/universities – Nil**

40. **Number of post graduate students getting financial assistance from the university:** 48 (2009-2013)
41. **Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** No
42. **Does the department obtain feedback from**
- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Feed-back is regularly sought from faculty members during Local Board of Studies and Teachers meeting in the Department. Decisions are placed in Board of Studies meeting for approval. Finally it is placed in the Academic Council meeting for final approval and implementation.
- b. **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:**  
On informal basis feedback is taken from final year students during their farewell programme. The suggestions are considered seriously for development of curriculum and teaching-learning aspects.  
The Principal of Bhavana collects structured feedback from final year students on each faculty and several parameters on them in a formal basis.
- c. **alumni and employers on the programmes offered and how does the department utilize the feedback:** Feedback is also sought from alumni during Reunion of the Department. They are also encouraged to send their feedback through e-mail to the Head of the Department.
43. **List the distinguished alumni of the department (maximum 10):**

Name	Institute/Country
Dr. Badal Datta (Professor)	Tripura University, Tripura
Dr. Manoj Majee (Scientist C)	NIPGR, New Delhi
Dr. Sanjib Bhakta (Asst. Professor)	Birbeck University, U.K
Dr. Ananda Sarkar (Scientist)	Scientist, NIPGER
Dr. Arunabha Dasgupta (Scientist C)	Central Drug Research Institute, Lucknow
Dr. Sukhendu Mandal (Asst. Professor)	Calcutta University
Dr. Binod C. Sharma (Assoc. Professor)	Darjeeling Govt College
Dr. Vivekananda Mandal (Assoc. Professor)	Gour Banga University
Dr. Amal Mandal (Assoc. Professor)	Vidyasagar University, West Bengal

Dr. Prakash Karmakar (Asst. Professor)	Vidyasagar University, West Bengal
Dr. Arnab Chattopadhyay	University of California, Los Angeles
Dr. Debojyoti Ghosh, PDF	University of Bourdeaux, France
Dr. Sushma Mishra, PDF	Bristol University, U.K.
Dr. Dhritiman Ghosh, PDF	Tennessee University, USA
Dr. Sarmistha Maity (Asst. Professor)	Krishnagar Govt. College, Krishnagar, W.B.
Dr. Sanjay Pal, PDF	University of Montreal, Canada
Dr. Pintu Banerjee (Asst. Professor)	Krishnagar Govt. College, Krishnagar, W.B.
Dr. Debasish Bakshi (Asst. Professor)	Bankura Christian College, W.B.
Dr. Arijit SinhaBabu (Asst. Professor)	Bankura Christian College W.B.
Dr. Arpita Banerjee (Asst. Professor)	Bankura Christian College, W.B.
Dr. Ashok Bhattacharyya (Asst. Professor)	Darjeeling Govt College, W.B.

**44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**

**Special Lectures:**

- Special lectures on student awareness programme Advances in Life Sciences by eminent scientists of national level.
- Arranging special lectures delivered by eminent guest faculty from various universities and Institutes : (One week duration in each occasion)
- Arranging Seminars, workshops and hand-on training on modern areas of biological science for UG and PG students (sponsored by UGC, West Bengal State DST, DBT etc.)

**45. List the teaching methods adopted by the faculty for different programmes:**

- Conventional method through board work
- Power point presentation
- Practical demonstration
- Field visit for plant and fungi identity
- Student seminar on taught topics
- Providing lecture notes (both hard copy and soft copy) to students at the end of classes
- Regular remedial coaching for UG and PG students belonging to weaker section

**46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**

- Periodical assessment of the students of both undergraduate and postgraduate level by various modes like internal examinations, performance in national level examinations, participation and presentation in different academic programmes

including National & International Conferences, Seminars, Workshops, Training programmes, Expedition etc.

b) Interaction of the students with reputed scientists, researchers, eminent alumni etc.

**47. Highlight the participation of students and faculty in extension activities:**

- a) Aforestation programme
- b) Environment Awareness programme
- c) Workshop on mushroom production
- d) Workshop on Biofertilizer and biopesticides
- e) Workshop on medicinal plants
- f) Faculty members and students (UG, PG and Ph.D) are involved in various co-curricular activities like NSS programme, NCC, Inter-University games and sports competitions, Drama competition, music competition, rural reconstruction programme etc. Such activities are the inherent characteristics of Visva-Bharati.

**48. Give details of “beyond syllabus scholarly activities” of the department:**

- a) Organisation of Academic Lectures like Debidas Bhattacharya Endowment Lecture
- b) Training on Science communication and Media practice
- c) DST INSPIRE INTERNSHIP Winter Camp
- d) Study tour
- e) Student related cultural programme
- f) Acting as resource person in different refresher courses
- g) Participation in exchange programmes
- h) Participation in workshops, seminars etc

**49. State whether the programme / department is accredited / graded by other agencies? If yes, give details: N/A**

**50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**

- a) Participating the international Conferences, delivering Invited lectures, acting as Chairpersons and interacting with global scientists visiting different universities and institutes like AFRC Institute of Crop Research, Rothamsted Experimental Station, Harpenden, England; University of UDLAB, Mexico; Komarov Botanical Institute, Leningrad, etc.
- b) Isolation and Development potent beneficial microbial strains for agricultural, food and industrial use
- c) Development of data bank of bioresources in our locality with potential applications.
- d) Development of techniques for conservation of biodiversity

- e) Participation of faculties, research scholars and students in the above programmes develop a strong group of manpower.

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**

**a) Strengths:**

- i) Post graduate Department of a Central University with good quality dedicated and devoted teachers
- ii) Faculty strength at present is 20 twenty with eight Professors
- iii) Financially supported by UGC DRS-SAP and DST-FIST programmes  
Choice based credit system is running for the UG and PG courses
- iv) Possibility of enhanced facility for better opportunity
- v) Interacting students programmes with eminent scientists

**b) Weaknesses:**

- i) Located in the remote place in West Bengal although well connected with Kolkata. Newly recruited faculty from other states always have tendency to move out from this university to nearby institutes or universities.
- ii) Maintenance of laboratory equipments is extremely time taking as it is located far from Kolkata.
- iii) Experimental research work is difficult to pursue due to frequent power cut
- iv) Infrastructure facility inadequate and needs to be strengthened further in order to provide justice to teaching and research. There is shortage of space for classrooms, individual rooms for faculties and research laboratories
- v) Lack of modern equipments like SEM/TEM, DNA Sequencer etc.

**c) Opportunities**

- i) Placements in various academic Institutions of India and abroad
- ii) Engagement with corporate sectors
- iii) Potential manpower development for rural reconstruction and societal development
- iv) Hand-on training and self-employment generation
- v) Exposure and participation of students and faculties to various cultural activities and social programmes unique to Visva-Bharati

**d) Challenges**

- i) Conservation of biodiversity through establishment of Germplasm collection centre and tissue culture laboratory
- ii) In spite of remote location of the University, establishment of collaboration with other good research institutes
- iii) To strengthen interdisciplinary research works so that we can make our

standard up.

- iv) To attract very good and high quality students
- v) To make our departmental administrative and academic environment more conducive.

**52. Future plans of the department:**

- a) Modernization of the existing laboratories with equipments
- b) Upgradation of curriculum
- c) Research activities at par with the present day social needs.

## Evaluative Report of the Department of Chemistry

1. **Name of the Department :** Chemistry
2. **Year of establishment :** 1962
3. **Is the Department part of a School/Faculty of the university?** Yes, It is under Siksha-Bhabana (Institute of science) of Visva-Bharati.
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :**  
UG, PG, Ph.D.
5. **Interdisciplinary programmes and departments involved:** Yes. The department is actively involved in interdisciplinary research with the Dept. of Botany in the field of Natural Products Chemistry, and with the Dept. of Integrated Physical Science, Visva-Bharati in the field of Photophysics.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** Not yet
7. **Details of programmes discontinued, if any, with reasons:** Not yet
8. **Examination System:** Annual/Semester/Trimester/Choice Based Credit System – Semester systems have already been started in both U.G.(2011) and P.G.(2009) levels as per UGC guidelines with choice based credit.
9. **Participation of the department in the courses offered by other departments:** Yes. Few faculty members of our department are actively engaged in the five years integrated course in physical science under Siksha-Bhabana.
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	2	1	6 (1 + 5 from CAS)
Associate Professors	5	5	5 (2 + 3 from CAS)
Asst. Professors	16	15	10
Others	-	-	1(DST Inspire fellow)



**11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Prof. I. N. Basumallick  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 33 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- b) **Name** : Prof. D. N. Chowdhury  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 32 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- c) **Name** : Prof. A. K. Das  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 26 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- d) **Name** : Dr. P. Chowdhury  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 19 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 08
- e) **Name** : Dr. P. Sarkar  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 15 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04

- f) **Name** : Dr. G. Brahmachari  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 15 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- g) **Name** : Dr. B. Mandal  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 23 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- h) **Name** : Dr. S. K. Chandra  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 15 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- i) **Name** : Dr. G. K. Das  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 15 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- j) **Name** : Dr. B. K. Dolui  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 13 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

- k) **Name** : Dr. A. Majee  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 12 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- l) **Name** : Dr. B. C. Bag  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 11 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- m) **Name** : Dr. N. A. Begum  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- n) **Name** : Dr. A. Hajra  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- o) **Name** : Dr. M. Ghosh  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02

- p) **Name** : Dr. M. Seikh  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 6 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- q) **Name** : Ms. B. Singh  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- r) **Name** : Dr. K. C. Bhowmick  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- s) **Name** : Dr. Biswajit Dey  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 4 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- t) **Name** : Dr. S. K. Mondal  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 7 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

- u) **Name** : Dr. P. Sahoo  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Organic Chemistry  
**No. of Years of Experience** : 9 months  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- v) **Name** : Dr. Shovan Mandal  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Inorganic Chemistry  
**No. of Years of Experience** : 1 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors:** Nil
13. **Percentage of classes taken by temporary faculty — programme-wise :** Nil
14. **Programme-wise Student Teacher Ratio :**  
a) B. Sc. (Hons): Teacher : Students = 1: 6  
b) B. Sc. (Allied): Teacher : Students = 1: 40  
c) M. Sc. (Hons): Teacher : Students = 1: 4.5
15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:** 8 (Sanctioned post 10)
16. **Research thrust areas as recognized by major funding agencies:**  
Thrust Area – I  
Theoretical and experimental Studies on the Synthetic Possibilities and Spectroscopic Properties of Nanomaterials  
Thrust Area-II  
Synthesis, Characterization, Structure, Properties and Biological Relevance of Coordination and Polymeric Compounds  
Thrust Area- III  
Development of New Drug-like Structures based on Bioactive Organic Molecules of Natural origin

17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:

Name of the Investigator	Title of the Project	Sponsoring Agency	Sanctioned Amount
Prof. Pranesh Chowdhury	Development of high performance ion exchange resin based on quaternized polymers for selective extraction of chromium from industrial wastewater. No.01(2392)/10/EMR-II	CSIR, New Delhi.	Rs.17.2 L
	Development of new biocompatible hybrid materials based on grafting organic polymers onto inorganic nanomaterials. No.01(2444)/10/EMR-II	CSIR, New Delhi	Rs.18.3 L
	Development of organic-inorganic hybrid (nano) materials and their biological relevance No.SR/S3/ME/0018/2010	DST, New Delhi.	Rs.35.5 L
Prof. Pranab Sarkar	Electronic Structure of Carbon Based Nanohybrid Materials (Ref. No. 01(2744) EMR-II/2013)	CSIR, New Delhi.	Rs. 10 L
Prof. Goutam Brahmachari	A sincere drive to develop eco-friendly methodologies for some useful organic transformations in the absence of organic solvents. No.02(0110)/12/EMR-II	CSIR, New Delhi.	Rs. 12.65 L
Dr. S. K. Chandra	Transition Metal Compounds with Potential Bridging Function Containing Polydentate Ligands	CSIR, New Delhi.	Rs. 13 L
	Synthesis, structure, characterization and magnetic properties of transition metal complexes with multidentate ligands	DST, New Delhi.	Rs. 25 L

Name of the Investigator	Title of the Project	Sponsoring Agency	Sanctioned Amount
Dr. Gourab Kanti Das	Theoretical investigation on the mechanisms of various transformations of biomolecules by cofactor dependent enzymes.	UGC, New Delhi.	Rs. 7.10 L
Dr. Alakananda Hajra & Dr. Adinath Majee	Ionic liquids and catalysts with ionic tag: Preparation and their application in organic synthesis. (SR/S5/GC-05/2010)	DST, New Delhi.	Rs. 38.25 L
Dr. Alakananda Hajra	Dye sensitized solar cell: photoinduced electron transfer in porphyrin based donor-acceptor dyads attached to nanostructured films.	BRNS, India.	Rs. 31.045 L
Dr. Adinath Majee	Development of some 'one pot multi-component reaction' involving carbon-heteroatom bond formation by using Cu salt, Indium salt and L-Proline as catalyst. No. PSW-171/11-12.	UGC, New Delhi.	Rs. 1.92 L
Dr. Naznin A. Begum	Studies on biogenic synthesis of metal nanoparticles with tailor-made structural properties. No. 01(2504)/11/EMR-II	CSIR, New Delhi.	Rs. 19.01 L
	To study the mechanism of antioxidant as well as DNA damage prevention activities of different natural occurring flavonoids and their synthetic derivatives. No. SR/SO/BB-0007/2011	DST, SERB, New Delhi.	Rs. 40.70 L

Name of the Investigator	Title of the Project	Sponsoring Agency	Sanctioned Amount
Dr. Kartick C. Bhowmick	Asymmetric catalysis in water/aqueous media: Design and Applications of Chiral Catalysts for C-C Bond-forming Reactions	DST, New Delhi	Rs. 16.56 L
Dr. Biswajit Dey	Exploitation of intriguing supramolecular features of various metallosupramolecular networks of transition metal ions with N,S,O-donor organic ligands in water media. No. SR/FT/CS-77/2011	DST, New Delhi. (Fast Track Project)	Rs. 24.8 L
Dr. Sudip Kumar Mondal	Better Understanding of Electrostatics and Dynamics in Protein and their Role in Protein Function Using New Synthetic Fluorescent Amino Acids as Probe. No. F. 20-5(17)/2012(BSR). (Start-Up-Grant for newly recruited faculty at Assistant Professor level in Science Department)	UGC, New Delhi.	Rs. 6 L
Dr. Shovan Mondal	Synthesis of bioactive heterocycles. No. IFA12-CH-56	DST, New Delhi.	Rs. 35 L

#### 18. Inter-institutional collaborative projects and associated grants

##### a) National collaboration:

Dr. Chiranjib Majumdar, BARC, Mumbai, Associated Grant Rs. 19 Lakhs, BRNS DAE Project

##### b) International collaboration:

- i) Prof. Guillem Aromí, Departament de Química Inorgànica, Universitat de Barcelona, Diagonal 647, 08028 Barcelona, Spain.
- ii) Enrique Colacio, Departamento de Química Inorgánica, Facultad de Ciencias, Universidad de Granada, Avda. Fuentenueva s/n, 18002 Granada, Spain.
- iii) Professeur Jean-Pierre Tuchagues, Laboratoire de Chimie de Coordination



du CNRS, 205 rout de Narbonne, 31077 Toulouse cedex, *France*.

- iv) Professor Thomas Frauenheim, Bremen Center for Computational Material Science, University of Bremen, Germany

**19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:**

- a) DST – FIST (2010 -2015 total grand received Rs. 260 lakh; Ref. No. SR/FST/CSI -208/2009 8<sup>th</sup> March 2010)  
b) UGC-SAP (2013-2018 total grand received Rs. 70 lakhs; Ref. No. F.540/17/DRS/2013 (SAP-I)

**20. Research facility / centre with**

- a) **state recognition** : Nil  
b) **national recognition:** Research facilities: 400 MHz NMR Spectrophotometer, HPLC, TGDTA, UV-VIS Spectrophotometers (two), Fluorimeters(two), IR spectrophotometers (two) Single Crystal X-ray diffractometer (purchase is on the process).  
Centre: UGC-SAP Phase-II, DST-FIST Phase-II  
c) **international recognition:** Nil

**21. Special research laboratories sponsored by / created by industry or corporate bodies:** Nil

**22. Publications:**

- a) **No. of papers published in peer reviewed journals (national/international):**  
**(2009-13)**  
i) P. Chowdhury – 25  
ii) N.A. Begum – 12  
iii) P. Sarkar – 29  
iv) B. C. Bag – 22  
v) A. Majee – 33  
vi) A. Hajra – 30  
vii) P. Sahoo – 18  
viii) M. Ghosh – 39  
ix) B. Dey – 11  
x) G.K. Das – 06  
xi) G. Brahmachari – 34  
xii) A.K. Das – 03  
xiii) Shovan Mondal – 22  
xiv) Md. Motin Seikh – 19

- xv) Bhabatosh Mandal – 15  
xvi) K.C. Bhowmick – 03  
xvii) S. K. Mondal – 02  
xviii) S.K. Chandra – 03
- b) **Monographs:** – Nil
- c) **Chapters in Books:** –
- i) **Md. Motin Seikh** and B. Raveau, “*Magnetoresistance and Phase separation in Cobalt Oxides*”, p. 107-156: **Giant Magnetoresistance: New Research: ISBN: 978-1-60456-733-5**, Ed. Adrian D. Torres and Daniel A. Perez , NOVA Publishers (2009)
- ii) S. S. Sinha, A. Ghosh, D. S. Ray and **B. C. Bag** edited by S. K. Ghosh and P. K. Chattaraj “Quantum Brownian Motion in Spin bath” in “Concepts and Methods in Modern Theoretical Chemistry Statistical Mechanics” CRC Press, Taylor and Francis Group, 2013
- iii) **Adinath Majee**, *Why do we need green chemistry ?* “Green Chemistry and Sustainable Agriculture Practice : A Step towards a Better Future” Edited by Dr. Tanmay Chattapadhyay and Biplab Bhowmick, Publisher : Council of MS Academic **2013** (ISBN: 978-81-921697-3-6,
- iv) **Alakananda Hajra**, *Green chemistry and catalysis for sustainable Organic Synthesis*, “Green Chemistry and Sustainable Agriculture Practice : A Step towards a Better Future” Edited by Tanmay Chattapadhyay and Biplab Bhowmick, Publisher : Council of MS Academic **2013** (ISBN: 978-81-921697-3-6,
- v) **Goutam Brahmachari (2013)**, Natural Bioactive Molecules: Impacts and Prospects — An Overview, In: *Natural Bioactive Molecules: Impacts & Prospects*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK / Narosa Publishing House Pvt. Ltd., New Delhi (ISBN: 978-1-84265-780-5/978-81-8487-235-4).
- vi) **Goutam Brahmachari (2013)**, Role of Natural Products as a Source of Alzheimer’s Drug Leads: An Update, In: *Natural Bioactive Molecules: Impacts & Prospects*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK / Narosa Publishing House Pvt. Ltd., New Delhi (ISBN: 978-1-84265-780-5/978-81-8487-235-4).
- vii) **Goutam Brahmachari (2013)**, Stevioside and Related Compounds: Molecules of Pharmaceutical Promise Beyond Zero-Calorie Sweeteners, In: *Natural Bioactive Molecules: Impacts & Prospects*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK/Narosa Publishing House Pvt. Ltd., New Delhi (ISBN: 978-1-84265-780-5/978-81-8487-235-4).

- viii) **Goutam Brahmachari (2013)**, Natural Bioactive Flavonoids — Recent Developments in Research: A Thorough Update, In: *Natural Bioactive Molecules: Impacts & Prospects*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK / Narosa Publishing House Pvt. Ltd., New Delhi (ISBN: 978-1-84265-780-5/978-81-8487-235-4).
- ix) **Goutam Brahmachari (2013)**, Chemistry and Pharmacology of Naturally Occurring Bioactive Compounds: An Overview, In: *Chemistry and Pharmacology of Naturally Occurring Bioactive Compounds*, Goutam Brahmachari (Editor), CRC Press (Taylor & Francis Group), USA, pp. 1-8.
- x) **Goutam Brahmachari (2013)**, Gambogic Acid: A Caged Prenylated Garcinia Xanthone Potent Anticancer Agent of Pharmaceutical Promise, In: *Chemistry and Pharmacology of Naturally Occurring Bioactive Compounds*, Goutam Brahmachari (Editor), CRC Press (Taylor & Francis Group), USA, pp. 393-415.
- xi) **Goutam Brahmachari (2011)**, Bio-flavonoids with promising antidiabetic potentials: A critical survey, In: *Opportunity, Challenge and Scope of Natural Products in Medicinal Chemistry*, Vinod K. Tiwari and Bhuwan B. Mishra (Editors), Research Signpost, Trivandrum, Kerala, India, pp.187-212.
- xii) **Goutam Brahmachari (2011)**, Natural products in drug discovery: impacts and opportunities – an assessment, In: *Bioactive Natural Products: Opportunities & Challenges in Medicinal Chemistry*, Goutam Brahmachari (Editor), World Scientific Publishing Co., Singapore, pp. 1-199.
- xiii) **Goutam Brahmachari (2011)** Andrographolide: A Plant-derived Natural Molecule of Pharmaceutical Promise. In: *Bioactive Natural Products: Opportunities & Challenges in Medicinal Chemistry*, Goutam Brahmachari (Editor), World Scientific Publishing Co., Singapore, pp. 335-367.
- xiv) **Goutam Brahmachari (2011)**, Anti-diabetic agents of natural origin: A retrospective account of some promising chemotypes, In: *Bioactive Natural Products: Opportunities & Challenges in Medicinal Chemistry*, Goutam Brahmachari (Editor), World Scientific Publishing Co., Singapore, pp. 519-599.
- xv) **Goutam Brahmachari (2009)**, Mother Nature – an inexhaustible source of drugs and lead molecules. In: *Natural Products: Chemistry, Biochemistry and Pharmacology*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK / Narosa Publishing House Pvt. Ltd., New Delhi, pp. 1-22.
- xvi) **Goutam Brahmachari**, Sadhan Mondal and Shyamal K. Jash (2009),

Nuclear magnetic resonance spectroscopic behaviour of natural abietane-diterpenoids: A look through. In: *Natural Products: Chemistry, Biochemistry and Pharmacology*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK / Narosa Publishing House Pvt. Ltd., New Delhi, pp. 734-781.

- xvii) **Goutam Brahmachari** and Dilip Gorai (2009), Michael addition reaction: Applications in total synthesis of bioactive natural products. In: *Natural Products: Chemistry, Biochemistry and Pharmacology*, Goutam Brahmachari (Editor), Alpha Science International, Oxford, UK / Narosa Publishing House Pvt. Ltd., New Delhi, pp.782-804.

**d) Edited Book:**

- i) *Natural Products: Chemistry, Biochemistry and Pharmacology*, edited by **Goutam Brahmachari** (with a foreword by Prof. Jorg Heukelbach and Prof. Ricke Speare), Alpha Science International Ltd., Oxford, U.K., 2009 (ISBN: 978-1-84265-450-7); co-published by Narosa Publishing House Private Ltd., New Delhi, India, 2009 (ISBN: 978-81-7319-886-1).
- ii) *Bioactive Natural Products: Opportunities and Challenges in Medicinal Chemistry*, edited by **Goutam Brahmachari** (with a foreword by Dr. David J. Newman), World Scientific Publishing Co., Singapore, 2011 (ISBN-13: 978-981-4335-37-9).
- iii) *Chemistry and Pharmacology of Naturally Occurring Bioactive Compounds*, edited by **Goutam Brahmachari** (with a foreword by Prof. Dr. Raphael Mechoulam, and Prof. Dr. Takuo Okuda), CRC Press/Taylor Francis Group, LLC, USA, 2013 (To be released on February 08, 2013).
- iv) *Natural Bioactive Molecules: Impacts & Prospects*, edited by **Goutam Brahmachari** (with a foreword by Prof. Dr. Arnold Demain), Alpha Science International Ltd., Oxford, U.K., 2013 (ISBN: 978-1-84265-780-5); co-published by Narosa Publishing House Private Ltd., New Delhi, India, 2013 (ISBN: 978-81-8487-235-4).

**e) Books with ISBN with details of publishers:**

- i) **Prof. Asim Kumar Das** and Mahua Das, Fundamental Concepts of Inorganic Chemistry (Vol. 1-7) (CBS Publishers and distributors, New Delhi-2), **A. K. Das** & M. Das ISBN No: 978-81-239-1866-2 (vol 1) **2010**; 978-81-239-1867-9 (vol 2) **2010**; 978-81-239-1868-6 (vol 3); **2010** 978-81-239-2351-2 (vol 4) **2014 (in press)**; 978-81-239-2352-9 (vol 5) **2014 (in press)**; 978-81-239-2353-6 (vol 6)**2014 (in press)**; 978-81-239-2354-3 (vol 7) **2014 (in press)**.
- ii) **Prof. Asim Kumar Das** and Mahua Das Environmental Chemistry with

- green Chemistry (Books and Allied Pvt. Ltd.) ISBN No:81-87134-32-1, 2010
- iii) **Organic Name Reactions: A Unified Approach** (with a foreword by Prof. S. Chandrasekaran), Narosa Publishing House Private Ltd., New Delhi, India, Revised edition 2012 (ISBN: 81-7319-719-2).
- iv) **Organic Chemistry Through Solved Problems** (with a foreword by Prof. Swapnadip Thakur), Narosa Publishing House Private Ltd., New Delhi, India, Revised edition 2012 (ISBN: 81-7319-816-0).
- v) **Handbook of Pharmaceutical Natural Products - Vol. 1 and 2 (Hardcover)** 1<sup>st</sup> Edition, 2010. XX, 926 Pages, Major Reference Book; ISBN-10: 3-527-32148-9; ISBN-13: 978-3-527-32148-3. Publisher: Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany
- vi) *This book authored by Dr. Goutam Brahmachari has been reviewed by Prof. Dr. Karl-Heinz Altmann, ETH Zrich (Switzerland), by Dr. Dr. Thomas Winckler, Jena (Germany), and also by John Goodier (Consultant, Goldhawk Information, London, UK).*
- vii) **Book Review-1.** "...the author has succeeded in compiling an impressive and highly informative reference text on many pharmaceutically relevant natural products. I would recommend this book to everyone involved in research with biologically active natural products as a convenient and practical source of high quality information....." (*ChemMedChem*, 2010, **5**, 10, 1788-1789) reviewed by Prof. Dr. Karl-Heinz Altmann, ETH Zrich (Switzerland)
- viii) **Book Review-2.** "... a useful addition to the bookshelf of every natural material specialist..." – *Pharmazie in unserer Zeit*, 2010, **39**(5), 415 (review in German) by Prof. Dr. Thomas Winckler, Jena (Germany).
- ix) **Book Review-3.** ".....This book is clearly for specialists, the natural product chemist and the pharmaceutical chemist... I do not know whether Goutam Brahmachari intends a revised edition in the future but I am sure there will be an ongoing demand for a book like this" (*Reference Reviews*, 2011, **25**, 3, 42-43) by John Goodier, Consultant, Goldhawk Information, London, UK.
- x) **Md. Motin Seikh, "Investigations on Transition Metal Oxides"** ISBN 978-3-8383-4217-7, Lambert Academic Publishing, Germany, (2010).
- xi) B. Raveau and **Md. Motin Seikh**, "*Cobalt Oxides: From Crystal Chemistry to Physics*" Wiley-VCH (2012).
- xii) **M. Ghosh**, N. K. Datta " Excitation in Impurity Doped Quantum Dots: Role of Impurity Parameter" *Invited Book*, Publisher: Lambert Academic Publishing, Germany. ISBN-10: **3844389326**, ISBN-13: **978-3844389326**

c) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):** N/A

d) **Citation Index — range / average:**

- i) P. Chowdhury – >1
- ii) N.A. Begum – >1
- iii) P. Sarkar – >1
- iv) B. C. Bag – >1
- v) A. Majee – >1
- vi) A. Hajra – >1
- vii) P. Sahoo – >1
- viii) M. Ghosh – >1
- ix) B. Dey – >1
- x) G.K. Das – >1
- xi) G. Brahmachari – >1
- xii) A.K. Das – >1
- xiii) Shovan Mondal – >1
- xiv) Md. Motin Seikh – >1
- xv) Bhabatosh Mandal – >1
- xvi) K.C. Bhowmick – >1
- xvii) S. K. Mondal – >1
- xviii) S.K. Chandra – >1

e) **SNIP:** N/A

f) **SIR:** N/A

g) **Impact Factor — range / average:**

- i) P. Chowdhury – >1
- ii) N.A. Begum – >1
- iii) P. Sarkar – >1
- iv) B. C. Bag – >1
- v) A. Majee – >1
- vi) A. Hajra – >1
- vii) P. Sahoo – >1
- viii) M. Ghosh – >1
- ix) B. Dey – >1
- x) G.K. Das – >1
- xi) G. Brahmachari – >1
- xii) A.K. Das – >1

- xiii) Shovan Mondal – >1
- xiv) Md. Motin Seikh – >1
- xv) Bhabatosh Mandal – >1
- xvi) K.C. Bhowmick – >1
- xvii) S. K. Mondal – >1
- xviii) S.K. Chandra – >1

**h) h-index:** N/A

- 23. Details of patents and income generated:** Not yet any
- 24. Areas of consultancy and income generated:** (i) Overhead Charges of research projects, (ii) Charges for NMR of sample analysis.
- 25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**  
Dr Adinath Majee had been selected as BOYSCAST FELLOW by DST Govt. of India to work in University of Sheffield, UK with Prof J. A. Harrity
- 26. Faculty serving in**
- a) National committees:**  
Dr. Naznin Ara Begum, National Advisory Committee member of **First World Conference on Fracture and Damage Mechanics of Metals, Glass, Ceramics, Semi-conductors, Polymers, Alloys, Composites, Nanocomposites, Gels and Adhesives (Fracture 2014)** to be held on August 9, 10 & 11, 2014 at Mahatma Gandhi University, Kottayam, Kerala, India.
  - b) International committees:** Nil
  - c) Editorial Boards:**
    - i) Dr. Adinath Majee of the Journal *Open Catalysis Journal*
    - ii) Dr. Alakananda Hajra of the Journal of *Chinese Clinical Medicine & ISRN Organic chemistry*
    - iii) Prof. Pranesh Chowdhury, Journal of Polymer Materials
    - iv) Prof. Goutam Brahmachari, Editor-in-Chief, SOA J. Org. Biomol. Chem. (ISSN: 2321-4163)
  - d) Any other (please specify):** N/A

**27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**

Name	Name of the course/ Summer School	Place	Duration	Sponsoring Agency
<b>Dr. Adinath Majee</b>	UGC sponsored Refresher Course	ASC, University of Calcutta	8 <sup>th</sup> February to 27 <sup>th</sup> , 2010	U.G.C.
	UGC sponsored Short term course	ASC, University of Burdwan	9 <sup>th</sup> March to 15 <sup>th</sup> , 2013	UGC
<b>Dr. Sudip Kumar Mondal</b>	83 <sup>rd</sup> Orientation programme	ASC, University of Burdwan	10/01/12 to 06/02/12	UGC
	21 <sup>st</sup> refresher course in Environmental Science	ASC, University of Burdwan	22/09/12 to 12/10/12	UGC
<b>Dr. Bijoy Krishna Dolui</b>	UGC sponsored Short term course	ASC, University of Burdwan	9 <sup>th</sup> March to 15 <sup>th</sup> , 2013	UGC
<b>Dr. Naznin Ara Begum</b>	67 <sup>th</sup> Orientation programme.	ASC, University of Burdwan	Dec. 13, 2008 – Jan. 09, 2009	UGC
	1 <sup>st</sup> Refresher Course in Materials Science	Academic Staff College, Burdwan University	28.06.2013 18.07.2013	UGC

**28. Student projects:**

- a) Percentage of students who have done in-house projects including interdepartmental projects: 100%
- b) Percentage of students doing projects in collaboration with other universities / industry / institute: Nil

**29. Awards / recognitions received at the national and international level by**

a) Faculty:

**Dr. Alakananda Hajra**, The excellent poster Award of the 11<sup>th</sup> Tetrahedronsymposium-Frontiers of Organic Chemistry, Beijing

**Dr Adinath Majee** had been selected as BOYSCAST FELLOW by DST Govt. of India to work in University of Sheffield, UK with Prof J. A. Harrity



b) **Doctoral / post doctoral fellows:** None

c) **Students:** Not yet

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

- CRSI (Kolkata Chapter) Symposium (IX) on Chemical Research in the First Decade of 21st Century August 06, 2011: Deptt of Chemistry, Visva-Bharati.
- One day The Royal Society of Chemistry seminar in the Dept. of Chemistry, Visva-Bharati on 16<sup>th</sup> October, 2009
- Academies lecture on A three days Workshop from 29<sup>th</sup> November to 1<sup>st</sup> December 2012 on *“Recent Developments in Chemistry”*

**Seminar Presented in the year 2012-2013:**

Sl. No.	Name of the Speaker	Title of the Seminar/Conference/Workshop
1	Prof. S. Duttagupta, Vice-chancellor, Visva- Bharati; Prof. B. M. Deb, IISER Kolkata; Prof. B. C. Ranu, IACS Jadavpur; Prof. P. K. Chattaraj, IIT Kharagpur; Prof. Samaresh Bhattacharyya; Dr. Suhrit Ghosh, IACS Jadavpur;	Recent Developments in Chemistry 29 <sup>th</sup> November – 1 <sup>st</sup> December, 2012
2	Dr. Gautam Gangopadhyay S. N. Bose National Center for Basic Sciences, Salt Lake; Kolkata	Master equation approach to heterogeneous enzyme catalysis. 22.07.2012
3	Dr. Apurba L. Koner, Department of Chemistry, IISER Bhopal, India	Non-covalent chemistry in a confined nanospace and its applications. 23.02.2013

**Seminar Presented in the year 2011-2012:**

Sl. No.	Name of the Speaker	Title of the Seminar
1	Prof. Dr. Michael Springborg University of Saarlandes, Saarbrucken, Germany	Determining and Analyzing the Structure of Clusters
2	Debnath Ghoshal MRC Laboratory of Molecular Biology Cambridge University	Mechanism of Division Plane Determination

Sl. No.	Name of the Speaker	Title of the Seminar
3	Dr. H. N. Ghosh Scientific Officer Radiation and Photochemistry Division Bhaba Atomic Research Centre Mumbai-400 085	“Ultra fast charge transfer Dynamics in Dye-sensitized and Quantum Dot Solar Cell
4	Dr. Sundargopal Ghosh Department of Chemistry Indian Institute of Technology Madras, Chennai-600 036	Chemistry and Applications of Metallaboranes
5	Prof. P.Paramanik IIT, Kharagpur	Challenges in nano-science and nano-technology
6	Prof. Sanjiv Bagchi, IISER, Kalyani	Current Trends in Chemistry
7	Prof. Chinmoy Chowdhury, IICB, Kolkata	Current Trends in Chemistry
8	Prof. Pradhyut Ghosh, IACS, Kolkata	Current Trends in Chemistry

**Seminar Presented in the year 2010-2011:**

Sl. No.	Name of the Speaker	Title of the Seminar
1	<b>Dr. H. N. Ghosh,</b> Scientific Officer, Radiation and Photochemistry. Division, BARC, held on 5th February, 2011.	Ultrafast charge transfer dynamics in dye-sensitized and quantum dot solar cell
2	<b>Dr. Sundargopal Ghosh</b> Dept. of Chemistry IIT Madras, held on 15th February, 2011.	Chemistry and Applications of Metalloboranes.
3	<b>Dr. Pratik Sen</b> IIT Kanpur, held on 20 <sup>th</sup> March, 2011	<i>Dye-protein interaction</i>

**Seminar Presented in the year 2009-2010:**

Sl No.	Name of the Speaker	Title of the Seminar
1	<i>Prof. Swadeshmukul Santra</i> , Department of CHEMISTRY, University of Central Florida ORLANDO, USA	Functional Nanomaterials for biomedical, energy and environmental research.
2	<i>Dr. Madhu S. Mondal</i> , Early Toxicology Laboratory, Novartis Institute of Biomedical Research Cambridge, USA	Traditional and Non-traditional In Vitro Early Toxicology Assays: Application in the Discovery Phase Pharmaceutical Drug Development.
3	<i>Prof. P. Pramanik</i> , Dept. of Chemistry, IIT Kharagpur	Nano-Materials by soft chemistry
4	<i>Prof. D. S. Ray</i> , Dept. of Physical Chemistry, IACS, Kolkata	Measurement of Equilibrium Properties from Non-equilibrium Measurement.
5	<i>Prof. Ali Mohammad</i> , Department of Applied Chemistry, Aligarh Muslim University	Role of Surfactants as Separation Activator in Thin Layer Chromatography.
6	<i>Prof. B. C. Ranu</i> , Dept. of Organic Chemistry, IACS, Kolkata	Practice of Green Chemistry in Teaching & Research
7.	<i>Prof. Biswanath Chakraborty</i> , Dept. of Chemistry, Kalyani University, Kalyani, Nadia	Overview of Analytical Methods applied to Industry
8.	<i>Prof. Sital Chattopadhyay</i> , Dept. of Chemistry, Kalyani University, Kalyani, Nadia	Studies on the utility of amino acids in natural product synthesis.
9.	<i>Prof. A. Patra</i> , Dept. of Material Science, IACS, Kolkata	New opportunities for Nano research in Nanophotonics

**31. Code of ethics for research followed by the departments:** The following ethical principles we follow as code of ethics:

- Integrity (honesty, transparencies and reproducibility of data)
- Competence
- Responsibility
- Respect for the rights and dignity of the person

**32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
UG	2009-10 =1800	26	10	98	100
	2010-11 =1900	26	11	98	100
	2011-12 =1800	26	08	98	100
	2012-13 =2000	28	16	-	-
PG	2009-10 =620	30	09	100	100
	2010-11 =700	29	09	100	100
	2011-12 =720	32	12	100	100
	2012-13 =846	30	14	-	-
Ph.D	2009-10	13	2	100	100
	2010-11	13	1	100	100
	2011-12	08	1	100	100
	2012-13	07	2	-	-

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
UG	50 %	50%		
PG	70%	20%	10%	
Ph.D	70%	20%	10%	

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

Name of the Examination	2009-2010	2010-2011	2011-2012	2012-2013
NET/GATE	20 (Gen-16, SC-3, ST-1)	22 (Gen-16, SC-6)	21 (Gen-18, SC-3)	15 (Gen-11, SC-3, ST-1)

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	100%
PG to M.Phil.	Not Applicable
PG to Ph.D.	55 %
Ph.D. to Post-Doctoral	9%
Employed	
• Campus selection	15%
• Other than campus recruitment	25%
Entrepreneurs	Nil

**36. Diversity of staff:**

Percentage of faculty who are graduates : 95%	
of the same university	25%
from other universities within the State	65%
from universities from other States	10%
from universities outside the country	0%

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	Nil
Ph.D.	Nil
D.Sc.	Nil
D.Litt	One

**38. Present details of departmental infrastructural facilities with regard to**

- Library:** One seminar library in the department. One in Siksha-Bhabana and Central library
- Internet facilities for staff and students:** Yes
- Total number of class rooms:** four and one seminar room which has also been used as class room when required.
- Class rooms with ICT facility:** Nil
- Students' laboratories:** 3 (Three)
- Research laboratories:** 2 (Two)

**39. List of doctoral, post-doctoral students and Research Associates:**

- Doctoral list from the host institution/university –** Please See Annexure II

b) **From other institutions/universities** – Please See Annexure II

40. **Number of post graduate students getting financial assistance from the university:** On average two per year.

41. **Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:**

In our Dept. there are two programmes (UGC-SAP Phase-II and DST-FIST phase-II) are presently running. Before we applied for the above mentioned programmes to UGC and DST respectively we convened a Teachers meeting and we decide through arguments what should be our thrust areas of research and what instrumental facilities we should ask for. We then form a small committee comprising some senior as well as junior faculty members to formulate a good project. We then circulate the project to all faculty members through e-mail and seek advice for improvements. In a final meeting we finalize both the project proposal and instruments we required. We also form a committee to monitor the smooth running of the projects.

42. **Does the department obtain feedback from**

a) **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** The department certainly obtains feedback from its faculty members on course curriculum and teaching-learning-evaluation. Normally we modify our syllabus on a gap of 4-5 years. During this modification the department includes all the good suggestions of the faculty members regarding inclusion of some new and emergent topics in the syllabus or exclusion of some topics. Following the suggestion of few faculty members we have arranged LCD projection in few classrooms for teaching some topics such as supramolecular chemistry.

b) **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** There is no formal way of getting feedback from students on faculties but of course there is informal discussion with the students on the syllabus and the department respects the suggestion of the students in formulating the syllabus.

c) **alumni and employers on the programmes offered and how does the department utilize the feedback:** The UGC, through its UGC-SAP programmes offer some suggestions such as implementation of project works of college students of surrounding area. We have fully implemented this in our department.

43. **List the distinguished alumni of the department (maximum 10):**

a) **Dr. Madhu S. Mondal**

Scientist, Early Toxicology Laboratory, Novartis Institute of Biomedical Research, Cambridge, USA

- b) **Prof. Barsanjit Majumdar**  
Department of Biological and Environmental Sciences,  
Cleveland State University, 2399 Euclid Avenue, SR 261, Cleveland OH 44115-2214. E-mail: [b.mazumder@csuphio.edu](mailto:b.mazumder@csuphio.edu)
- c) **Prof. Arindam Banerjee**  
Department of Biological Chemistry, IACS, Jadavpur, Kolkata- m700032  
E-mail : [bcab@iacs.res.in](mailto:bcab@iacs.res.in)
- d) **Dr. Surajit Sinha**  
Associate Professor, Department of Organic Chemistry, IACS, Jadavpur,  
Kolkata 700 032, India  
E-mail: [ocss5@iacs.res.in](mailto:ocss5@iacs.res.in)
- e) **Dr. Goutam De**  
Chief Scientist & Head , Nano-structured Materials Division , CGCRI, Jadavpur,  
Kolkata – 700032  
E-mail: [gde@cgcri.res.in](mailto:gde@cgcri.res.in)
- f) **Dr. Pratik Sen**  
Assistant Professor, Department of Chemistry , IIT Kanpur, Uttar Pradesh - 208  
016. E-mail: [psen@iitk.ac.in](mailto:psen@iitk.ac.in)
- g) **Prof. Tarasankar Pal**  
Department of Chemistry, IIT Kharagpur 721302.  
E-mail: [tpal@chem.iitkgp.ernet.in](mailto:tpal@chem.iitkgp.ernet.in)
- h) **Prof. P. V. Bharatam, M.Sc., Ph.D.**  
Dept. of Medicinal Chemistry, NIPER Mohali, Chandigarh  
E-mail : [pvbharatam@niper.ac.in](mailto:pvbharatam@niper.ac.in)
- i) **Dr. Hiren Ghosh, F. A. Sc.**  
BARC, Mumbai
- j) **Prof. Samudranil Pal**  
School of Chemistry, University of Hyderabad, Hyderabad 500 046, India  
E-mail : [spal@uohyd.ac.in](mailto:spal@uohyd.ac.in)
44. **Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**  
**Special Lectures:**
- Each year one day programme organized in association with Royal Society of Chemistry (Easter India Section).
  - Organized seminar lectures on contemporary topics by distinguished Scientists from different parts of our country and abroad also.
  - Organized three days workshop in association with Indian Academy of Sciences, Bangalore.

- 45. List the teaching methods adopted by the faculty for different programmes:**  
UG & PG- Primarily we preferred usual chalk-board method. But there are many topics we introduced through slide show.  
Ph. D. Course Works- Primarily through slide show presentation.
- 46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**  
For teaching programme we ensured it through the success of our students in National level test such as NET and also success of our students in getting chance for doing Ph. D. abroad.  
For research programme we ensured it through the standard of our publication in reputed national and international journals.  
If in any year the success of our students in NET examinations is not up to our expectations we the faculty members discussed with the students about the problem they faced and we tried to overcome all those problems.
- 47. Highlight the participation of students and faculty in extension activities:**  
Our university is situated in a rural area. Residents of local villages are mostly low income group and mostly illiterate. People are not aware of safe handling of our environment. They often suffer from malnutrition and diseases. The main source of income of these people is agriculture and very small and unorganized cottage industries based on manufacturing handicrafts e.g. doing batik on fabric and leather following traditional Santiniketan style which has huge market possibility (nationally or internationally). Due to lack of knowledge, these workers are using low cost toxic chemicals as dyes and other processing materials which have harmful effect on their health as well as on environment at long run. On this back ground the extension activities of the Chemistry Department are:
- Organization of seminar for generating awareness about safe and responsible use of chemical in day to day life, small scale handicraft business and agriculture.
  - Initiate a programme to prepare a data base for locally available traditionally used plants and their phytochemical profiles. These data are helpful in (a) searching of low cost source of natural antioxidants which will fight against their malnutrition and (b) identifying naturally occurring nontoxic plants based pigments, which can be replaced synthetic dyes and (c) educating the people about locally available biopesticides.
  - NSS, School level seminar
- 48. Give details of “beyond syllabus scholarly activities” of the department:**
- Student’s seminar and group discussion on some advanced topics of chemistry have been introduced. Students are encouraged to make power point presentation



to discuss their topics.

- b) Resourceful person and ex-students (distinguished alumni of the department) are invited to interact with the present student and faculties for well directed motivations.
- c) Display of wall magazine at regular interval is a well known practice of our department.

**49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not yet

**50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**

- a) A useful technique to prevent catalyst leaching has developed. Preparation of “cost effective” “reusable” ionic liquid tagged catalyst has also been achieved to meet the demand of “reusability” of this type of catalysts.
- b) We have developed a completely new catalytic system consists of L-Cysteine and an acid additive and tested its excellent efficacy in the direct asymmetric aldol reaction in water.
- c) Green, straightforward and novel methodologies on some significant organic transformations have been developed during this period, such as a very simple and highly efficient procedure for N-formylation of primary and secondary amines at room temperature under solvent-free condition.
- d) We have demonstrated for the first time the efficiency of Murrayanine, a naturally occurring carbazole alkaloid isolated from Indian Curry Leaf plant as a fluorescent probe and it was found to be nearly as good as those of well-known probes like ANS and coumarin 153.
- e) We have also developed an easy and simplified method for the assessment of antioxidant activity of extracts of biogenic materials (both plant and animal derived) based on their individual Au nanoparticles formation potentials.
- f) A new method of finding the lowest energy structures of nanoparticles has been developed combining the density functional theory and genetic algorithm. We have also explored the possibility of using CdTe nanowire functionalized by small organic molecules for solar cell application.
- g) Role of Impurity Strength and Impurity Domain on Excitation of Doped Quantum Dot Induced by Discontinuously Reversing Pulsed Field have been explored.
- h) A series of complexes have been synthesized by reactions of a family of tetradentate pyridyl/ imine ligands with NiII ion in the presence of various pseudohalides (N<sub>3</sub><sup>-</sup>, SCN<sup>-</sup>, and NCO<sup>-</sup>) and characterized by X-ray crystallography. The study of bulk magnetization of the complexes bridged by EO pseudohalide reveals that these ligands to mediate ferromagnetic coupling between

the NiII ions. The striking difference in the coupling intensity between N3<sup>-</sup> and NCO<sup>-</sup> has prompted an investigation by means of density functional theory calculations, which has confirmed the experimental results and provided insight into the reasons for this observation.

- i) Expansion of ferromagnetism in perovskite  $\text{EuBaCo}_2\text{O}_{5.50}$ .
- j) Protein folding kinetics: The theoretical simulation based on the techniques of non-equilibrium statistical mechanics show that mean folding time first increases with driving frequency and then decreases passing through a maximum until the off resonance starts to work.

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**

**a) Strengths :**

- i) Highly qualified and devoted young faculties (average age ~35-40).
- ii) Extensive teaching (UG, PG, Ph. D, Integrated Science).
- iii) Extensive research
- iv) Good student placement.
- v) Healthy teachers- students' relationship.

**b) Weaknesses:**

- i) Insufficient student classrooms, laboratories and teacher's sitting room.
- ii) Only one wet laboratory for research.
- iii) No technical staff for instruments.
- iv) Lack of modern teaching aids.
- v) lack of annual maintenance for instruments.

**c) Opportunities:**

- i) Coaching for NET, GATE.
- ii) External access of departmental research facilities.
- iii) Collaborative research work with other institute and Industries.
- iv) Advanced level teaching.
- v) Arrangement of special classes by renowned resource person.

**d) Challenges :**

- i) Enhancement of number of students from other states.
- ii) Development of the 'state-of-the-art' research centre.
- iii) Arrangement of more remedial classes for backward students.
- iv) Arrangement of extensive campus interview.
- v) Adoption of modern teaching aid.

**52. Future plans of the department:**

On the basis of our previous research work during UGC-SAP (DRS-I), we have

identified the following thrust area for our future research: “Design, Synthesis, Characterization and Understanding the Structure and Behavior of Functional Materials for their Potential Technological Application” The aim of this thrust area is to build an understanding of the chemistry of functional materials both experimentally, conceptually and theoretically and to utilize this understanding to control the assembly, structure and function of these materials which have long term potentials in energy, biomedical and other technologies.

The specific objectives under this thrust are the followings:

- a) Exploring and understanding the size, shape and composition dependent electronic structure of functional nanomaterials.
- b) Theoretical understanding of the interfacial electron transfer processes in Quantum Dot sensitized Solar cells by ab initio time-domain atomistic simulation method.
- c) Theoretical studies on excitation profiles and transport properties of doped quantum dot systems for understanding of dynamical aspects of quantum dot nanodevices.
- d) Computational studies on the effect of solvents and catalysts on the stereo- and regio- specificity of 1,3-H shift reactions relevant to the synthesis of bio-active organic compounds.
- e) Eco-friendly and economic synthesis, and characterization of energy relevant nanomaterials e.g. semiconductor and magnetic nanomaterials with an emphasis on their controllable structures and tailored reactivity.
- f) Development of biogenic/green routes for the synthesis of bio-compatible polymeric
- g) Nanocomposites and metal nanoparticles for their bio-medical applications.
- h) Exploration and exploitation of novel and green nano-catalyst for the synthesis of biologically relevant molecules.
- i) Development of facile synthetic routes for versatile organometallic supramolecular architectures and inorganic co-crystals followed by their characterization.
- j) Synthesis and studies on the properties of transition metal oxides with triangular arrangement of oxygen framework (triangular and Kagome Lattices) exhibiting magnetic frustration.
- k) Development of bio-friendly solid phase extractors for metal ion separation.
- l) Eco-friendly synthesis of biocompatible, thermo-sensitive and conducting polymer and polymer/silica nanoparticle composite.
- m) Studies on the kinetics of metal nanoparticle catalyzed reductions of biologically relevant transition metal complexes to explore mechanistic pathways of some important biological redox processes.

## Evaluative Report of the Department of Environmental Studies

- 1. Name of the Department :** Environmental Studies
- 2. Year of establishment :** 1998
- 3. Is the Department part of a School/Faculty of the university?** Yes, Institute of Science
- 4. Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** Undergraduate (Compulsory course for B.Sc./B.A./B.Fine/B.Mus/B.Des etc. of the university), PG (M.Sc. in Environmental Science), Ph.D. (Environmental Sciences).
- 5. Interdisciplinary programmes and departments involved:**

The students of various departments under different Bhavanas of Visva-Bharati which are involved in the Compulsory course of Environmental Studies have to undertake a project which is related to their respective subject with environment.

Besides the department is also involved in research with collaboration with other institutes like Central Institute of Mining and Fuel Research (CIMFR), Dhanbad; Ravenshaw University, Cuttack; Institute of Agriculture and Department of Zoology, Visva-Bharati, etc.

We are collaborating with University of Leeds, University of Nottingham, and University of Exeter, UK and also with IIT – Chennai, and IIT Bombay for generation of electricity by integrating Concentrated Photovoltaic and Biogas produced by anaerobic digestion of biomass for the electricity to the rural tribal community of Kaligunj in Santiniketan.
- 6. Courses in collaboration with other universities, industries, foreign institutions, etc.:** None
- 7. Details of programmes discontinued, if any, with reasons:** N/A
- 8. Examination System:** Annual/Semester/Trimester/Choice Based Credit System – Semester, Choice Based Credit System
- 9. Participation of the department in the courses offered by other departments:** Yes. PG students participate in CBCS offered by Department of Statistics; Ph.D students

participate in the course offered by the Department of Computers.

**10. Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	1	1	1
Associate Professors	1	0	1
Asst. Professors	4	4	3
Others	-	-	-

**11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Prof. S. Chaudhury  
**Qualification** : Ph.D  
**Designation** : Professor  
**Specialization** : Bioremediation, Biomass and energy, Environmental Toxicology  
**No. of Years of Experience** : 24 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- b) **Name** : Dr. Pratap K. Padhy  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Air pollution & Plants, Environmental Pollution and health  
**No. of Years of Experience** : 14 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- c) **Name** : Dr. Pulak K. Patra  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Environmental Geology  
**No. of Years of Experience** : 12 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 2+1 (submitted)
- d) **Name** : Dr. S. Balachandran  
**Qualification** : Ph.D.

- Designation** : Assistant Professor  
**Specialization** : Ethnobotany / Medicinal plants & Phytochemistry/ Environmental microbiology, Biomass and energy  
**No. of Years of Experience** : 9 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 01 (submitted)
- e) **Name** : Dr. Shweta Yadav  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Atmospheric Chemistry  
**No. of Years of Experience** : 6 months  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors:** 3 faculty members from other departments of Visva-Bharati take few classes in M.Sc. Env. Sc.
13. **Percentage of classes taken by temporary faculty — programme-wise :** N.A.
14. **Programme-wise Student Teacher Ratio :**  
a) UG – 200:1  
b) PG – 9:1  
c) Ph.D Course Work 2013 – 4:1

15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	-	-	-
Administrative Staff	-	0	1
Others	-	-	-

16. **Research thrust areas as recognized by major funding agencies:**

Name of the Investigator	Title of the project & duration	Thrust Area	Funding agency
Prof. S. Chaudhury	Wetlands and Ponds of Santiniketan: Impacts of pollution on water quality and	Biodiversity & Water Quality	UGC (2007-2010)

Name of the Investigator	Title of the project & duration	Thrust Area	Funding agency
	Biodiversity, 3 years		
Dr. Pratap K. Padhy	Assessment of volatile organic compounds (VOCs) exposures during biomass combustion in rural homes and its impact on respiratory health, 3 years	Air Pollution Health	UGC (2010-2013)
Dr. S. Balachandran	A comparative ethnobotanical investigation: The Santal tribes of major populated districts in West Bengal, India, 3 years	Ethnobotany	UGC (2010-2013)
Prof. S. Chaudhury	A comparative study of biotransformation mechanisms of earthworm <i>Lampito mauritii</i> and <i>Eisenia fetida</i> exposed to soil of industrial origin.	Bioremediation	UGC (2011-2014)
Prof. Shibani Chaudhury (PI), and Dr. S. Balachandran (Co-PI) Prof. A. Hazra (Co-PI) (from REC, Visva-Bharati) Other Co-PI are from IITB and IITM	Development and Integration of Biomass and Concentrating Photovoltaic System for the Rural and the urban Energy Bridge: BioCPV.	Renewable energy	Indo-UK Collaborative Research Initiative on <i>Bridging the Urban and the Rural Divide (BURD)</i> . Sponsoring agency: DST (2012-2015)
Dr Pulak Kumar Patra	Hydrogeochemical and Stable isotope investigations on the fluoride enrichment processes of groundwater in parts of Birbhum district, West Bengal, India, 3 years	Geochemistry	UGC (2013-2016)

17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and

**grants received project-wise:****National funding and Grants received**

<b>Name of the Investigator</b>	<b>Title of the project &amp; duration</b>	<b>Amount sanctioned (in Rs.)</b>	<b>Funding agency</b>
Prof. Shibani Chaudhury	A comparative study of biotransformation mechanisms of earthworm <i>Lampito mauritii</i> and <i>Eisenia fetida</i> exposed to soil of industrial origin.	8,70,800.00	UGC (2011-2014)
Prof. Shibani Chaudhury (PI), and Dr. S. Balachandran (Co-PI) Prof. A. Hazra (Co-PI) (from REC, Visva-Bharati) Other Co-PI are from IITB and IITM	Development and Integration of Biomass and Concentrating Photovoltaic System for the Rural and the urban Energy Bridge: BioCPV.	22670325.00	Indo-UK Collaborative Research Initiative on <i>Bridging the Urban and the Rural Divide (BURD)</i> . Sponsoring agency: DST (2012-2015)
Dr Pulak Kumar Patra	Hydrogeochemical and Stable isotope investigations on the fluoride enrichment processes of groundwater in parts of Birbhum district, West Bengal, India, 3 years	2,29,000.00	UGC (2013-2016)
<b>Total</b>		<b>2,37,70,125.00</b>	

**18. Inter-institutional collaborative projects and associated grants**

Title of the project & duration	Amount sanctioned (in Rs.)	Funding agency	National Collaborators	International Collaborators
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Development and Integration of Biomass and Concentrating Photovoltaic System for the Rural and the urban Energy Bridge: BioCPV.	22670325.00	DST, Govt. of India	IIT Mumbai and IIT Madras	University of Exeter, UK, University of Nottingham, U.K., University of Leeds, U.K..
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19. **Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:** Proposal presented to FIST-DST (2013)
20. **Research facility / centre with**  
a) **state recognition :** Nil  
b) **national recognition:** Nil  
c) **international recognition:** Nil
21. **Special research laboratories sponsored by / created by industry or corporate bodies:** Nil
22. **Publications:** (last 2 years) 2009-13  
a) **No. of papers published in peer reviewed journals (national/international):** – 23  
i) Prof. Shibani Chaudhury - 8  
ii) Dr. P.K. Padhy - 17  
iii) Dr. P.K. Patra - 9  
iv) Dr. S. Balachandran - 3  
b) **Monographs:** – Nil  
c) **Chapters in Books:** –  
i) Prof. Shibani Chaudhury - 2  
ii) Dr. P.K. Padhy- 1  
iii) Dr. P.K. Patra - 1  
iv) Dr. S. Balachandran - 0  
d) **Edited Book:** – None  
e) **Books with ISBN with details of publishers: 01**  
Pulak Kr. Patra, “A Textbook on Climatology”, Kalyani Publishers- ISBN-978-93-272-2601-0  
f) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):**

	Scopus	Web of Science
Prof. Shibani Chaudhury	2	3
Dr. P.K. Padhy	1	7
Dr. P.K. Patra	0	4
Dr. S. Balachandran	0	0

**g) Citation Index — range / average:**

Name	Average	Range
Prof. Shibani Chaudhury	1.75	0-7
Dr. P.K. Padhy	1.65	0-11
Dr. P.K. Patra	0.77	0-3
Dr. S. Balachandran	0.66	0-2

**h) SNIP:** N/A

**i) SIR:** N/A

**j) Impact Factor — range / average:**

Name	Average	Range
Prof. Shibani Chaudhury	0.849	0-3.634
Dr. P.K. Padhy	2.017	0-3.258
Dr. P.K. Patra	0.46	0-1.025
Dr. S. Balachandran	0	0

**k) h-index:** N/A

- 23. Details of patents and income generated:** Presently we are working with the rural people for environmental awareness and we are planning future to generate income through consultancies for environmental awareness campaign.
- 24. Areas of consultancy and income generated:** Presently we are working for generation of income by environmental analysis with the instruments like Gas Chromatography, CHNSO analyzer, Ion Chromatography, Anodic Stripping voltameter.
- 25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**

Sl No.	Name of the Faculty	University	Period
1	Prof. Shibani Choudhury	Herriot Watt University, UK	July 2012
2	Prof. Shibani Choudhury	University of Leeds, UK	June 2013
3	Dr. S. Balachandran	University of Leeds, UK	June 2013

**26. Faculty serving in**a) **National committees:** Nilb) **International committees:** Nilc) **Editorial Boards:**

P.K. Patra, Associate Editor in Research Journal of Environmental and Earth Sciences, Maxwell Science Publishers

d) **Any other (please specify):** Nil**27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**

Faculties undergo Refresher / orientation programs, training programs (DST, ISRO) regularly.

**National and International standard Conference/Seminar/Workshop/Exhibition etc. attended by Teachers/Research scholars in detail**

1. Abhijit Chowdhury, **Shibani Chaudhury** and P.K.Partra. A study of soil pollution of coal mine area. National Seminar on Echoes of Silent Spring: Human Impact on Environment, Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013.
2. Debopriya Bhattacharyya and **Shibani Chaudhury**. "Speciation of heavy metals in vermicomposted flyash and its effect on some plant characters" National Seminar on Echoes of Silent Spring: Human Impact on Environment, Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013.
3. Syed Yakub Ali and **Shibani Chaudhury**. Phytoremediation of heavy metals from soil. National Seminar on Echoes of Silent Spring: Human Impact on Environment, Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013
4. Utpal Majee, G. N. Cattopadhyay, **Shibani Chaudhury** and B.C. Roy "Quality assessment of coal bed water for using in agriculture". National Seminar on Echoes of Silent Spring: Human Impact on Environment, Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013.
5. A. Shome, AK Chakraborty, AK Mathew, R. Goswami, SN Banerjee , S. Balachandran, **Shibani Chaudhury**. Role of some microorganisms in biogas production and their molecular detection: A review, "National Seminar on Echoes of Silent Spring: Human Impact on Environment", Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013.
6. AK Chakraborty, A. Shome, AK Mathew, R. Goswami, SN Banerjee , S.

- Balachandran, **Shibani Chaudhury**. Utilisation of water hyacinth (*Eichhornia crassipes*) for biogas production: A brief review. “National Seminar on Echoes of Silent Spring: Human Impact on Environment”, Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013.
7. SN Banerjee, S. Balachandran, **Shibani Chaudhury**. Sustainable environment for future generation: a reality or myth? “National Seminar on Echoes of Silent Spring: Human Impact on Environment”, Organized by Department of Environmental Studies, Visva-Bharati, Santiniketan on 9<sup>th</sup> March, 2013.
  8. Utpal Majee, G. N. Chattopadhyay, **Shibani Chaudhury** and B.C. Roy “Effect of coal bed water quality on soil environment” National Seminar on Ecology, Environment and Development (NASEED-2013), organized by Sambalpur University during January 25-27, 2013.
  9. **Shibani Chaudhury**, “Tagore’s views on Environment”. International Conference on Tagore and His Global Vision : Forging Bonds with the World, Organised by Department of History, Visva-Bharati, January 14-15, 2013.
  10. Utpal Majee, G. N. Chattopadhyay and **Shibani Chaudhury**. “Effects of coal bed water on some soil environment attributing properties”. Indian Science Congress, 2013, held at Calcutta University, Kolkata during 3-7<sup>th</sup> January 2013.
  11. Debopriya Bhattacharyya and Shibani Chaudhury. -“Vermicomposted fly ash treated red & lateritic soil : A study on chemical speciation of some trace elements”. Indian Science Congress, 2013, held at Calcutta University, Kolkata during 3-7<sup>th</sup> January 2013.
  12. Muthusamy Senthil Kumar, Srinivasan Balachandran, **Shibani Chaudhury** – Callus induction, biomass growth and morphology from stem explants of *Heliotropium indicum* L under the influence of plant growth regulators. Paper presented in the 100<sup>th</sup> Indian Science Congress, 3-7 January 2013, Kolkata
  13. Muthusamy Senthil Kumar, Srinivasan Balachandran, **Shibani Chaudhury**. “The Influence of Polyethylene glycol on callus culture of *Heliotropium indicum* for the assessment of total phenols and flavanoids content”. National Seminar, JN Tata Memorial Auditorium, IIS, Bangalore, Second Indian biodiversity congress 9-11 December 2012.
  14. Utpal Majee, G.N.Chattopadhyay,B.C..Roy, **Shibani Chaudhury** and Shashank Shekher. “Possibility of using some amendments in mitigating the adverse effects of coal bed water on soil environment”. International conference on nuclear energy, environmental and biological sciences. Bangkok, September 8-9, 2012.
  15. Utpal Majee, G. N. Chattopadhyay, **Shibani Chaudhury** and B.C. Roy “Quality assessment of coal bed water for use in agricultural lands”. Paper presented in

the Advances in Agricultural Research towards Food Security and Environmental Sustenance, organized by Palli Siksha Bhavana, Visva-Bharati during 1-3 September 2012.

16. Debopriya Bhattacharyya and **Shibani Chaudhury** “Vermicomposting of Fly Ash by *Eisenia foetida* and *Lampito mauritii* : Comparison of growth, biochemical parameters and metal content in Spinach” Paper presented in the Advances in Agricultural Research towards Food Security and Environmental Sustenance, organized by Palli Siksha Bhavana, Visva-Bharati during 1-3 September 2012
  17. Utpal Majee, G.N. Chattopadhyay and **Shibani Chaudhury**: Possibility of mitigating adverse effects of coal bed water on soil environment for safe agriculture. National Seminar on Safe Food for All, PSB, Sriniketan, Visva-Bharati, 21- 23, February, 2012.
  18. Debopriya Bhattacharyya, Sujit Mal, **Shibani Chaudhury**, G.N.Chattopadhyay: Use of vermicompost in soil health management. National Seminar on Safe Food for All, PSV, Sriniketan, Visva-Bharati, 21- 23, February, 2012.
- 28. Student projects:**
- a) **Percentage of students who have done in-house projects including interdepartmental projects:** 84%
  - b) **Percentage of students doing projects in collaboration with other universities / industry / institute:** 16% (3 out of 18 students)
- 29. Awards / recognitions received at the national and international level by**
- a) **Faculty:** Felicitation to Prof. Shibani Chaudhury by Burdwan University
  - b) **Doctoral / post doctoral fellows:** None
  - c) **Students:** Not yet
- 30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**  
National Seminar on Echoes of Silent Spring on March 9, 2013.  
Number of participants/paper: 41 (21 from Visva-Bharati and 20 from outside)
- 31. Code of ethics for research followed by the departments:** As per University rules.
- 32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
PG 2010-2012	32	8	1	100	100
PG 2011-2013		4	5	100	100

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
PG 2012- 2014		6	2	-	-
Ph.D Course Work 2011		3	1	-	-
Ph.D Course Work 2012		5	1	-	-

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
PG	0	94	6	0
Ph.D.	65	25	10	5

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

- NET (CSIR-UGC) – 02
- SET – Nil
- Civil Service/ Defense Service – Nil
- GATE – 01
- Other Competitive Examination/Government Service – Nil

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	Not Applicable
PG to M.Phil.	Not Applicable
PG to Ph.D.	33 %
Ph.D. to Post-Doctoral	0
Employed	
• Campus selection	0
• Other than campus recruitment	30
Entrepreneurs	Nil

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	20

from other universities within the State	0
from universities from other States	80
from universities outside the country	0

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	Nil
Ph.D.	01
D.Sc.	Nil
D.Litt	Nil

**38. Present details of departmental infrastructural facilities with regard to**

- a) **Library:** One.
- b) **Internet facilities for staff and students:** Yes
- c) **Total number of class rooms:** 02
- d) **Class rooms with ICT facility:** 02
- e) **Students' laboratories:** 02
- f) **Research laboratories:** 03

**39. List of doctoral, post-doctoral students and Research Associates:**

- a) **Doctoral list from the host institution/university – Nil**
- b) **From other institutions/universities – 03**

**40. Number of post graduate students getting financial assistance from the university: 02.**

**41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** Yes. The process involves a series of departmental meetings followed by BOS, Institute Board, Academic Council and Executive Council.

**42. Does the department obtain feedback from**

- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Nil
- b. **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** Nil
- c. **alumni and employers on the programmes offered and how does the department utilize the feedback:** Nil

**43. List the distinguished alumni of the department (maximum 10):** Our department is very new and only 8 batches have passed out moreover our students are well placed in

national and international institutes for research and teaching and also serving as scientists in public and corporate enterprises.

Sl No.	Name	University/Institute Associated with	Position
1	Sangamitra Majumdar	University of Texas	Completed her Ph.D. pursuing her Post doc
2	Parnali Choudhry	University of Saskatoon Canada	Completed her Ph.D. pursuing her Post doc
3	Bijaya Kr. Padhi	Assist. Prof. Asian Institute of Public Health, Bhuwa (Indo-US joint Collaboration Institute)	Assistant Professor
4	Susmita Bandyopadhyay	University of Texas	Completed her Ph.D. pursuing her Post doc
5	Loknath Sahu	Bhusan Steel and Power, Angul, Orissa	Env Officer
6	Prafulla Sahoo	University of Kong Kong	Pursuing his Post Doc

**44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**

The Department organizes seminars, special lectures, workshops involving distinguished personalities in the field of environment from different university / organizations.

**45. List the teaching methods adopted by the faculty for different programmes:**

a). Chalk & Talk, b). OHP, c). Power Point etc.

**46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**

Periodic assessment by departmental faculty meeting and BOS.

**47. Highlight the participation of students and faculty in extension activities:**

The M.Sc. students, research scholars and faculty members of Department of Environmental Studies (DES) are actively involved in the Environmental Awareness Campaign during annual Poush Mela.

**48. Give details of “beyond syllabus scholarly activities” of the department:**

The students of Environmental science also go for to the annual study tour to



different places in India. The students, teachers and staff members of the department also go for an outreach programme to different villages.

**49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not yet

**50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**

The department used to undertake environmental consciousness and awareness programmes among the local inhabitants for improving the quality of life. Presently the department is working to bridge the rural and urban divide with regard to energy by providing energy to the rural people mainly in the Kaligunj Village (a tribal village) for the upliftment and socio-economic development. This is done by CPV and Biogas and its integrating, which is new innovation and to be implemented by July 2015.

The department has produced knowledge and publications in the following research fields:

- Air pollution in Rural, urban & industrial complexes and their impact on Plant and Human health.
- Phytotoxicity, Bioremediation, Vermi-composting with fly ash.
- Water Pollution and sediment contamination in River and Coastal environment.
- Foraminifera as indicator of Pollution and Paleoclimate.
- Soil Pollution in agricultural, mining & industrial areas.
- Hydro-geochemical & Stable Isotope Studies in groundwater.
- Alternative energy

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**

**a) Strengths :**

1. Faculty with different field specialization.
2. Good instrumentation facility.
3. External funded projects.
4. Good Seminar Library facility.
5. Faculty works as a team.

**b) Weaknesses:**

1. Lack of room-space.
2. Shortage of teaching staff.
3. Lack of non-teaching/technical staff.

**c) Opportunities:**

1. Better job opportunities for students.
2. Opportunity for collaborative research.
3. Better research opportunity for students.
4. Work for nature and environment.

**d) Challenges :**

Research in frontier areas of environment such as climate change, global warming, disaster management etc.

**52. Future plans of the department:**

- a) To promote the study of environment at all levels in the form of formal and informal education through appropriate teaching programmes.
- b) To undertake research projects and in depth studies on relevant issues of the environment in a multidisciplinary manner.
- c) To create environmental consciousness and to improve the quality of life especially the rural population.
- d) To work towards the upliftment of society in every aspect of environment by conducting awareness programmes and translating global ideas into local actions.
- e) To take the people forward with the modern approach to environmental issues
- f) To promote and maintain a liaison between various disciplines of sciences related to environment and also among government and non-government institutions, academics, societies and other organizations in the field of environment.
- g) To recommend the government and its agencies regarding the environmental issues of public interest.
- h) To collaborate with international organizations in the fields of environmental studies.
- i) To conduct conferences, seminar, workshop and to arrange lectures and demonstration for various aspects of the environment.
- j) To deal with various problems relating viz. over exploitation of natural resources, disproportionate share and consumption of resources, management of the biosphere, deforestation and loss of biodiversity, population pressure, poverty to many other environmental issues and It will definitely suggest the solutions to some of these issues in the coming years.
- k) To provide the students and public a holistic view to nature and life. Beside the educational programme, the Centre will also thrive for excellence in the field of research by using recent technologies and extension work.

## Evaluative Report of the Department of Mathematics

1. **Name of the Department :** Mathematics
2. **Year of establishment :** 1961
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** UG, PG, Ph.D., D.Sc.
5. **Interdisciplinary programmes and departments involved:** Undergraduate Students participated in allied courses on Tagore Studies offered by Rabindra Bhavana; Environmental Science, Physics, Chemistry, Statistics and Computer Science offered by respective Departments; B.A. and M.A. programmes offered by Vidya-Bhavana
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** Faculty members are engaged in collaboration of research works as well as Ph. D. guidance/Ph. D. course works with researchers/scientists/academicians from other Universities/Institutes, namely Jadavpur University (Kolkata), University of Calcutta (Kolkata), Burdwan University (Burdwan), Umea University (Sweden), Indian Statistical Institute (Kolkata), Indian Institute of Technology (Kharagpur) etc.
7. **Details of programmes discontinued, if any, with reasons:** None
8. **Examination System:** Annual/Semester/Trimester/Choice Based Credit System : Semester with choice based credit system.
9. **Participation of the department in the courses offered by other departments:** Yes. Environmental Sciences, Tagore Studies at UG level, Ph. D. course work etc.
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	03	03	05 (03 Substantive, 02 CAS & MPS)
Associate Professors	04	03 (01 Vacant/ 01 promoted to Professor)	05 (02 Substantive, 03 CAS)

	Sanctioned	Filled	Actual (including CAS & MPS)
Asst. Professors	12	11 (01 Vacant/01 promoted to Professor /03 promoted to Associate Professor)	07
Others	NA	NA	NA

**11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Syamal Kumar Samanta  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Functional Analysis  
**No. of Years of Experience** : 35 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- b) **Name** : Puspajit Mandal\*  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor (Retired on 31 July, 2013)  
**Specialization** : Quantum Mechanics  
**No. of Years of Experience** : 28 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- c) **Name** : Dulal Pal  
**Qualification** : M.Sc., M.Phil., Ph.D.  
**Designation** : Professor  
**Specialization** : Fluid Mechanics, Atmospheric Science  
**No. of Years of Experience** : 21 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- d) **Name** : Santabrata Chakravarty  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Biomathematics  
**No. of Years of Experience** : 28 years  
**No. of Ph.D./M.Phil. students**

- guided for the last 4 years : 02
- e) **Name** : Swapan Raha  
**Qualification** : M.Sc., M.Tech., Ph.D.  
**Designation** : Professor  
**Specialization** : Advanced Computer Science and cybernetic/  
 Bioinformatics  
**No. of Years of Experience** : 25 years  
**No. of Ph.D./M.Phil. students  
 guided for the last 4 years** : 03
- f) **Name** : Prasanta Chatterjee  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Plasma Dynamics  
**No. of Years of Experience** : 14 years  
**No. of Ph.D./M.Phil. students  
 guided for the last 4 years** : 08
- g) **Name** : Tarapada Bag  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Fuzzy Functional Analysis, Functional  
 Analysis  
**No. of Years of Experience** : 13 years  
**No. of Ph.D./M.Phil. students  
 guided for the last 4 years** : Nil
- h) **Name** : Tapas Roy Mahapatra  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Fluid Dynamics  
**No. of Years of Experience** : 10 years  
**No. of Ph.D./M.Phil. students  
 guided for the last 4 years** : 03
- i) **Name** : Dibyendu Banerjee  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Complex Analysis  
**No. of Years of Experience** : 10 years

- No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 02
- j) **Name** : Anjan Kumar Bhuniya  
**Qualification** : M.A., Ph.D  
**Designation** : Assistant Professor  
**Specialization** : Algebra (Theory of Semigroups)  
**No. of Years of Experience** : 10 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 01
- k) **Name** : Amar Prasad Misra  
**Qualification** : M.Sc., Ph.D  
**Designation** : Assistant Professor  
**Specialization** : Plasma Physics, Magnetohydrodynamics  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 04
- l) **Name** : Prashanta Kumar Mandal  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Biomathematics  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 04
- m) **Name** : Subhasis Roy  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Real Analysis  
**No. of Years of Experience** : 07 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : Nil
- n) **Name** : Madan Mohan Panja  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Dynamical System, Wavelet Numerical  
Analysis, Theory of Diff. Equation  
**No. of Years of Experience** : 06 years

- No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- o) **Name** : Kalyan Hansda  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Algebra  
**No. of Years of Experience** : 04 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- p) **Name** : Lakshmi Narayan Guin  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Biomathematics  
**No. of Years of Experience** : 03 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- q) **Name** : Nikhil Pal  
**Qualification** : M.Sc., M. Tech.  
**Designation** : Assistant Professor  
**Specialization** : Computer Science  
**No. of Years of Experience** : 1 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- r) **Name** : Mizanur Rahaman  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Functional Analysis  
**No. of Years of Experience** : 1 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors:**
1. Prof. K. B. Sinha, JNCASR, Bangalore
  2. Prof. Sankar Kumar Pal, ISI, Kolkata
  3. Prof. R. Sahadevan, Ramanujan Institute of Advanced Study in Mathematics, University of Madras, Chennai
  4. Prof. G Rangarajan, IISc, Bangalore

5. Prof. M. K. Chakravorty, University of Calcutta, Kolkata
6. Prof. Riddhi Shah, JNU, New Delhi
7. Prof. B. S. Choudhury, BESU, Shibpur, Howrah
8. Prof. K. C. Chattopadhyay, Burdwan University, Burdwan
9. Prof. D. K. Ganguly, University of Calcutta, Kolkata
10. Prof. Birendra Nath Mandal, ISI, Kolkata

13. **Percentage of classes taken by temporary faculty — programme-wise :** None

14. **Programme-wise Student Teacher Ratio :** 240:19 (UG & PG).

15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	-	Nil	Nil
Administrative Staff	-	01	01
Others	-	01 (Peon)	01

16. **Research thrust areas as recognized by major funding agencies:**

Thrust areas recognized by SAP-DRS (UGC) are: *Nonlinear systems with thrust on Fluid Mechanics supported by Quantum Mechanics and Fuzzy Mathematics, which include the following areas:*

(i) Real Analysis, (ii) Complex Analysis, (iii) Functional Analysis, (iv) Fuzzy Topology, (v) Fuzzy Functional Analysis, (vi) Abstract Algebra, (vi) Fluid Mechanics, (viii) Computational Fluid Dynamics, (ix) Atmospheric Sciences, (x) Biomechanics, (xi) Plasma Physics, Nonlinear Dynamics (xii) Symmetry and Painleve Analysis of differential equations, (xii) Artificial Intelligence, (xiv) Quantum Scattering Theory, (xv) Wavelet based Numerical Analysis.

17. **Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:**

a) **national:** DST sponsored project titled “Nonlinear structures in quantum plasmas” (since 2012)

UGC sponsored major research project titled ‘Role of similarity in approximate reasoning’ (during May 2009 - July 2012)

b) **international funding agencies:** None

c) **Total grants received:** Rs. 13,08,000.00

18. **Inter-institutional collaborative projects and associated grants**



- a) **National collaboration:** None  
 b) **International collaboration:** None
19. **Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:** UGC-SAP DRS Programme - An amount of Rs. 35,42,533/- released till commencement of the Phase-II (2009-2014) programme during the financial years 2009-2013
20. **Research facility / centre with**  
 a) **state recognition :** Nil  
 b) **national recognition:** UGC-SAP  
 c) **international recognition:** Nil
21. **Special research laboratories sponsored by / created by industry or corporate bodies:** Computer laboratory sponsored by DST under the FIST programme.
22. **Publications:** (2009 to till date)  
 a) **No. of papers published in peer reviewed journals (national/international):** –  
 Prof. Syamal Kumar Samanta : 12  
 Prof. Puspajit Mandal : 03  
 Prof. Dulal Pal : 54  
 Prof. Santabrata Chakravarty : 16  
 Prof. Swapan Raha : 04  
 Prof. Prasanta Chatterjee : 51  
 Dr. Tarapada Bag : 18  
 Dr. Tapas Roy Mahapatra : 27  
 Dr. Dibyendu Banerjee : 17  
 Dr. Anjan Kumar Bhuniya : 05  
 Dr. Amar Prasad Misra : 35  
 Dr. Prashanta Kumar Mandal : 23  
 Dr. Subhasis Roy : 11  
 Dr. Madan Mohan Panja : 06  
 Mr. Kalyan Hansda : 01  
 Mr. Lakshmi Narayan Guin : 01  
 b) **Monographs:** –  
 c) **Chapters in Books:** –  
 d) **Edited Book:**  
 e) **Books with ISBN with details of publishers:**  
 Prof. Prasanta Chatterjee (2009 to till date)

- i) Nonlinear structures in dusty plasma, K. Roy and P. Chatterjee, ISSN: 978-3-659-30026-4;
- ii) Uchchotaro Ganit Samagro (Vol. 1&II), B. Sen and P. Chatterjee, ISBN: 81-7381-509-7;
- iii) A text book of higher mathematics, (Vol. 1&II), B. Sen and P. Chatterjee, ISBN: 978-81-7381-616-1.

**Prof. Swapan Raha –**

- i) Banibrata Mondal and **Swapan Raha**, ‘Approximate reasoning in fuzzy resolution’, Proceedings of the Annual Meeting of the North American Fuzzy Information Processing Society, NAFIPS 2012, August 06-09, 2012, Berkeley, USA, pp.1-6; ISBN 978-1-4673-2336-9; Doi: 10.1109/NAFIPS.2012.6291062.

**c) Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):**

Prof. Syamal Kumar Samanta : 06

Prof. Puspajit Mandal : 03

Prof. Dulal Pal : 37

Prof. Santabrata Chakravarty : 15

Prof. Swapan Raha : 01

Prof. Prasanta Chatterjee : 51

Dr. Tarapada Bag : 02

Dr. Tapas Roy Mahapatra : 18

Dr. Dibyendu Banerjee : 01

Dr. Anjan Kumar Bhuniya : 03

Dr. Amar Prasad Misra : 21

Dr. Prashanta Kumar Mandal : 19

Dr. Madan Mohan Panja : 03

Mr. Lakshmi Narayan Guin : 01

**d) Citation Index — range / average:**

Prof. Syamal Kumar Samanta

- Sum of the times cited: 69
- Sum of Times Cited without self-citations: 67
- Citing Articles: 66
- Citing Articles without self-citations: 64
- Average Citations per Item: 11.50

Prof. Puspajit Mandal : 03

- Sum of the times cited: 26
- Sum of Times Cited without self-citations: 25
- Citing Articles: 24
- Citing Articles without self-citations: 23
- Average Citations per Item: 8.67

Prof. Dulal Pal

- Sum of the times cited: 236
- Sum of Times Cited without self-citations: 178
- Citing Articles: 167
- Citing Articles without self-citations: 144
- Average Citations per Item: 6.38

Prof. Santabrata Chakravarty :

- Sum of the times cited: 40
- Sum of Times Cited without self-citations: 35
- Citing Articles: 37
- Citing Articles without self-citations: 33
- Average Citations per Item: 2.67

Prof. Swapan Raha :

- Sum of the times cited: 2
- Sum of Times Cited without self-citations: 2
- Citing Articles: 2
- Citing Articles without self-citations: 2
- Average Citations per Item: 2

Prof. Prasanta Chatterjee :

- Sum of the times cited: 267
- Sum of Times Cited without self-citations: 168
- Citing Articles: 151
- Citing Articles without self-citations: 116
- Average Citations per Item: 5.24

Dr. Tarapada Bag :

- Sum of the times cited: 0
- Sum of Times Cited without self-citations: 0
- Citing Articles: 0
- Citing Articles without self-citations: 0
- Average Citations per Item: 0

Dr. Tapas Roy Mahapatra :

- Sum of the times cited: 50

- Sum of Times Cited without self-citations: 44
- Citing Articles: 46
- Citing Articles without self-citations: 41
- Average Citations per Item: 2.78

Dr. Dibyendu Banerjee :

- Sum of the times cited:01
- Sum of Times Cited without self-citations: 01
- Citing Articles: 01
- Citing Articles without self-citations:01
- Average Citations per Item:01

Dr. Anjan Kumar Bhuniya :

- Sum of the times cited: 01
- Sum of Times Cited without self-citations: 01
- Citing Articles: 01
- Citing Articles without self-citations: 01
- Average Citations per Item: 0.33

Dr. Amar Prasad Misra :

- Sum of the times cited: 118
- Sum of Times Cited without self-citations: 102
- Citing Articles: 96
- Citing Articles without self-citations: 87
- Average Citations per Item: 5.62

Dr. Prashanta Kumar Mandal :

- Sum of the times cited: 46
- Sum of Times Cited without self-citations: 40
- Citing Articles: 43
- Citing Articles without self-citations: 38
- Average Citations per Item: 2.42

Dr. Madan Mohan Panja :

- Sum of the times cited: 03
- Sum of Times Cited without self-citations: 02
- Citing Articles: 03
- Citing Articles without self-citations: 02
- Average Citations per Item: 01

Mr. Lakshmi Narayan Guin :

- Sum of the times cited: 01
- Sum of Times Cited without self-citations: 01

- Citing Articles: 01
  - Citing Articles without self-citations: 01
  - Average Citations per Item: 01
- e) **SNIP: NA**
- f) **SIR: NA**
- g) **Impact Factor — range / average:**  
 Prof. Syamal Kumar Samanta : 0 – 3  
 Prof. Puspajit Mandal : 0 – 2  
 Prof. Dulal Pal : 0 – 3.8071  
 Prof. Santabrata Chakravarty : 0 – 2.5  
 Prof. Swapan Raha : 0.451-4.26  
 Prof. Prasanta Chatterjee : 0 to 2.5  
 Dr. Tarapada Bag : 0-2  
 Dr. Tapas Roy Mahapatra : 0.5-2.5  
 Dr. Dibyendu Banerjee : 0.5-2.0  
 Dr. Anjan Kumar Bhuniya : 0.5-2  
 Dr. Amar Prasad Misra : 0.579-7.37.  
 Dr. Prashanta Kumar Mandal :.6-2.6  
 Dr. Subhasis Roy : 0-1  
 Dr. Madan Mohan Panja : 01-02  
 Mr. Lakshmi Narayan Guin : 0.5-2
- h) **h-index:**  
 Prof. Syamal Kumar Samanta : 2  
 Prof. Puspajit Mandal : 03  
 Prof. Dulal Pal : 10  
 Prof. Santabrata Chakravarty : 4  
 Prof. Swapan Raha : 01  
 Prof. Prasanta Chatterjee : 10  
 Dr. Tapas Roy Mahapatra : 04  
 Dr. Dibyendu Banerjee : 01  
 Dr. Anjan Kumar Bhuniya : 01  
 Dr. Amar Prasad Misra : 07  
 Dr. Prashanta Kumar Mandal : 04  
 Dr. Madan Mohan Panja : 01  
 Mr. Lakshmi Narayan Guin : 01

23. **Details of patents and income generated:** Nothing in particular to mention

24. **Areas of consultancy and income generated:** Nothing in particular to mention
25. **Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**
- i) Prof. Prasanta Chatterjee: visited (i) Plasma Research Laboratory, Department of Physics, University of Malaya, Malaysia during 2009-2010 (ii) Department of Physics, POSTECH, South Korea in 2008.
  - ii) Dr. Prashanta Kumar Mandal: visited (i) as a Teaching Fellow, Newton Institute, University of Cambridge during July 2009 (ii) as a visiting Associate Professor, Department of Mathematics, University Technology Malaysia during April, 2008.
  - iii) Dr. Amar Prasad Misra: (a) Visited Department of Physics, Umea University, Umea, Sweden, as a postdoctoral fellow during 01 October, 2009 to 30 September, 2011. (b) Visited Institute for Theoretical Physics IV, Ruhr-University Bochum, Germany during May-June, 2010.
26. **Faculty serving in a) National committees, b) International committees, c) Editorial Boards, d) Any other (please specify):**
- Prof. S. K. Samanta**
- i) **Member of the editorial board of**
    - The Journal of Nonlinear Science and Applications
    - J P Journal of Fixed Point Theory and applications
  - ii) **Reviewer of the following international journals:**
    - Fuzzy Sets and Systems (Elsevier)
    - Computers & Mathematics with Applications (Elsevier)
    - Information Sciences (Elsevier)
    - International Journal of computer Mathematics
  - iii) **Participation in Conference/ Seminar etc.**
    - Acted as a resource person in the 13<sup>th</sup> Refresher Course in “Mathematical Science” at the Academic Staff College, Burdwan University on 14.12.2011 and delivered lecture on “Fuzzy Metric Spaces”.
    - Participated in the Extension Programme organized jointly by the Department of Mathematics and the Centre for Mathematics Education, Visva-Bharati at three venues viz., (i) Department of Mathematics, Visva-Bharati, Santiniketan (during 15-16 Jan, 2012); (ii) Silut Basantapur High School, Dist Burdwan (during 3-4 Feb. 2012); (iii) Purusattampur High School, Dist. Bankura (during 17-18 Feb, 2012).
    - Participated, acted as a committee member and chaired a session in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-

2012) held during March 24-25, 2012, at by the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

- Participated, acted as a committee member and chaired a session in the National Seminar on “Mathematics for nonlinear systems” held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as a joint convener, participated and chaired a session in the two-day national seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

**Prof. Puspajit Mandal**

**i) Reviewer of the following Journals**

- Indian J Physics, IACS, Kolkata
- Euro. Phys. J. D, EDP Sciences

**ii) Participation in Conference/ Seminar etc.**

- Participated, acted as a committee member and chaired a session in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated, acted as a committee member and chaired a session in the National Seminar on “Mathematics for nonlinear systems” held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as a joint convener, participated and chaired a session in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

**Prof. Dulal Pal**

**i) Reviewer of the following Journals**

- Special topics and Reviews in porous media (Begell House)
- Chemical Engineering Communications (Taylor & Francis)
- Communications in Nonlinear Science and Numerical Simulations (Elsevier)
- Energy-The International Journal (Elsevier)
- International Journal of Heat and Mass Transfer (Elsevier)
- Meccanica (Springer)
- International Journal of Thermal Science (Elsevier)
- Journal of Porous Media (Begell House)

**ii) Participation in Seminar/ Conference etc.**

- Participated, acted as a committee member and chaired a session in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Delivered an invited talk on “Computers and its Applications” in UGC sponsored “Extension Programme in Mathematics for School Students” held on 16<sup>th</sup> January 2012 at Department of Mathematics, Visva-Bharati, Santiniketan.
- Delivered an invited talk on “Computers and its Applications” in UGC sponsored “Extension Programme in Mathematics for School Students” held on 4<sup>th</sup> February 2012 at Silut Basantapur High School, P.O. Sahapur Basantapur, Dist. Burdwan, West Bengal.
- Participated, acted as a committee member and chaired a session in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member and chaired a session in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

**Prof. Santabrata Chakravarty****i) Member of the following Academic Bodies**

- American Mathematical Society (AMS)
- Calcutta Mathematical Society (CMS)

**ii) Reviewer of the following journals**

- International Journal of Biomathematics ( World Scientific Publishing Company )
- Chemical Engineering Communications ( Taylor & Francis Group )
- Journal of Mechanics in Medicine and Biology ( World Scientific Publishing Company )
- Applications in Applied Mathematics (A & M University, Texas, USA )

**iii) Participation in Conference/ Seminar etc.**

- Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the National Seminar on



Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

#### **Prof. Swapan Raha**

##### **i) Reviewer of the following journal (s)**

1. IEEE Transactions on Fuzzy Systems

##### **ii) Participation in Conference/ Seminar etc.**

- Participated in the Two-day long National Seminar on **Applications of mathematics in fuzzy environment** during August 11-12, 2009, organized by the Department of Mathematics, Meenakshi College for Women (Autonomous), Kodambakkam, Chennai and delivered an invited talk titled **Fuzzy Logic, Approximate Reasoning and its application in pattern classification and fuzzy control**.
- Participated in the Third National Conference on **Uncertainty: A mathematical approach (UAMA-2009)** on February 27, 2009, organized by the Department of Mathematics, MUC Womens’ College, Burdwan and delivered an invited talk titled **Approximate Reasoning**.
- Participated in the **XII Annual Conference of the Society of Statistics, Computer and Applications** during February 24-26, 2010, organized by the Department of Statistics, Visva-Bharati and delivered an invited talk titled **Possibility theory as a tool for Approximate Reasoning**.
- Delivered an invited talk on **Discrete mathematical structures** in the **Summer Camp under INSPIRE Internship Programme of DST, Government of India** at Visva-Bharati, Santiniketan during 26-30 July 2010.
- Delivered an invited talk on **Similarity Based Approximate Reasoning** at **Bhaba Atomic Research Centre, Mumbai** on October 18, 2011.
- Participated in a **National Seminar on Fuzzy Set, Rough Set and Soft Computing**, acted as the Guest-in-chief in the Inaugural Programme and delivered the Inaugural Lecture on **Fuzzy set in Approximate Reasoning** on November 11, 2011 organized by the Department of Mathematics at Tripura University.
- Participated in an **International Workshop on Fuzzy set, Rough set, Soft-Computing and its applications** organized by the National Institute of Technology, Durgapur during November 21-25, 2011, delivered an invited lecture on **Similarity in Approximate Reasoning** and Chaired a Technical

session **on applications of soft computing.**

- Acted as a resource person in the Refresher Course organized by the Academic Staff College at Burdwan University and delivered a series of talks on **Inexact concepts, Fuzzy sets and approximate reasoning** on December 13, 2011.
- Participated acted as a committee member and chaired a session in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated in the **2<sup>nd</sup> National Conference on Mathematical Analysis and its applications (NCMAA12)** and delivered an invited talk on **‘On Similarity Relations in Approximate Reasoning’**, during April 5-6, 2012 organized by the Department of Mathematics, Tripura University, Tripura.
- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Participated in the **International Conference on Rough Sets, Fuzzy Sets and Soft Computing (ICRFSC)** and delivered an invited talk on **Role of similarity in approximate reasoning** on January 17, 2013, organized by the Department of Mathematics, Tripura University, Tripura.
- Participated and organized two special sessions **‘On Fuzzy set theory’** and **‘On Fuzzy Logic in Life Science Informatics’** at the **2013 International Conference on Fuzzy Systems (FUZZ-IEEE 2013)**, held during 07-10 July 2013 in Hotel Novotel, Hyderabad, India.

**Prof. P. Chatterjee**

**i) Member of the following:**

Life member of Asian African Association for Plasma Training

**ii) Reviewer of the following journals**

- Indian J Physics
- Pramana-Journal of Physics
- Europhysics Letters
- Earth Moon and Planets
- Astrophysics & Space science

- Advances in Space Research

**iii) Participation in Conference/ Seminar etc.**

- Participated, acted as a committee member and chaired a session in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and chaired a session in the National Seminar on Mathematics & Applications, Department of Mathematics, Burdwan University, Burdwan, India (28-29 March, 2012).
- Delivered an invited lecture titled “Nonlinear structures in dusty plasmas” at NIT Durgapur in a national workshop on nonlinear dynamical Systems, 2011” during 04.07.2011 to 08.07.2011.
- Acted as a committee member and delivered lectures on “Mathematics and Physical Sciences: in search of a relationship- I & II” at Basantapur High school, Burdwan and Purusottampur High School, Bankura as a part of extension activities jointly organized by Department of Mathematics and Center for Mathematics Education during January-March 2012.
- Participated in a national (micro) seminar held at Jadavpur University in September 2011.
- Participated, acted as a committee member and chaired a session in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Participated and delivered an Invited talk in the National Seminar on Mathematics & Applications, Department of Mathematics, The University of Burdwan, Burdwan, India (29 March, 2012).
- Participated and delivered an Invited talk in the National Workshop on Nonlinear Waves: Theory and Simulation, Department of Mathematics, National Institute of Technology (NIT), Durgapur, India (14-18 January, 2013).
- Delivered invited talks on “Life and Works of Ramanujan” at Rampurhat College, Rampurhat High School, Baharampur Science Club and Vidyasagar University.

**Dr. Prashanta Kumar Mandal****i) Member of the following:**

- Editorial board member of ISRN Journal of Biomedical Engineering (Hindawi publication)
- Life Member of the Indian Society for Theoretical and Applied Mechanics (ISTAM)
- Member of American Mathematical Society

**ii) Reviewer of the following journals**

- Meccanica (Press: Springer)
- Chemical Engineering Communications (Press: Taylor & Francis)
- Computer Methods in Biomechanics and Biomedical Engineering (Press: Taylor & Francis)
- International Journal for Numerical Methods in Fluids (Press: John Wiley & Sons Ltd.)
- International Journal for Numerical Methods in Biomedical Engineering (Press: John Wiley & Sons Ltd.)
- International Journal of Thermal Sciences (Press: Elsevier)
- Communications in Nonlinear Science and Numerical Simulations (Press: Elsevier)
- Applied Mathematics and Computation (Press: Elsevier)
- Mathematical Reviews ( Press: American Mathematical Society)

**iii) Participation in Conference/ Seminar etc.**

- Delivered an invited talk in the Seventeenth Mathematics Conference of Bangladesh Mathematical Society during 22-24 December 2011 at Jahangirnagar University, Dhaka, Bangladesh.
- Participated in the National Seminar on Mathematics & Applications, Department of Mathematics, Burdwan University, Burdwan, India (28-29 March, 2012).
- Participated, acted as a committee member and chaired a session in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National

Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

- Delivered an invited talk in the National Seminar on Computational Hemodynamics: Clinical and Engineering Aspects, organized by Jadavpur University, Kolkata, during August 17-18, 2012.
- Participated in the 10th Micro-seminar on Nonlinear Phenomena held on 27 July, 2012 in the Department of Mathematics, University of Burdwan, Burdwan.

**Dr. Madan Mohan Panja**

- i) **Resource person** in the Advanced Level Workshop on “**Nonlinear Differential Equations: Dynamics of Complex System**, under NPDE-TCA ” sponsored by DST, Govt. of India organized by Department of Applied Mathematics, University of Calcutta, during Sept. 23- Sept. 28, 2013.
- ii) **Guided project work** under INSPIRE fellowship of one undergraduate student of Jadavpur University, Kolkata.
- iii) **Participation in Conference/ Seminar etc.**
  - Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
  - Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
  - Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
  - Participated and delivered an invited talk titled “Multiresolution analysis... Sturm-Liouville Problem” in the National Seminar on advances in Mathematics & applications, held during 6-7 March, 2013 at the Department of Mathematics, University of Burdwan, Burdwan.
  - Participated and completed the 3rd Indo-German workshop on Adaptive finite element methods (WAFEM-2013) held during 22 February, 2013 to 02 March, 2013 at the Institute of Mathematics & Application, Bhubaneswar, India.

**Dr. Tarapada Bag**

- i) **Reviewer of the following journals**
  - Fuzzy Information and Engineering (Springer)
  - Annals of Fuzzy Mathematics and Informatics

- Mathematical Reviews (American Mathematical Society)

**ii) Participation in Conference/ Seminar etc.:**

- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated, acted as a committee member and chaired a session in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Participated and presented a paper titled “Fixed point theorems in Felbin's type fuzzy normed linear spaces” in the National Seminar on Mathematical Analysis and Applications: Present Perspectives held during 06-07 September, 2012 at Calcutta Mathematical Society, Kolkata.
- Participated and presented a paper titled “Some Results on Generalized Fuzzy Metric Spaces” held during 03-04 October, 2012 at Aliah University.
- Participated and presented a paper titled “Strictly Convex Fuzzy Normed Linear Space” in the International Seminar held during 07-09 December, 2012 at Calcutta Mathematical Society, Kolkata.
- Participated, acted as a committee member and joint convener in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as Jt. Convenor and participated in the National Seminar on Non-Linear Aspects of Analysis and Algebra. Date: March 24-25, 2012. Funding Agencies: UGC SAP (DRS)-Phase II and CSIR.
- Acted as Jt. Convener and participated in the “National Seminar on Mathematics Phobia: Its Genesis and Remedies”. Date: February 13-15, 2010. Funding Agencies: V.B. and CSIR.

**Dr. Dibyendu Banerjee**

**ii) Reviewer** of the Journal of Nonlinear Sciences and Applications (TJNSA) University of Pittsburgh at Bradford, Bradford.

**iii) Participation in Conference/ Seminar etc.**

- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National

Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

- Participated and presented a paper entitled “Maximum modulus and maximum term of generalized iterated entire functions” in the National Seminar on Mathematical Analysis and Application Present Perspective (NSMAAPP-2012) held during September 6 – 8, 2012 at Calcutta Mathematical Society, Kolkata.
- Participated and presented a paper entitled “Growth of Generalized iterated entire functions” in the National Seminar on Advanced in Mathematics & Applications (AMA-2013) held during March 6 – 7, 2013 at The University of Burdwan, Burdwan.
- Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

**Dr. Tapas Ray Mahapatra**

**i) Participation Conference/ Semiar etc.**

- Attended National Seminar on “Recent Trends in the Mechanics of Fluids & Solids” held in the Government Degree College, Haripur (Manali), Himachal Pradesh - 175136 during March 10-11, 2012 and presented a paper entitled “Unsteady natural convection flow in an inclined enclosure”.
- Participated and presented a paper in the National Seminar on Mathematics & Applications, Department of Mathematics, Burdwan University, Burdwan, India (28-29 March, 2012).
- Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as a joint convener in the extension programmes at Department of Mathematics, Visva-Bharati, Santiniketan, and Basantapur High school, Burdwan and Purusottampur High School, Bankura, jointly organized by Department of Mathematics and Center for Mathematics Education during January-March 2012.
- Acted as Teacher-in-charge of the Study Tour 2011-2012 of the Department of Mathematics, Visva-Bharati, to Mumbai, Goa and surrounding areas during 19-26 January, 2012.
- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the

Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Attended the National Seminar on “Mathematical and Computational Sciences” held in the Adikavi Nannaya University, Rajahmundry, Andhra Pradesh – 533 105, during July 6-7, 2012 and presented a paper entitled “Natural convection in a lid-driven square cavity filled with porous medium”.
- Attended the National Seminar on “Advances in Mathematics & Applications” held in the Department of Mathematics, The University of Burdwan, Burdwan, during March 6-7, 2013.
- Participated and presented a paper titled “Numerical study of magnetohydrodynamic laminar flow separation in a channel with smooth expansion” in the International Conference, organized by the Department of Mathematics, Vidyasagar University, Paschim Medinipur, during 20-21 March, 2013.

**Dr. Anjan Kumar Bhuniya**

**i) Reviewer of the following journals:**

- Semigroup Forum
- Soft Computing
- Filomat
- Southeast Asian Bulletin of Mathematics

**ii) Participation in Conference/ Seminar etc.:**

- Participated, acted as a committee member and joint convener in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

**Dr. Subhasis Ray**

**i) Participation in Conference/ Seminar etc.**



- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Attended the National Seminar on “Advances in Mathematics & Applications” held in the Department of Mathematics, The University of Burdwan, Burdwan, during March 6-7, 2013.
- Participated and presented a paper titled “Convexity condition for approximate generalized Riemann derivable functions” in the National Seminar on Mathematical Analysis and Application Present Perspective (NSMAAPP-2012) held during September 6 – 8, 2012 at Calcutta Mathematical Society, Kolkata.
- Participated and presented a paper titled “On the Borel derivatives” in the National Seminar on Advanced in Mathematics & Applications (AMA-2013 ) held during March 6 – 7, 2013 at The University of Burdwan, Burdwan.
- Delivered a talk ‘On the Laplace derivative’ in the National Seminar on Analysis and its applications (NSAA-2011), September 6-7, 2011, Calcutta Mathematical Society.
- Participated and presented a paper in the National Seminar on Mathematics & Applications, Department of Mathematics, Burdwan University, Burdwan, India (28-29 March, 2012).
- Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

**Dr. Amar Prasad Misra**

**i) Membership**

- Life member of Plasma Science Society India (PSSI)
- Life Member of Indian Association for the Cultivation of Science (IACS), Kolkata, India.

**ii) Reviewer of the following journals:**

- Physics of Plasmas (American Institute of Physics)
- Physics Letters A (Elsevier Science)
- Astrophysics and Space Science (Springer)

- Journal of Plasma Physics (Oxford University Press)
- Optics & Laser Technology (Elsevier Science)
- Euro Physics Letters (EPS & IOP)
- European Physical Journal B, D & E, France
- Indian Journal of Physics (Springer)
- Zeitschrift fuer Naturforschung A, Germany
- Advances in Space Research (Elsevier Science)
- IEEE Transactions on Plasma Science
- Waves in Random and Complex Media (Taylor & Francis)

**iii) Participation in Conference/ Seminar etc.**

- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as a Committee member in the International Topical Conference on Plasma Science: Advanced Plasma Concepts (Sept. 24-28, 2012; Faro, Portugal).
- Participated and delivered an Invited talk in the National Workshop on Nonlinear Waves: Theory and Simulation, Department of Mathematics, National Institute of Technology, Durgapur, India (14-18 January, 2013).
- Participated and Completed the UGC supported Refresher Course in Algebra, Analysis, Discrete Mathematics & Applications held at Academic Staff College, Jadavpur University, Kolkata during 27 August, 2012 to 15 September, 2012.
- Participated and acted as a committee member in the *National Seminar on Nonlinear Aspects of Analysis and Algebra* (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Delivered an invited talk in the Departmental seminar of Department of Mathematics & Statistics, IISER Kolkata, Nadia, India (28 March, 2012).
- Participated and delivered an invited talk in the *National Seminar on Mathematics & Applications*, Department of Mathematics, The University of Burdwan, Burdwan, India (28-29 March, 2012).
- Participated and presented a poster in the *6<sup>th</sup> International Conference on the Physics of Dusty Plasmas*, Garmisch-Partenkirchen, Germany (16-20 May, 2011).
- Acted as an international committee member, participated and delivered an

invited talk in the *International Topical Conference on Plasma Science: Strongly Coupled Ultra-Cold and Quantum Plasmas*, Lisbon, Portugal (12-14 Sept., 2011).

**Mr. Kalyan Hansda**

**i) Participation in Conference/ Seminar etc:**

- Participated and presented a paper at National Seminar on Mathematics & Applications, Department of Mathematics, Burdwan University, Burdwan, India (28-29 March, 2012).
- Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as Teacher Escort of the Study Tour 2011-2012 of the Department of Mathematics, Visva-Bharati, to Mumbai, Goa and surrounding areas during 19-26 January, 2012.
- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Participated and completed the UGC supported 89th orientation programme held at Burdwan University during 06 February, 2013 to 05 March, 2013.
- Participated and Completed the Refresher Course in Mathematical Science, University of Burdwan, 30 Nov-20 Dec 2011.

**Mr. Lakshmi Narayan Guin**

**i) Participation in Conference/ Seminar etc.:**

- Participated in the 13<sup>th</sup> Refresher Course in Mathematical Sciences (Period: 30.11.2011-20.12.2011), UGC academic staff college, The University of Burdwan, Burdwan-713104, West Bengal, India.
- Successfully completed the Ph. D. course work in the Department of Mathematics, Siksha Bhavana, Visva-Bharati.
- Participated in the National Seminar and presented a paper entitled “Spatiotemporal dynamics of a ratio-dependent predator-prey model” on Mathematics and Applications (NSMA-2012, Period: 28-29, 2012), organised by Department of Mathematics, The University of Burdwan, Burdwan-713104, West Bengal, India.

- Participated and acted as a committee member in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Acted as Teacher Escort of the Study Tour 2011-2012 of the Department of Mathematics, Visva-Bharati, to Mumbai, Goa and surrounding areas during 19-26 January, 2012.
- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Participated and Completed the UGC supported 89th orientation programme held at Burdwan University during 06 February, 2013 to 05 March, 2013.
- Participated in the National Seminar on Advances in Mathematics and Applications (AMA-2013) held during 6-7 March, 2013 at the Department of Mathematics, The University of Burdwan, Burdwan-713104, West Bengal, India, and presented a paper entitled “Spatial pattern in a diffusive predator-prey model with sigmoid ratio-dependent functional response”.

#### **Mr. Nikhil Pal**

##### **i) Participation in Conference/ Seminar etc.:**

- Participated and acted as a committee member in the National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.
- Participated in the Instructional School for Lecturers in Differential Equations and computations during June 04, 2012 to June 16, 2012.
- Participated in the National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

#### **Mr. Mizanur Rahaman**

##### **i) Participation in Conference/ Seminar etc.:**

- Participated and acted as a committee member in the National Seminar on

Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.

- Participated and acted as a committee member in the two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

- 27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):** Faculty members have been invited regularly to act as resource persons in different Orientation programmes, Refresher Courses, Mathematics teaching and training programmes conducted by different universities/institutes
- 28. Student projects:**
- Percentage of students who have done in-house projects including interdepartmental projects:** 100%
  - Percentage of students doing projects in collaboration with other universities / industry / institute:** NA
- 29. Awards / recognitions received at the national and international level by**
- Faculty:** None
  - Doctoral / post doctoral fellows:** None
  - Students (INSPIRE etc.):** Following students have qualified for INSPIRE scholarship/fellowship :

Serial No.	Name	UG/PG/Ph. D. Student
1	Namrata Bhattacharyya	Ph. D.
2	Camellia Yasmin	PG-II
3	Shahnaz Begum	PG-II
4	Indrajit Ghosh	PG-II
5	Snigdha Choudhury	PG-II
6	Arthita Sarkar	PG-I
7	Kuntal Bhandari	B. Sc.-III
8	Sayanil Mitra	B. Sc.-II
9	Amit Sarkar	B. Sc.-II
10	Moinul Hossain	B. Sc.-II
11	Ishita Das	B. Sc.-II
12	Subhajeet Roy	B. Sc.-II

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

- a) Organized a National Seminar on Nonlinear Aspects of Analysis and Algebra (NAAA-2012) held during March 24-25, 2012, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- b) Organized jointly with the Centre for Mathematics Education an extension programme at the Department of Mathematics, Visva-Bharati, Santiniketan, Basantapur High school, Burdwan and Purusottampur High School, Bankura, during January-March 2012.
- c) Organized Study Tours in 2009-2013 of the Department of Mathematics, Visva-Bharati, to visit places including Mumbai, Goa, Shimla, Kullu-Manali and surrounding areas December- January in each calendar year.
- d) Organized a National Seminar on Mathematics for nonlinear systems held during March 17-18, 2013, at the Department of Mathematics, Siksha Bhavana, Visva-Bharati, Santiniketan, India.
- e) Organized a two-day National Seminar on “Mathematics and its Applications” held on the occasion of Golden Jubilee Celebration during 30-31 March, 2013.

**List of outstanding participants:**

- a) Prof. K. B. Sinha, JNCASR, Bangalore
- b) Prof. Sankar Kumar Pal, ISI, Kolkata
- c) Prof. R. Sahadevan, Ramanujan Institute of Advanced Study in Mathematics, University of Madras, Chennai
- d) Prof. G Rangarajan, IISc, Bangalore
- e) Prof. M. K. Chakravorty, University of Calcutta, Kolkata
- f) Prof. Riddhi Shah, JNU, New Delhi
- g) Prof. B. S. Choudhury, BESU, Shibpur, Howrah
- h) Prof. K. C. Chattopadhyay, Burdwan University, Burdwan
- i) Prof. D. K. Ganguly, University of Calcutta, Kolkata
- j) Prof. Birendra Nath Mandal, ISI, Kolkata

**31. Code of ethics for research followed by the departments:** As per University rules.

**32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
UG (2010-2011)		32	06	65	100
PG (2011-2012)		31	18	84	77
Ph. D. (VB-RET-2013)	12	00	03	0	100

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
UG (2010-2011)	50	47	03	Nil
PG (2011-2012)	33	67	Nil	Nil
Ph. D. (2013)	100	Nil	Nil	Nil

**34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

Serial No.	Name	UGC/ CSIR -NET/ SET/GATE (2012-2013)
1	Aryaman Sensarma (Gen)	CSIR-NET JRF, GATE
2	Riddhick Birbonshi (SC)	CSIR-NET JRF, GATE
3	Sudeep Kundu (Gen)	CSIR-NET JRF, GATE
4	Manik Das (SC)	CSIR-NET JRF, GATE
5	Sudipto Ghosh (Gen)	CSIR-NET JRF
6	Benukar Mondal (Gen)	CSIR-NET JRF
7	Ranjit Mehatari (Gen)	CSIR-NET JRF
8	Tushar Kanti Das (Gen)	CSIR-NET Lectureship, GATE
9	Abhishek Banerjee (Gen)	CSIR-NET Lectureship, GATE
10	Arnab Barman (SC)	CSIR-NET Lectureship, GATE
11	Tathagata Mandal (Gen)	CSIR-NET Lectureship, GATE
12	Swaraj Paul (Gen)	CSIR-NET Lectureship, GATE
13	Debsmita Mukherjee (Gen)	GATE
14	Sandipan Dutta (Gen)	CSIR-NET-JRF
15	Manami Chatterjee (Gen)	GATE
16	Prasenjit Saha (SC)	GATE
17	Manas Kumbhakar (SC, PH)	CSIR-NET Lectureship
18	Kanika Mandal (Gen)	UGC-NET JRF
19	Sushobhan Maity (Gen)	GATE
20	Manimala Nej (Gen)	GATE
21	Priyajit Mandal (Gen)	GATE

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	95
PG to M.Phil.	NA
PG to Ph.D.	10
Ph.D. to Post-Doctoral	NA
Employed	
• Campus selection	(I) NA
• Other than campus recruitment	(II) 90
Entrepreneurs	NA

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	20
from other universities within the State	80
from universities from other States	Nil
from universities outside the country	Nil

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	Nil
Ph.D.	01
D.Sc.	Nil
D.Litt	Nil

**38. Present details of departmental infrastructural facilities with regard to**

- a) **Library:** One Departmental Library (Books funded by NBHM, SAP, University)
- b) **Internet facilities for staff and students:** Ethernet Broad-Band & WIFI
- c) **Total number of class rooms:** 07.
- d) **Class rooms with ICT facility:** Nil
- e) **Students' laboratories:** 01 Computer Laboratory
- f) **Research laboratories:** 01

**39. List of doctoral, post-doctoral students and Research Associates:**

- a) **Doctoral list from the host institution/university –**

Doctoral Students: Benekar Mandal, Sabiar Rahman, Nijamuddin Ali, Ramprasad Saha, Namrata Bhattacharya, Lakshmi Narayan Guin, Kalyan Hansda, Sougata Mukherjee, Arnab Barman, Rajib Debnath, Sumanta Sidui, Nilkanta Mandal,



Biswajit Mandal, Akshay Kumar Mandal, Asim Kumar Pal, Himadrisekhhar Gupta, Gopinath Mandal, Supriyo Pal, Pankaj Kumar Mandal, Sk. Nazmul, Arunima Mazumder, Dipsekhar Haldar.

**b) From other institutions/universities –**

Mitrapam Chakraborty, Ramkrishna Thakur, Akash Pradip Mandal, Gobordhan Rano, Kanchan Jana, Tapas Mandal, Anupam Garai, Utpal Samanta, Debkumar Ghosh, Jayanta Pal, Sudin Mandal, Prakash Kumar Das, Anwasha Bhuniya Pandey.

**40. Number of post graduate students getting financial assistance from the university:** 20 (approx)

**41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** Nothing in particular to mention

**42. Does the department obtain feedback from**

**a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Faculty members meet from time to time in Departmental meetings as well as Board of Studies where external members were present. Here course curriculum as well as teaching and learning evaluation are considered and/or scrutinized for possible improvement. Pre-Ph.D.

seminars are conducted in presence of external expert members where suggestions made by members are incorporated by the students. Performance of students in examinations conducted at the state and national level are also discussed.

**b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** Students' representatives are invited in every Institute Board as well as Academic Council meetings which is the highest body responsible for all academic activities of this university.

**c. alumni and employers on the programmes offered and how does the department utilize the feedback:** Alumni involved in academics and/or interested in academics offer their opinions on issues related to academic uplift of the Department. Their participation is also sought in different Seminars etc.

**43. List the distinguished alumni of the department (maximum 10):**

- i) Prof. A. Chatterjee, ISM, Dhanbad, India;
- ii) Prof. K. S. Chowdhury, Jadavpur University, Kolkata, India;
- iii) Prof. G. Banerjee, Rabindra Bharati University, Kolkata;
- iv) Prof. P. Mandal, Visva-Bharati, Birbhum, India;
- v) Prof. P. Das, Jadavpur University, Kolkata, India;
- vi) Prof. R. K. Roy, IIT Mandi, India;
- vii) Prof. S. Banerjee, Presidency University, Kolkata, India.

44. **Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:** Special lectures and seminars are organized at regular intervals by external experts
45. **List the teaching methods adopted by the faculty for different programmes:** Power-point presentation, Student-Teacher interactive sessions, Tutorials.
46. **How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:** Students' feedback and their performance in the assessment as well as in the examinations.
47. **Highlight the participation of students and faculty in extension activities:** Centre for Mathematics Education in collaboration with the Department of Mathematics organizes Extension programmes at different institutes in each year, and a large of students participate.
48. **Give details of “beyond syllabus scholarly activities” of the department:** Coaching for NET/SET/GATE and Projects in various fields of research at PG level.
49. **State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not yet
50. **Briefly highlight the contributions of the department in generating new knowledge, basic or applied:** Department is contributing by including recent research fields in the curriculum. It has introduced semester with choice based credit system in both the UG and PG courses. It is also updating syllabus as per UGC guidelines from time to time in generating new knowledge in both Pure and Applied Mathematics. Department also organizes Seminars, Conferences in new emerging fields of nonlinear systems in Mathematics and related disciplines in order to introduce and generate new knowledge.
51. **Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**
  - a) **Strengths :** (i) Faculties have expertise in various fields of research including pure and applied mathematics, (ii) Faculties are well-equipped in their fields of specialization as well as publication of research articles in international/national journals of repute, (iii) Considerable number of students qualify in NET/SET/GATE/NBHM in each year, (iv) Organization of national seminars/conferences each year at regular intervals helps developing knowledge of students and faculties, (v) Department has been under the support of SAP-DRS over the last ten years.

- b) Weaknesses:** (i) Infrastructural inadequacy, (ii) Malfunction of the Departmental library in the absence of any library assistant, (iii) Very few students opt for full-time research work, (iv) No in-house placement for the students, (v) Internet facility for a limited period only on working days.
- c) Opportunities:** (i) Consistent healthy working environment and cooperation among the faculty members, (ii) Students have the scope to work for Ph. D./D. Sc. Programmes after completion of PG course, (iii) Syllabi catering to global needs and standards are implemented and practiced, (iv) Ample scope for special lectures/ interactive sessions from distinguished experts of various fields from other universities/institutes, (v) The natural environment of Santiniketan inculcates and enthuses the young minds and disciplines them with moral virtues to become responsible citizens with compassionate hearts.
- d) Challenges :** (i) To admit more students from other states and abroad, (ii) To make the tutorial system more effective and to improve the communicating skills of the students, especially in English, (iii) To motivate more number of students to engage in research activities, (iv) Research needs to be more productive, so that its output can largely be made useful to the community, (v) To motivate the doctoral students to opt for their postdoctoral studies as well as D. Sc. Programmes.

**52. Future plans of the department:**

- (i) Extension of the existing class rooms for UG, PG, Ph. D etc. courses, together with the appropriate enhancement of the faculty strength, (ii) Up-gradation of the existing laboratory and library facilities (e.g., Computer Laboratory, Departmental library) for students, research scholars as well as for faculties with round-the-clock internet facility, (iii) Explore possibility of exchange programmes/ collaborative projects with other universities/institutes in India/ foreign countries, thereby creating visiting fellowships for research scholars and visiting professorship for faculties, (iv) Establishment of a “Centre for Nonlinear Studies” with all necessary modern infrastructural facilities and equipments for high-quality collaborative research works, (v) Seminar hall needs to be developed with modern facilities to organize properly seminar/ conference/workshop etc.

## Evaluative Report of the Department of Integrated Science Education and Research Centre (ISERC)

1. **Name of the Department :** Integrated Science Education and Research Centre (ISERC),
2. **Year of establishment :** 2008
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** Integrated M.Sc., Ph.D.
5. **Interdisciplinary programmes and departments involved:** Dr. Subrata Sinha, Associate Professor is running a sponsored project (DAE-BRNS), with the collaboration of Bhava Atomic Research Centre, Mumbai and Department of Chemistry, Visva-Bharati. Dr. Susanta Ghosh, Associate Professor is collaborating with Indian Association for the Cultivation of Science (IACS), Kolkata on Women Scientists Scholarship Scheme (WOS-A), DST, New Delhi. One research scholar, working under the guidance of Dr. Umesh Kumar Singh, Assistant Professor, collaborates with the Bidhan Chandra Krishi ViswaVidyalaya, Mohanpur, West Bengal
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** None
7. **Details of programmes discontinued, if any, with reasons:** None
8. **Examination System:** Annual/Semester/Trimester/Choice Based Credit System – Semester
9. **Participation of the department in the courses offered by other departments:** Yes. Tagore Studies (Rabindra-Bhavana), Environmental Science (Siksha Bhavana), Ph.D. course work, etc.
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	---	---	---
Associate Professors	2	2	2

Asst. Professors	5	5	5
Others	NA	NA	NA

**11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Dr. Subrata Sinha  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Spectroscopy  
**No. of Years of Experience** : 8.5 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- b) **Name** : Dr. Susanta Ghosh  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Physical Chemistry  
**No. of Years of Experience** : 9.5 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- c) **Name** : Dr. Mahasweta Nandi  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Inorganic Chemistry, Material Science  
**No. of Years of Experience** : 4.5 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- d) **Name** : Dr. Umesh Kumar Singh  
**Qualification** : M.Sc., M.Phil., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Environmental Science (Hydrogeology, Water Pollution, Soil Pollution)  
**No. of Years of Experience** : 4.5 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- e) **Name** : Dr. Swapan Kumar Pandit  
**Qualification** : M.Sc., M.Phil., Ph.D.  
**Designation** : Assistant Professor

- Specialization** : Numerical Methods in PDE, Numerical Schemes for Incompressible Flows, CFD  
**No. of Years of Experience** : 4.5 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- f) Name** : Dr. Nilanjan Bondyopadhyaya  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Integrable Model, Quantum Field Theory, Condensed matter Physics  
**No. of Years of Experience** : 4 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- g) Name** : Dr. Gireesh A.  
**Qualification** : M.Sc., M.Phil., Ph.D  
**Designation** : Assistant Professor  
**Specialization** : Life Science  
**No. of Years of Experience** : 9 months  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

**12. List of senior Visiting Fellows, adjunct faculty, emeritus professors:**

- a) Prof. Kali Shankar Mukherjee (Formerly Professor, Visva-Bharati)
- b) Prof. Soumya Chakraborty (Formerly Professor Emeritus, Department of Physics, California State Polytechnic University)
- c) Prof. Bidyendu Mohan Deb (Formerly Professor, IISER, Kolkata)

**13. Percentage of classes taken by temporary faculty — programme-wise : 50%**

**14. Programme-wise Student Teacher Ratio : 43:7 (Approx.)**

**15. Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	-	-	1
Administrative Staff	-	-	-
Others	-	-	1 (Peon)

**16. Research thrust areas as recognized by major funding agencies:**

- a) Spectroscopy

- b) Electrochemistry
- c) Inorganic Chemistry, Material Science, Catalysis
- d) Environmental Science (Hydrogeology, Water Pollution, Soil Pollution)
- e) Numerical Methods in Partial Differential Equation (PDE), Numerical Schemes for Incompressible Flows, Computational Fluid Dynamics (CFD)
- f) Mathematical Physics, Condensed matter physics
- g) Cancer biology, Neurobiology

17. **Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise: 02**

Name	Ongoing projects	National funding agencies	International funding agencies	Total grants received
Dr. Subrata Sinha	DAE-BRNS project (Sanction No: 2010/37P/12/BRNS, Dated: 08.11.2010, ongoing in the fourth financial year 2013-2014) Project title: Dye sensitized solar cell: photoinduced electron transfer in porphyrin based donor-acceptor dyads attached to nanostructured films	DAE-BRNS		Rs. 30,50,511/-
Dr. Umesh Kumar Singh	UGC Major Research Project (F. No. 42-437/2013 (SR)) Project title: Water quality assessment of river Ajoy- A tributary of river Ganga.	UGC		Rs. 12,06,800/-

18. **Inter-institutional collaborative projects and associated grants**

**a) National collaboration:**

*Dr. Subrata Sinha:* Dr. Sukhendu Nath, Scientific Officer (F), Radiation and Photochemistry Division, Bhabha Atomic Research Centre, Mumbai – 400 085  
DAE-BRNS Project (Sanction No: 2010/37P/12/BRNS, Dated: 08.11.2010)  
Grant received so far: Rs. 30,50,511/-

**b) International collaboration:** None

19. **Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:** Not yet

20. **Research facility / centre with**  
 a) **state recognition :** Nil  
 b) **national recognition:** Nil  
 c) **international recognition:** Nil
21. **Special research laboratories sponsored by / created by industry or corporate bodies:** Nil
22. **Publications:**  
 a) **No. of papers published in peer reviewed journals (national/international):** – given below in individual details  
 b) **Monographs:** – do  
 c) **Chapters in Books:** – do  
 d) **Edited Book:** - do  
 e) **Books with ISBN with details of publishers:** do  
 c) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):** do  
 d) **Citation Index — range / average:** do  
 e) **SNIP:** do  
 f) **SIR:** do  
 g) **Impact Factor — range / average:** do  
 h) **h-index:** do

#### Individual details

- a) **Dr. Subrata Sinha**  
 Number of papers : 3  
 published  
 Citation Index - range : 0-2  
 Impact Factor - range : 2.1-2.1  
 h-index : 8

#### **List of Publications (2009-2013)**

1. Fluorescence quenching of 9-cyanoanthracene in presence of zinc tetraphenylporphyrin in a polar liquid medium  
 Paulami Mandal, Sanat Kumar Tiwari, Tapan Ganguly and **Subrata Sinha**  
*J. Lumin.* 129 (2009) 958-965



2. Fluorescence self-quenching of tetraphenylporphyrin in liquid medium  
Mihir Ghosh, Sukhendu Nath, Alakananda Hajr and **Subrata Sinha**  
*J. Lumin.* 141 (2013) 87-92
3. Photophysics of Soret-excited free base tetraphenylporphyrin and its zinc analog in solution  
Mihir Ghosh, Aruna K. Mora, Sukhendu Nath, Asit K. Chandra, Alakananda Hajra and **Subrata Sinha**  
*Spectrochim. Acta Part A: Mol. Biomol. Spectrosc.* 116 (2013) 466-472

**b) Dr. Susanta Ghosh**

Number of papers : 11  
published  
Citation Index - range : 0-22  
Impact Factor - range : 0.628-6.585  
h-index : 15

**List of Publications (2009-2013)**

1. Cyclic voltammetric studies with plant extracts of some traditionally used Indian medicinal plants to evaluate their antioxidant potential  
G. Brahmachari, **S. Ghosh**, S. Mondal, S.K. Jash, L.C. Mandal and A. Mondal  
*Biochemistry – An Indian Journal* 3(1) (2009) 32-35
2. Synthesis of Pt Nano Electrocatalyst For Methanol Oxidation Using Polymer Template  
M. Chatterjee, **S. Ghosh**, P. Chowdhury and I. Basumallick  
*Elec. Chem. Soc. Transactions* 19(27) (2009) 87-95
3. Electro-oxidation of ethanol and ethylene glycol on carbon supported nano Pt and Pt-Ru catalyst in acid solution  
M. Chatterjee, A. Chatterjee, **S. Ghosh** and I. Basumallick  
*Electrochimica Acta* 54 (2009) 7299-7304.
4. A new solar carbon capture process: solar thermal electrochemical photo (STEP) carbon capture  
S. Licht, B. Wang, **S. Ghosh**, H. Ayub, D. Jiang and J. Ganley  
*J. Phys. Chem. Lett.* 1 (2010) 2363 -2368
5. Efficient STEP production of hydrogen  
S. Licht, O. Chitayat, H. Bergmann, A. Dick, H. Ayub and **S. Ghosh**  
*Int. J. Hydrogen Energy* 35 (20) (2010) 10867-10882.
6. Nanoparticles Facilitated Charge Transfer and Voltage of a High Capacity VB2 Anode  
S. Licht, **S. Ghosh**, B. Wang, D. Jiang, J. Asercion and H. Bergmann

- Electrochemical and Solid-State Letters* 14 (6) (2011) A83-A85
7. Super-iron nanoparticles with facile cathode charge transfer  
M. Farmand, D. Jiang, B. Wang, **S. Ghosh**, D.E. Ramaker and S. Licht  
*Electrochemistry Communication* 13 (2011) 909-912
  8. Electro-Oxidation of Ethanol and Isopropanol onto Ternary Pt-Sn-Ni Surface  
A. Chatterjee, M. Chatterjee, **S. Ghosh** and I. Basumallick  
*Chemical Technology: An Indian Journal* 6(4) (2011)
  9. Electro-oxidation of ethanol and isopropanol onto Pt-Sn and Pt-Ni surfaces  
A. Chatterjee, M. Chatterjee, **S. Ghosh** and I. Basumallick  
*Int. Journal of current research and review* 4(2) (2012) 13-20
  10. Electro-oxidation of isopropanol on to Pt loaded carbon felt surface modified by polyaniline  
A. Chatterjee, M. Chatterjee, **S. Ghosh** and I. Basumallick  
*International Journal of Emerging Science* 2(1) (2012) 123-133
  11. Electro Oxidation Study of Isopropanol In Surfactant Media  
A. Chatterjee, **S. Ghosh** and I. Basumallick  
*Research and review in electrochemistry* 4(4) (2013) 136-139

c) **Dr. Mahasweta Nandi**

Number of papers : 33  
published  
Chapters in Books : 1  
Citation Index - range : 0-82  
Impact Factor - range : 0.787-9.765  
h-index : 13

**List of Publications (2009-2013)**

1. Adsorption over polyacrylonitrile based carbon monoliths  
**Mahasweta Nandi**, Arghya Dutta, Astam Kumar Patra, Asim Bhaumik and Hiroshi Uyama  
*AIP Conference Proceeding* 298 (2013) 1512
2. Peroxidative addition of cycloalkane by di-, tetra- and polynuclear copper(II) complexes  
**Mahasweta Nandi** and Partha Roy  
*Indian Journal of Chemistry, Section A* 52A (2013) 1263-1268
3. Synthesis of mesoporous hollow silica nanospheres using polymeric micelles as template and their application as a drug-delivery carrier  
Manickam Sasidharan, Haruna Zenibana, **Mahasweta Nandi**, Asim Bhaumik and Kenichi Nakashima

- Dalton Transactions* 42 (2013) 13381-13389
4. Unprecedented CO<sub>2</sub> uptake over highly porous N-doped activated carbon monoliths prepared by physical activation  
**Mahasweta Nandi**, Keisuke Okada, Arghya Dutta, Asim Bhaumik, Jun Maruyama, Didi Derks and Hiroshi Uyama  
*Chemical Communications* 48 (2012) 10283-10285  
**Selected for cover page**
  5. Porphyrin based porous organic polymers: novel synthetic strategy and exceptionally high CO<sub>2</sub> adsorption capacity  
Arindam Modak, **Mahasweta Nandi**, John Mondal and Asim Bhaumik  
*Chemical Communications* 48 (2012) 248-250  
**One of the top ten most accessed articles in November, 2011**
  6. Organic-inorganic hybrid porous sulfonated zinc phosphonate material: efficient catalyst for biodiesel synthesis at room temperature  
Malay Pramanik, **Mahasweta Nandi**, Hiroshi Uyama and Asim Bhaumik  
*Green Chemistry* 14 (2012) 2273-2281
  7. Organic-inorganic hybrid tinphosphonate material with mesoscopic void spaces: an excellent catalyst for the radical polymerization of styrene  
Malay K. Pramanik, **Mahasweta Nandi**, Hiroshi Uyama and Asim Bhaumik  
*Catalysis Science and Technology* 2 (2012) 613-620
  8. 3D-Hexagonal Mesoporous Silica and its Organic Functionalization for High CO<sub>2</sub> Uptake  
Arghya Dutta, **Mahasweta Nandi**, Manickam Sasidharan and Asim Bhaumik  
*ChemPhysChem* 13 (2012) 3218-3222
  9. Titanium containing periodic mesoporous organosilica as an efficient catalyst for the epoxidation of alkenes  
Arindam Modak, **Mahasweta Nandi**, Asim Bhaumik  
*Catalysis Today* 198 (2012) 45-51
  10. Functionalized mesoporous materials as efficient organocatalysts for the syntheses of xanthenes  
John Mondal, **Mahasweta Nandi**, Arindam Modak and Asim Bhaumik  
*Journal of Molecular Catalysis A* 363-364 (2012) 254-264
  11. Triazine functionalized ordered mesoporous organosilica as a novel organocatalyst for the facile one-pot synthesis of 2-amino-4H-chromene under solvent-free conditions  
John Mondal, Arindam Modak, **Mahasweta Nandi**, Hiroshi Uyama and Asim Bhaumik  
*RSC Advances* 2 (2012) 11306-11317

12. Hybrid porous tin(IV) phosphonate: an efficient catalyst for adipic acid synthesis and a very good adsorbent for CO<sub>2</sub> uptake  
Arghya Dutta, Malay Pramanik, Astam K. Patra, **Mahasweta Nandi**, Hiroshi Uyama and Asim Bhaumik  
*Chemical Communications* 48 (2012) 6738-6740
13. Functional mesoporous polymer monolith for application in ion-exchange and catalysis  
**Mahasweta Nandi**, Keisuke Okada and Hiroshi Uyama  
*Functional Materials Letters* 4 (2011) 407-410
14. Highly ordered acid functionalized SBA-15: Novel organocatalyst for preparation of Xanthenes  
**Mahasweta Nandi**, John Mondal, Krishanu Sarkar, Yusuke Yamauchi and Asim Bhaumik  
*Chemical Communications* 47 (2011) 6677-6679  
**Highlighted in SYNFACTS**
15. Highly Efficient Hydroformylation of 1-Hexene over an *ortho*-Metallated Rhodium(I) Complex Anchored on a 2D-Hexagonal Mesoporous Material  
**Mahasweta Nandi**, Paromita Mandal, Manirul Islam and Asim Bhaumik  
*European Journal of Inorganic Chemistry* (2011) 221-227
16. Fe(III)-containing mesoporous poly-(*p*-phenylenediamine): Synthesis, Characterization and Magnetic Properties  
**Mahasweta Nandi**, Swapan K. Das, Saurav Giri and Asim Bhaumik  
*Microporous and Mesoporous Materials* 142 (2011) 557-563
17. Mesoporous lanthanum-manganese oxides with nanoscale periodicity, high surface area and ferromagnetic property  
**Mahasweta Nandi**, Krishanu Sarkar, Motin Sheikh and Asim Bhaumik  
*Microporous and Mesoporous Materials* 143 (2011) 392-397
18. Functionalized Mesoporous Silica Supported Copper(II) and Nickel(II) Catalysts for Liquid Phase Oxidation of Olefins  
**Mahasweta Nandi**, Partha Roy, Hiroshi Uyama and Asim Bhaumik  
*Dalton Transactions* 40 (2011) 12510-12518
19. Fabrication of mesoporous polymer monolith: a template-free approach  
Keisuke Okada, **Mahasweta Nandi**, Jun Maruyama, Tatsuya Oka, Takashi Tsujimoto, Katsuyoshi Kondoh and Hiroshi Uyama  
*Chemical Communications* 47 (2011) 7422-7424
20. Novel organic-inorganic hybrid mesoporous silica supported oxo-vanadium Schiff base for selective oxidation of alcohols.  
Sanny Verma, **Mahasweta Nandi**, Arindam Modak, Suman L. Jain and Asim

Bhaumik

*Advanced Synthesis and Catalysis* 353 (2011) 1897-1902

**Highlighted in SYNFACTS**

21. From Porous Metal Phosphates to Oxophenylphosphates: A Review  
**Mahasweta Nandi**, Asim Bhaumik and Nawal K. Mal  
*Recent Patents on Materials Science* 3 (2010) 151-166
22. An improved high yielding immobilization of vanadium Schiff base complexes on mesoporous silica via azide-alkyne cycloaddition for the oxidation of sulfides  
Suman L. Jain, Bharat S. Rana, Bhawan Singh, Anil K. Sinha, Asim Bhaumik, **Mahasweta Nandi** and Bir Sain  
*Green Chemistry* 12 (2010) 374-377
23. New 3D-hexagonal mesoporous silica having high H<sub>2</sub> adsorption capacity  
**Mahasweta Nandi**, Mohona Sarkar, Krishanu Sarkar and Asim Bhaumik  
*Journal of Physical Chemistry C* 113 (2009) 6839-6844
24. Nanorods of all organic porous *m*-cresol-formaldehyde composite resin having photoluminescence at room temperature  
**Mahasweta Nandi** and Asim Bhaumik  
*Materials Chemistry and Physics* 114 (2009) 785-788
25. Four  $\mu_4$ -oxo-bridged copper(II) complexes: magnetic properties and catalytic applications in liquid phase partial oxidation reactions  
Partha Roy, **Mahasweta Nandi**, Mario Manassero, Mauro Riccò, Marcello Mazzani, Asim Bhaumik and Pradyot Banerjee  
*Dalton Transactions* 43 (2009) 9543-9554
26. Selective Fluorescence Zinc(II) Ion Sensing by Functionalized Mesoporous Material Covalently Grafted with Fluorescent Chromophore: Biological Application  
Krishanu Sarkar, Koushik Dhara, **Mahasweta Nandi**, Partha Roy, Asim Bhaumik and Pradyot Banerjee  
*Advanced Functional Materials* 19 (2009) 223-234
27. A new mesoporous FeBO<sub>3</sub> material with dominant surface magnetism  
Swapan K. Das, **Mahasweta Nandi**, Saurav Giri and Asim Bhaumik  
*Microporous and Mesoporous Materials* 117 (2009) 362-367
28. Facile Suzuki coupling over ortho-metalated Palladium(II) complex anchored on 2D-hexagonal mesoporous organosilica  
Krishanu Sarkar, **Mahasweta Nandi**, Manirul Islam and Asim Bhaumik  
*Applied Catalysis A: General* 352 (2009) 81-86
29. Vanadium resin as an efficient catalyst for the liquid phase ammoxidation of cyclic ketones  
Sanghamitra Mukherjee, **Mahasweta Nandi**, Krishanu Sarkar and Asim Bhaumik

- Journal of Molecular Catalysis: A* 301 (2009) 114–117
30. A convenient sol-gel route for the synthesis of salicylate-titania nanocomposites having visible absorption and blue luminescence  
Atanu Mitra, Asim Bhaumik, **Mahasweta Nandi**, John Mondal and B. K Roy  
*Journal of Solid State Chemistry* 182 (2009) 1200-1205
31. 3-D Ordered Mesoporous KIT-6 Support for Effective Hydrodesulfurization Catalysts  
K. Soni, B.S. Rana, A.K. Sinha, A. Bhaumik, **M. Nandi**, M. Kumar, G.M. Dhar  
*Applied Catalysis B: Environmental* 90 (2009) 55-63
32. Concomitant polymorphism of an antiferromagnetically coupled dicopper(II,II) complex with single strand helical assembly: Synthesis, structure, DSC, magnetic and heterogeneous catalytic studies  
Md. Mijanuddin, Atish Dipankar Jana, Michael G.B. Drew, Chang Seop Hong, Basab Chattopadhyay, Monika Mukherjee, **Mahasweta Nandi**, Asim Bhaumik, Madeline Helliwell, Golam Mostafa, Mahammad Ali  
*Polyhedron* 28 (2009) 665–672
33. Two highly unsymmetrical tetradentate (N<sub>3</sub>O) Schiff base copper(II) complexes: template synthesis, structural characterization, magnetic and computational studies  
Ambarish Ray, Dipankar Maity, Anup Pramanik, Kalyan K. Das, **Mahasweta Nandi**, Asim Bhaumik, M. Nethaji, Swastik Mondal, Monika Mukherjee, Mahammad Ali  
*Polyhedron* 28 (2009) 3659-3666

#### Chapter in Books

1. Liquid phase partial oxidations over active transition metals grafted on different heterogeneous supports  
Mahasweta Nandi and Asim Bhaumik  
Focus on Catalysis Research: New Developments (2012); Nova Science Publishers, Inc., USA (2012) Chapter 14, 361-399  
Editors: Minjae Ghang and Bjørn Ramel  
ISBN: 978-1-62100-444-8

#### d) Dr. Umesh Kumar Singh

Number of papers : 4  
published  
Citation Index - range : 12-19  
Impact Factor - range : 1.44-4.5  
h-index : 6

**List of Publications (2009-2013)**

1. Arsenic enrichment in ground water in the middle Gangetic Plain of Ghazipur District in Uttar Pradesh, India  
Manish Kumar, Pankaj Kumar, A.L. Ramanathan , Prosun Bhattacharya, Roger Thunvik, **Umesh K. Singh**, M. Tsujimura and Ondra Sracek  
*Journal of Geochemical Exploration* 105 (2010) 83-94
2. Movement of Toxic Metals from Small Scale Industrial Areas-A case study from Delhi, India  
Manju Rawat, **Umesh K. Singh** and V. Subramanian  
*International Journal of Environment and Waste Management (IJEWM)* 5(3-4) (2010) 224-236
3. Chemical Weathering and Associated CO<sub>2</sub> consumption in Godavari River Basin, India  
Pawan Kumar Jha, Jaya Tewari, **Umesh Kumar Singh**, Manish Kumar and V. Subramanian  
*Chemical Geology* 264 (2009) 364 -374
4. Hydrogeochemical processes in the groundwater environment of Muktsar, Punjab: Conventional graphical and multivariate statistical  
Manish Kumar, Kalpana Kumari, **Umesh Kumar Singh** and AL. Ramanathan  
*Environmental Geology* 57 (2009) 873-884

**e) Dr. Swapan Kumar Pandit**

Number of papers : 1  
published  
Impact Factor - range : 2.3

**List of Publications (2009-2013)**

1. Transient Solution of an Incompressible Viscous Flow in a Channel with Sudden Expansion/Contraction  
**S. K. Pandit** and D. C. Dalal  
*International Journal of Mathematical Sciences* 7(2) (2013) 10-20

**f) Dr. Nilanjan Bondyopadhaya**

Number of papers : 3  
published  
Citation Index - range : 1-4  
Impact Factor - range : 1.243-5.3  
h-index : 4

**List of Publications (2009-2013)**

1. Topologically trivial zero-bias conductance peak in semiconductor Majorana wires from boundary effects  
Dibyendu Roy, **Nilanjan Bondyopadhaya** and Sumanta Tewari  
*Physical Review B* 88 (2013) 020502(R)
2. One-Dimensional Vertex Models Associated with a Class of Yangian Invariant Haldane-Shastry Like Spin Chains  
Bireswar Basu-Mallick, **Nilanjan Bondyopadhaya** and Kazuhiro Hikami  
*SIGMA* 6 (2010) 091
3. Spectral properties of supersymmetric Polychronakos spin chain associated with  $A_{N-1}$  root system  
B. Basu-Mallick and **Nilanjan Bondyopadhaya**  
*Physics Letters A* 373 (2009) 2831

**g) Dr. Gireesh A.**

Number of papers : 1  
published  
Citation Index - range : 10  
Impact Factor - range : 31.027  
h-index : 2

**List of Publications (2009-2013)**

1. The molecular basis of acid insensitivity in the African naked mole-rat  
Ewan St. John Smith, Damir Omerbasic, Stefan G. Lechner, **Gireesh Anirudhan**,  
Liudmila Lapatsina and Gary R. Lewin  
*Science* 6062 (334) (2011) 1557-1560
23. **Details of patents and income generated:** Nothing in particular to mention
24. **Areas of consultancy and income generated:** Nothing in particular to mention
25. **Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**
  - a) Dr. Susanta Ghosh  
Visiting fellow, The George Washington University, Washington DC, USA (2009-2010)
  - b) Dr. Mahasweta Nandi  
Post-doctoral Researcher (JSPS and GCOE), Osaka University, 2010-2012
  - c) Dr. Umesh Kumar Singh  
Boyscast fellow  
Kansas State University, Manhattan, USA (2011-2012)  
Also visited during this period:  
University of California, Berkeley



City University of New York (CUNY)  
Iowa State University  
The George Washington University

26. **Faculty serving in**
- National committees: NA**
  - International committees: NA**
  - Editorial Boards: NA**
  - Any other (please specify): NA**
27. **Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs): NA**
28. **Student projects:**
- Percentage of students who have done in-house projects including interdepartmental projects: 22%**
  - Percentage of students doing projects in collaboration with other universities / industry / institute: 78%**
29. **Awards / recognitions received at the national and international level by**
- Faculty:**  
**Dr. Mahasweta Nandi**  
Recipient of the JSPS (Japan Society for the Promotion of Science) Fellowship, FY2011, ID P11042  
Recipient of the GCOE (Global Centre of Excellence) Fellowship of Osaka University  
Recipient of the FCT (Fundação para a Ciência e a Tecnologia) Fellowship, Grant No. SFRH/BPD/65351/2009, Portugese Govt. Fellowship for Post-doctoral research  
**Dr. Umesh Kumar Singh**  
Recipient of the BOYSCAST FELLOWSHIP for the year 2010-2011.  
Recipient of the JAPAN GOVERNMENT FELLOWSHIP (2009) to do research work in University of Tokyo for two years.
  - Doctoral / post doctoral fellows:**  
**Mr. Mihir Ghosh (SRF)**  
Recipient of the best poster presentation award in Modern Methods in Materials Processing and Characterization (M3PAC – 2013), September 17-21, 2013, Department of Physics, NIT Durgapur, India
  - Students:**  
*All the students of the Centre* are entitled to DST INSPIRE fellowship provided by the Department of Science and Technology (DST), New Delhi, India

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

- (a) National Symposium on Atomic & Molecular Spectroscopy (NSAMS – 2010), March 27-28, 2010  
(Convenor: Dr. Subrata Sinha, Organizing Secretary: Dr. Mahasweta Nandi)  
Source of funding: Visva-Bharati, DAE-BRNS  
List of outstanding participants:  
Prof. Tulsi Mukherjee, BARC (Plenary talk)  
Prof. Tapan Ganguly, IACS  
Prof. Nitin Chattopadhyay, JU  
Prof. P. C. Mishra, BHU  
Prof. Samita Basu, SINP  
Prof. Lokesh C. Tribedi, TIFR  
Prof. Amitava Patra, IACS  
Dr. Nikhil Guchhait, CU  
Prof. P. K. Mukherjee, Retired Professor, IACS  
Dr. H. Pal, BARC  
Dr. A. K. Chandra, NEHU  
Dr. Pralay Maiti, BHU
- (b) International Conference on Global Climate Change (ICGC C– 2010), February 19-21, 2010  
(Convenor: Prof. Puspajit Mandal and Prof. Shibani Chaudhury, Organizing Secretary: Dr. Umesh Kumar Singh and Dr. S. Balachandran)  
Source of funding: Visva-Bharati, Ministry of Environment and Forest (MoEF), CSIR
- (c) Mathematics Training and Talent Search Programme 2010 (MTTS-2010), May 24-June 19, 2010  
(Coordinator: Dr. Swapan Kumar Pandit)  
Source of funding: Visva-Bharati, NBHM
- (d) Mathematics Training and Talent Search Programme 2011 (MTTS-2011), May 23- June 18, 2011  
(Coordinator: Dr. Swapan Kumar Pandit)  
Source of funding: Visva-Bharati, NBHM
- (e) INSPIRE Internship Winter Camp 2011, Visva-Bharati, December 12-16, 2011  
(Coordinator: Dr. Swapan Kumar Pandit)  
Source of funding: Visva-Bharati, DST

- (f) INSPIRE Internship Winter Camp 2012, Visva-Bharati, December 10-14, 2012  
(Coordinator: Dr. Swapan Kumar Pandit and Dr. Umesh Kumar Singh)  
Source of funding: Visva-Bharati, DST

31. **Code of ethics for research followed by the departments:** As per University rules.  
32. **Student profile programme-wise:** NA (First batch not yet passed)

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
Five year Integrated M.Sc.		34	9	NA	
Ph.D.		6	2	NA (Degree not awarded yet)	

33. **Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
Integrated M.Sc. (2009-2013)	Students in the Integrated Course enter after 10+2 level. Thus they do not come from any University			Nil
Ph.D. (2009-2013)	37.5	50.0	12.5	Nil

34. **How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:** NIL (First Batch not yet passed out)  
35. **Student progression:**

Student progression	Percentage against enrolled
UG to PG	NA (Five year Integrated Course)
PG to M.Phil.	NA
PG to Ph.D.	NA (First batch not yet passed)
Ph.D. to Post-Doctoral	NA
Employed <ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	NA (First batch not yet passed)
Entrepreneurs	NA (First batch not yet passed)

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	14.29
from other universities within the State	57.14
from universities from other States	28.57
from universities outside the country	NIL

- 37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: 1 (One)**
- 38. Present details of departmental infrastructural facilities with regard to**
- Library:** One departmental library (Books funded by University).
  - Internet facilities for staff and students:** Ethernet Broad-Band and WiFi
  - Total number of class rooms:** 04
  - Class rooms with ICT facility:** 01
  - Students' laboratories:** 03
  - Research laboratories:** 01
- 39. List of doctoral, post-doctoral students and Research Associates:**
- Doctoral list from the host institution/university –**  
Hemanta Karmakar, Anirban Chattopadhyay, Biswajit Roy
  - From other institutions/universities –**  
Sreejata Sensarma, Sukanta Das, Mihir Ghosh, Sandip Layek, Arkabane Mukherjee
- 40. Number of post graduate students getting financial assistance from the university:** All our Five Year Integrated M.Sc. students, who maintain their GPA equal to 6.0 or more, are getting DST INSPIRE fellowship through Visva-Bharati.
- 41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** Nothing in particular to mention
- 42. Does the department obtain feedback from**
- faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Yes. The centre tries to improve its functioning based on the feedback provided by the faculty members. This is generally done by discussing and resolving the concerned matters either in a Board of Studies (BOS) or departmental meeting.
  - students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** Yes, our faculty members take student's feedback verbally and they improve and rectify accordingly.

- c. **alumni and employers on the programmes offered and how does the department utilize the feedback:** Nothing in particular to mention
43. **List the distinguished alumni of the department (maximum 10):** NA, First batch not yet passed out
44. **Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**  
Special lectures and seminars are organized from time to time involving external experts.  
*Special lectures*  
a) Prof. Debashish Chowdhury, Department of Physics, IIT Kanpur  
b) Dr. Amalesh Mukhopadhyay, advisor, SERB, DST, New Delhi  
c) Prof. Gautam Basu, Department of Biophysics, Bose Institute, Kolkata
45. **List the teaching methods adopted by the faculty for different programmes:**  
a) Student-teacher interactive session involving board and chalk teaching and power-point presentations  
b) Laboratory practical sessions  
c) Field work  
d) Tutorials
46. **How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**  
Students' feed-back, their performance in the internal assessments as well as in semester examinations.
47. **Highlight the participation of students and faculty in extension activities:**  
a) All the Students of the centre are enrolled in National Service Scheme (NSS).  
b) Many students participate in Inter-University sports competition and some are selected to represent at the National level.  
c) Faculty members help in day-to-day functioning of the hostels by taking charge as Hostel-Wardens.
48. **Give details of "beyond syllabus scholarly activities" of the department:**  
a) Guidance for NET/SET/GATE  
b) Projects in various fields of research at PG level
49. **State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not yet
50. **Briefly highlight the contributions of the department in generating new knowledge, basic or applied:** Nothing in particular to mention

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:****a) Strengths :**

- i) Faculties have expertise in various subjects, *e.g.* Biology, Chemistry, Mathematics, Physics, Environmental Science, etc.
- ii) Faculties are well-experienced in their fields of specialization as well as publication of research articles in international/national journals of repute
- iii) All the students are entitled to INSPIRE fellowship provided by Department of Science and Technology (DST, New Delhi)
- iv) Organization of DST INSPIRE winter/summer camp, national seminars / conferences at regular intervals which helps to develop knowledge for both students and faculties
- v) Students of the department come from various states all over the country

**b) Weaknesses:**

- i) Infrastructural inadequacy
  - a) No separate unit for the Centre (accommodated in the Mathematics department on temporary basis)
  - b) No sitting rooms for faculty members as well as office room
  - c) Insufficient number of classrooms
  - d) Insufficient number of students laboratory as well as research laboratory
  - e) No room for library
- ii) Shortage of manpower
  - a) Insufficient number of teaching staff (have to depend on temporary teachers)
  - b) Insufficient number of laboratory assistants and office support staff
  - c) No library assistant
- iii) Very few students opt for full-time research work
- iv) No in-house placement for the students
- v) Internet facility for a limited period of time and only on working days; uninterrupted supply of power is not always available, which is important for functioning of certain delicate instruments.

**c) Opportunities:**

- i) As the department offers integrated course in Science, students have the opportunity to opt for major in Biology/Chemistry/Mathematics/Physics, after the first two years, depending upon their interest. But during the initial two years the students have to study all the subjects with equal effort which make them aware about the scope and application of the subjects, which they can later apply to perform interdisciplinary studies.

- ii) Faculty members have huge opportunity to carry out interdisciplinary research work as the department comprises of teachers under one shed belonging to various fields of Science, viz. Biology, Chemistry, Mathematics, Physics, Environmental Science, etc.
- iii) Students have the scope to work for Ph.D./D.Sc. Programmes after completion of Integrated M.Sc. course
- iv) Syllabi catering to global needs and standards are implemented and practiced, (iv) Ample scope for special lectures/ interactive sessions from distinguished experts of various fields from other universities/institutes
- v) The natural environment of Santiniketan inculcates and encourages the young minds and disciplines them with moral virtues to become responsible citizens with compassionate hearts.

**d) Challenges :**

- i) To set up *state of the art* classrooms, student and research laboratories where innovative ways of interactive learning can be introduced
- ii) To motivate the students to choose a career in research after completion of the five year Integrated Course
- iii) To make the tutorial system more effective and to improve the communicating skills of the students, so that they remain at par with students coming from other reputed institutions
- iv) To motivate more number of students from other Universities and abroad to carry out their research activities in this Centre
- v) To motivate the doctoral students to opt for their postdoctoral studies as well as D. Sc. Programmes.

**52. Future plans of the department:**

Established in 2008, this department is at its premature state struggling hard to develop itself as a center with excellence in both academics and research. The new building is coming up where classrooms and students laboratories shall be set up with modern infrastructural facilities. Side by side, the research laboratories shall also be extended with the cooperation of the faculty members. The center shall also try to enhance the faculty as well as non-academic staff strength which is another very important part for proper functioning of the unit. Up-gradation of the facilities like Computer Laboratory, Departmental library, etc. for students, research scholars as well as for faculties with round-the-clock internet facility shall be done. Possibility of exchange programmes/collaborative projects with other universities/institutes in India/ foreign countries, shall be explored thereby creating visiting fellowships for research scholars and visiting professorship for faculties. A seminar hall equipped with modern facilities shall be developed to properly organize seminar/conference/workshop etc. Finally, the

center plans to offer more interdisciplinary courses to the students in the coming years, so that the course remains an integrated one in the true sense.



## Evaluative Report of the Department of Physics

1. **Name of the Department :** Physics
2. **Year of establishment :** 1963
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** UG, PG, Ph.D.
5. **Interdisciplinary programmes and departments involved:** Our department is actively involved in designing curriculum and teaching courses offered by the center of integrated science, Visva-Bharati.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** None
7. **Details of programmes discontinued, if any, with reasons:** NA
8. **Examination System:** Annual/Semester/Trimester/Choice Based Credit System – Semester/ Choice Based Credit System
9. **Participation of the department in the courses offered by other departments:** Yes. Integrated Science
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	3	2	11
Associate Professors	5	5	3
Asst. Professors	18	18	11
Others			

11. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**
  - a) **Name** : S.N. Roy
  - Qualification** : Ph.D.
  - Designation** : Professor

- Specialization** : Nuclear Physics  
**No. of Years of Experience** : 34 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- b) Name** : S.K. Roy  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Condensed matter Physics  
**No. of Years of Experience** : 32 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- c) Name** : S. Chakrabarty  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Particle Physics  
**No. of Years of Experience** : 32 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- d) Name** : T.P. Chattopadhyay  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Eletronics  
**No. of Years of Experience** : 27 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- e) Name** : Somenath Chakrabarty  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Astrophysics & Cosmology  
**No. of Years of Experience** : 8+13\* years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- f) Name** : Manas Maity  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Particle Physics

- No. of Years of Experience** : 11 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- g) Name** : T.K.Kundu  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Eletronics  
**No. of Years of Experience** : 9+5\* years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- h) Name** : A.Bhattacharjee  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Condensed Matter Physics  
**No. of Years of Experience** : 9+9\* years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- i) Name** : P.K.Ghosh  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Particle Physics  
**No. of Years of Experience** : 8 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 01
- j) Name** : S. Mandal  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Quantum Eletronics  
**No. of Years of Experience** : 20 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- k) Name** : A. Sengupta  
**Qualification** : Ph.D.  
**Designation** : Professor  
**Specialization** : Condensed Matter Physics  
**No. of Years of Experience** : 20 years

- No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 03
- l) Name** : S. Sil  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Condensed Matter Physics  
**No. of Years of Experience** : 14 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 01<sup>#</sup>
- m) Name** : A. Chakravarty  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Condensed Matter Physics  
**No. of Years of Experience** : 16 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 01<sup>#</sup>
- n) Name** : A. Saha  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Atomic Physics  
**No. of Years of Experience** : 16 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 02
- o) Name** : S.K. Mandal  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Condensed Matter Physics  
**No. of Years of Experience** : 09 years  
**No. of Ph.D./M.Phil. students  
guided for the last 4 years** : 04
- p) Name** : B.C. Gupta  
**Qualification** : Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Condensed Matter Physics  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students**

- guided for the last 4 years : 03
- q) **Name** : B. Mukherjee  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Experimental Nuclear Physics  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- r) **Name** : S.C. Tudu  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : X-Ray & Crystallography  
**No. of Years of Experience** : 6 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- s) **Name** : S. Roy  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Electronics  
**No. of Years of Experience** : 06 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- t) **Name** : A. Bandhyapadhyay  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Laser Physics  
**No. of Years of Experience** : 04 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- u) **Name** : S.Das  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Astrophysics&Cosmology  
**No. of Years of Experience** : 04 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 01

- v) **Name** : B. Roy Chowdhury  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Relativity, Cosmology  
**No. of Years of Experience** : 04 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- w) **Name** : B. Pandey  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Astrophysics&Cosmology  
**No. of Years of Experience** :  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- x) **Name** : A.Saw Mondal  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Astrophysics&Cosmology  
**No. of Years of Experience** :  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- y) **Name** : R.K.Singha  
**Qualification** : Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : High Energy Physics  
**No. of Years of Experience** :  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- # Mr. S. Roy has carried out research work under joint supervision of Dr. Arani Chakravarty and Dr. S. Sil.

**12. List of senior Visiting Fellows, adjunct faculty, emeritus professors:**

Prof. B. K. Talukdar

**13. Percentage of classes taken by temporary faculty — programme-wise : NA**

**14. Programme-wise Student Teacher Ratio : 16:1**

**15. Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	04	-	04
Administrative Staff	03	-	03
Others (Peon)	02	-	02

**Total No. of Non-Teaching Staff: 9 (+2 vacant)**

**16. Research thrust areas as recognized by major funding agencies:**

Astrophysics & Cosmology  
 Condensed Matter Physics (Theory & Experiment)  
 Electronics, Microwave & Optical Communication  
 Nuclear Physics (Theory & Experiment)  
 Material Science  
 Particle Physics & Mathematical Physics  
 Quantum Electronics  
 Radiation Physics  
 Solar Energy & Renewable energy

**17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:**

SI No	Name of the faculty	Project title	Funding authority	Sanctioned amount
1	Prof. T. Chattopadhyay	<i>Nonlinearities and synchronization of quantum cascade laser.</i>	UGC, Govt. of India	Rs. 5,44,021/- ( May 01, 2009-April 30, 2012)
2	Prof. M. Maity	<i>India-LHC Grid Collaboration – Enhancement of Regional Worldwide Computing Grid(WLCG).</i>	DST, Govt. of India	Rs. 29.7 lakhs, (April 2009 – March 2013)
3	Prof. M. Maity	<i>Study of New Particles with the eCMS at the Large Hadron Collider and Heavy Ion Physics with the LHC at CERN</i>	DST, Govt. of India	Rs. 431 lakhs, (April 2009 – March 2014)

SI No	Name of the faculty	Project title	Funding authority	Sanctioned amount
4	Prof. S. Mandal	<i>Quantum Teleportation with Continuous Variables</i>	UGC, Govt. of India	Rs. 11 Lacs
5	Prof. A. Sengupta:	<i>Effects of annealing on free volume and chain mobility in pilot fluoroelastomers investigated by non-destructive measurement protocol</i>	SERC, DST, Govt. of India	INR 34,20,200.
6	Prof. A. Sengupta:	<i>Measurement of occupied and Free Volume in Polyethylene by Raman Spectra and Positron Annihilation Lifetime Spectroscopy.</i>	UGC, Govt of India	INR 9,33,000
7	Prof. A. Bhattacharjee	<i>Electrical, Magnetic and Microstructural Characterization of some Composite Biopolymer</i>	CSIR, Govt. of India	Rs. 15.74 Lacs (Tenure: JULY, 2011 – JUNE, 2014)
8	Prof. T. K. Kundu	<i>Metal nanoparticles embedded in oxide thin films for memory device application</i>	UGC, Govt. of India	Rs. 7.46 lacs (Aug 2011-July 2014)
9	Prof. P. K. Ghosh	<i>Physics and Mathehtics of PT symmetric system</i>	SERC, DST, Govt. of India	Rs. 13.40 lacs (May 2013-May 2016)
10	Dr. S. K. Mandal	<i>Chemical synthesis and physical properties of multiferroic nanostructures</i>	CSIR, Govt. of India	Rs. 15 Lacs
11	Dr. B. Mukherjee	<i>Measurement of prompt proton decays in <math>N = Z</math> nuclei using Indian Gamma Detector Array</i>	Inter-University Accelerator Center, New Delhi (an autonomous center of	One UFR fellowship plus consolidated INR 25,000/- per year for 3 years.



SI No	Name of the faculty	Project title	Funding authority	Sanctioned amount
			UGC).	
12	Mr. S. Roy	<i>Experimental study of percolation phenomenon through contactless techniques</i>	UGC, Govt. of India	Rs. 1,70,000

**18. Inter-institutional collaborative projects and associated grants**

- a) National collaboration: None  
 b) International collaboration: None

**19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:**

Funding authority	Head of account as given in the original sanction order	Total Sanctioned Project Cost	Date of Commencement
DST, Govt. of India Sanction letter : SR/FIST/PSI- 157/2010, dt 10.03.2011	FIST program: PG teaching and Research (Materials Science, Nanoscience, Computational facility)	Rs. 152,00,000.00	17.04.2011

**20. Research facility / centre with**

- a) state recognition : None  
 b) national recognition: None  
 c) international recognition: None

**21. Special research laboratories sponsored by / created by industry or corporate bodies: NA**

**22. Publications:**

- a) No. of papers published in peer reviewed journals (national/international):  
 – 2011-12, No. of Papers = 30,  
 2012-13, No. of papers = 25

B. K. Talukdar : 8  
 Subrata Chakraborty : 5  
 T. P. Chattopadhyay : 5  
 S. N. Chakrabarty : 3  
 Swapan Mondal : 13  
 A. Sengupta : 1  
 M. Maity : 26  
 T.Kundu : 5  
 A. Bhattacharjee : 22  
 P.K. Ghosh : 9  
 S. Sil : 5  
 A. Chakraborty : 1  
 B. C. Gupta : 6  
 S. Roy : 1  
 B. Panday : 3  
 S. Das : 4  
 A. Saha : 6  
 B. Mukherjee : 5  
 S. K. Mondal:9

- b) Monographs:** – Nil  
**c) Chapters in Books:** –  
**A. Bhattacharjee**, “Understanding of phase transitions and thermally induced metal to metal electron transfer in a .....Blue Analogue”, Prussian Blue(s): Multifunctional materials, ed. P. Somani, Pune, India 2010.  
**d) Edited Book:** Nil –  
**e) Books with ISBN with details of publishers:**  
 1. Taraprasad Chattopadhyay: “Advanced Electronics,” CBS Publisher, New Delhi, 2013  
 2. B. Roychoudhury: “Relativistic Sagnac Effect: Some conceptual questions and related issues”, VDM Verlag (2010) ISBN – 978-3-639-29679-2.  
**f) Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):** Nil  
**g) Citation Index — range / average:** Nil  
**h) SNIP:** Nil  
**i) SIR:** Nil

- j) **Impact Factor** — range / average: 0.5- 5
- k) **h-index:** Nil
23. **Details of patents and income generated:** Not yet any
24. **Areas of consultancy and income generated:** NA
25. **Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**
- a) **National** –
- i) Prof. Swapan Mondal: NPL, Delhi.
  - ii) Dr. B. Mukherjee: IUAC, New Delhi; IAS, Bengaluru.
- b) **International** –
- i) Prof. Bikash Chandra Gupta: Department of Physics, Virginia Commonwealth University, USA (2011-2012)
  - ii) Prof. Swapan Mondal: ICTP, Trieste, Italy (2011 -2012); Palacky University, Olomouc, Czech Republic; University of LaPlata, Buenosaires, Argentina.
  - iii) Prof. P.Ghosh Nuclear Physics Institutes, ASCR; Doppler Institute of Mathematical Physics, Prague, Czech Republic (2011-12).
  - iv) Dr. Biswajit Pandey: AVH Fellowship, Germany. (2011-12).
26. **Faculty serving in**
- a) **National committees:**
- b) **International committees:**
- c) **Editorial Boards:**  
Prof. T.K. Kundu: Guest Editor; Advanced Material Science & engineering.
- d) **Any other (please specify):**  
**Pijush K. Ghosh**  
Reviewer of Journals:
- i) Physics Letters A, Journal of Physics A: Mathematical & General, Nonlinearity, European Journal of Physics etc.
27. **Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**  
**Taraprasad Chattopadhyay**  
Seminars, Conferences, Symposia Workshops etc. attended

Conference/ Workshop, etc	Symposia	Name of the Sponsoring Agency	Place and Date
IEEE International Conference on Circuits and Systems		DST, CSIR, Visva-Bharati	Kuala Lumpur, Malaysia, September 18-19, 2013.

(ICCAS 2013)		
IEEE International Conference on Computers and Devices for Communications (CODEC-2012)	Visva-Bharati	Institute of Radio Physics and Electronics, University of Calcutta, Kolkata, Dec. 17-19, 2012
IEEE National Conference on Electrical, Electronics and Computer Engineering	UGC	Jadavpur University, Kolkata, India, November 04-05, 2011.

### Asmita Sengupta

Details of Seminars, Conferences, Symposia organized

Organised a two day 'Panel Discussion Meeting' on Materials Research with Frontier State – of – Art Facilities (MRFSAF-09) during January 17-18, 2009 at the Department of Physics,

### Sudipta Das

#### **Seminars, Conferences, Symposia Workshops etc. attended**

Conference/ Workshop, etc	Symposia	Name of the Sponsoring Agency	Place and Date
Workshop on Astrophysics and Cosmology		Calcutta University and IUCAA	University of Calcutta from 13.01.2010 – 14.01.2010
Refresher course in Physics		UGC	Academic Staff College, University of Calcutta from 04. 07. 2011 to 23. 07. 2011
International Conference on Modern Perspectives of Cosmology and Gravitation		Indian Statistical Institute, Kolkata	Indian Statistical Institute, Kolkata 07 – 11 February, 2012
XX DAE-BRNS High Energy Physics Symposium		DAE	Department of Physics, Visva-Bharati from 14-18 December, 2012
Orientation Programme (OP - 99)		UGC	Academic Staff College, University of Calcutta from 02. 02. 2013 to 02. 03. 2013

**Improvement of Professional Competence:**

- i) Workshop on Astrophysics and Cosmology held at University of Calcutta from 13.01.2010 – 14.01.2010
- ii) Refresher course in Physics held at Academic Staff College, University of Calcutta from 04. 07. 2011 to 23. 07. 2011
- iii) International Conference on Modern Perspectives of Cosmology and Gravitation held at Indian Statistical Institute, Kolkata from 07 – 11 February, 2012
- iv) XX DAE-BRNS High Energy Physics Symposium held at Department of Physics, Visva-Bharati from 14-18 December, 2012
- v) Orientation Programme (OP – 99) held at Academic Staff College, University of Calcutta from 02. 02. 2013 to 02. 03. 2013
- vi) 27th IAGRG Meeting held at Department of Physics, H N Bahuguna Garhwal University, Srinagar (Garhwal), Uttarakhand from 07-09 March, 2013

**Aditya Sow Mondal****Improvement of Professional Competence:**

- i) Attended workshop on Data-analysis: X-ray Pulsars and Compact objects that was sponsored by Inter University Center for Astronomy and Astrophysics(IUCAA) , held at North-Bengal University during 1-3 December, 2011.
- ii) Participated in the 2<sup>nd</sup> IUCAA X-ray Astronomy School held at IUCAA, Pune during February 4 – March 2, 2013.
- iii) Attended IUCAA sponsored workshop on X-Ray Astronomy, held at North-Bengal University during 23-25 March, 2013.
- iv) Attended one refresher course on Astronomy and Astrophysics from IUCAA, Pune during May 6 – June 7, 2013.
- v) Attended one national seminar on Rabindrachitra organised by Visva-Bharati University during February 11-12, 2012

**Bikash Chandra Gupta****Improvement of Professional Competence:**

Details regarding refresher courses/orientation attended, participation in summer schools, workshops, seminars, symposia etc. including open university courses/M.Phil., Ph.D.

Conference/ Symposia Workshop, etc	Name of the Sponsoring Agency	Place and Date
“Physics of Surfaces and Interfaces”	IOP (Bhubaneswar) & IACS (Kolkata)	Puri, Orissa (Feb. 23-27, 2009)
“International Symposium on Clusters and Nano-Structures”	VCU (USA)	Virginia, USA (Nov. 7-10, 2011)

Conference/ Symposia Workshop, etc	Name of the Sponsoring Agency	Place and Date
“Condensed Matter Days”	BIT, Mesra, Ranchi, India	BIT, Mesra (Aug 29-31, 2012)
“Condensed Matter Days”	NIT, Rourkela, India	NIT, Rourkela (Aug 29-31, 2013)

### **Subhas Chandra Tudu**

#### **Improvement of Professional Competence:**

Details regarding refresher courses/orientation attended, participation in summer schools, workshops, seminars, symposia etc. including open university courses/M.Phil., Ph.D.

- i) Attended one orientation programme from UGC-Academic Staff College, Burdwan University 4<sup>th</sup>- 31<sup>st</sup> July, 2013

### **Dr. Aparna Saha**

#### **Improvement of Professional Competence:**

Details regarding refresher courses/orientation attended, participation in summer schools, workshops, seminars, symposia etc. including open university courses/M.Phil., Ph.D.

Attended three refresher courses and one orientation programme.

Presented papers in the following seminars:

- i) Participated national symposium on “ Atomic and molecular spectroscopy” (NSAMS-2010), SERC, Visva-Bharati.
- ii) National seminar on “Non-linear aspects of Analysis and Algebra” (NAAA-2012), Deptt. of Maths, Visva-Bharati.
- iii) National seminar on “Analysis of non-linear systems” (ANS-2011), Deptt. Of Maths, Visva-Bharati.
- iv) National seminar on “Mathematics for non-linear systems”; Deptt. Of Maths., Visva-Bharati.

### **Tapas Kumar Kundu**

#### **Seminars, Conferences, Symposia Workshops etc. attended**

Conference/ Symposia Workshop, etc	Name of the Sponsoring Agency	Place and Date
International Conference on Nanotechnology and Medical Sciences, (ICNAM)	D.Y.Patil University,	Kolhapur, 2010
National Review and coordination meeting 2009-Nano Mission	SNBNCBS, Kolkata,	2009

**Ashis Bhattacharjee**

Seminars, Conferences, Symposia Workshops etc. attended

Conference/ Workshop, etc	Symposia	Name of the Sponsoring Agency	Place and Date
1. International Conf. On Global Scenario In Environment and Energy (ICGSEE2013)			MANIT, Bhopal, India, 14-16 <sup>th</sup> March 2013.
2. TSNSCMPLA-2013			Burdwan Univ., WB, March, 2013.
3. Int. Conf. on Recent Advances in Composite Materials			Goa, Feb 18-21, 2013,
4. Int. Workshop on Nanomaterials			Jadavpur Univ., 14-15 Dec, 2012.
5. SNSCMPLA-2012			Burdwan Univ., WB, March, 2012.

**Manas Maity**

Details of Seminars, Conferences, Symposia organized

- i) Member, National Organizing Committee, XIX DAE-BRNS Symposium on High Energy Physics, LNMIIT, Jaipur, India, December, 2010
- ii) Convener, Discussion Meeting on Physics at the LHC, Visva-Bharati, Santiniketan, January 28-30, 2011
- iii) Convener, XX DAE-BRNS High Energy Physics Symposium, Visva-Bharati, Santiniketan, January 14-18, 2013

**Pijush K. Ghosh**

Seminars, Conferences, Symposia Workshops etc. attended

Conference/ Workshop, etc	Symposia	Name of the Sponsoring Agency	Place and Date
XX DAE-BRNS High Energy Physics symposium		Not Applicable	January 13-18, 2013, Visva-Bharati University, Santiniketan
Jubilee meeting of the international conference series Pseudo-hermitian Hamiltonian and Quantum Physics(PHHQP X) entitled ``Quantum Physics with non-hermitian operators"		Max Planck Institute for Physics of Complex Systems, Dresden,	June 16-25, 2011, Max Planck Institute for Physics of Complex Systems, Dresden, Germany.

	Germany.	
National Seminar on Science and Nature: Tagore's Vision and its Relevance (A celebration on the occasion of 150th birth anniversary of Gurudev Rabindranath Tagore)	Not Applicable	March 12-13, 2011, Siksha-Bhavana, Visva-Bharati.
International Workshop on Supersymmetric Quantum Mechanics & Spectral Design	SERC, DST, Govt. of India and Organizers	July 18 - July 30, 2010, Centro De Ciencias Pedro Pasucal, Benasque, Spain.
One-day mini-symposium on Topological Aspects of Condensed Matter Physics: Mathematical Approaches	Not Applicable	June 13, 2008, ISSP, University of Tokyo, Kashiwa

## Invited/Contributed Talk Given At Conferences/Symposia:

- i) Jubilee meeting of the international conference series Pseudo-hermitian Hamiltonian and Quantum Physics(PHHQP) entitled "Quantum Physics with non-hermitian operators", June 16-25, 2011, Max Planck Institute for Physics of Complex Systems, Dresden, Germany.
- ii) Regional Science Congress of Jawhar Navodaya Vidyalaya Samiti(Patna Region) under the auspices of MHRD, Govt. of India, November 17, 2010, Jawhar Navoday Vidyalaya at Durgapur, West Bengal, India.
- iii) Workshop on Supersymmetric Quantum Mechanics & Spectral Design, July 18 - July 30, 2010, Centro De Ciencias Pedro Pasucal, Benasque, Spain.
- iv) National Level Applied Mathematics Symposium on Trends & Challenges in Quantum Theory, February 27-28, 2008, Department of Applied Mathematics, University of Calcutta, Kolkata, India.
- v) National Level Applied Mathematics Symposium on Quantum Mechanics in the Perspective of Modern Trends, February 17-18, 2005, Department of Applied Mathematics, University of Calcutta, Kolkata, India
- vi) India And Abroad -III: A Conference In Condensed Matter Physics(A special session on the Bose-Einstein condensation), January 2003, S. N. Bose National Centre for Basic Sciences, Kolkata, India
- vii) Symposium on Current Trends in Physics, September 1999, Institute of Physics, Bhubaneswar, INDIA.
- viii) XI High Energy Physics symposium, December 1994, Visva-Bharati University, Santiniketan, INDIA ( Organized by Department of Atomic Energy, India ).



Visited and delivered talk(s) within India

- i) Tata Institute of Fundamental Research, Mumbai, (b) Indian Institute of Science, Bangalore, (c) S. N. Bose National Centre for Basic Sciences, Kolkata, (d) Indian Institute of Technology, Kanpur, (e) Indian Institute of Technology, Kharagpur, (f) Central University of Hyderabad, Hyderabad, (g) Jawaharlal Nehru University, Delhi, (h) Saha Institute of Nuclear Physics, Kolkata.

Training Programmes:

- i) Summer School in Particle Physics and Cosmology, June 08-30, 1996, Abdus Salam International Centre for Theoretical Physics, Trieste, ITALY.
- ii) Summer School in Particle Physics and Cosmology, June 11 - July 08, 1994, Abdus Salam International Centre for Theoretical Physics, Trieste, ITALY.
- iii) Winter School on Interface of Particle Physics and Cosmology, January 1993, Puri, INDIA (Organized by BCSPIN, Institute of Physics and S. N. Bose National Centre for Basic Sciences).
- iv) VII SERC School in Theoretical High energy Physics, December 30, 1991-January 16, 1992, Physical Research Laboratory, Ahmedabad, INDIA.

**Dr. Amitava Bandyopadhyay**

Improvement of Professional Competence:

Details regarding refresher courses/orientation attended participation in summer schools, workshops, seminars, symposia etc. including Open University courses/M.Phil., Ph.D.

1. Inspire Programme 2009	Department of Science & Technology	Integrated Science Education & Research Centre, Visva-Bharati, August 2009.
2. National Symposium on Atomic & Molecular Spectroscopy 2010	Department of Atomic Energy	Integrated Science Education & Research Centre, Visva-Bharati, March 2010
3. Refresher Course in Physics	UGC	Academic Staff College, University of Calcutta, 92 A. P. C. Road, Kolkata 700 009; duration 4 <sup>th</sup> July 2011 – 23 <sup>rd</sup> July 2011
4. Orientation Program	UGC	Academic Staff College, University of Calcutta, 92, APC Road, Kolkata 700 009. Duration: 3 <sup>rd</sup> September 2012 – 29 <sup>th</sup> September 2012

28. **Student projects:**
- Percentage of students who have done in-house projects including interdepartmental projects: 100%
  - Percentage of students doing projects in collaboration with other universities / industry / institute: NA
29. **Awards / recognitions received at the national and international level by**
- Faculty:**  
**Dr. Ashmita Sengupta:** “Bharat Jyoti” by IIFS, “Glory of India” by IISA, “Best citizen of India” by International Publishing House, New Delhi .  
**Dr. Swapan Mondal :** Fellowship awarded jointly by Third world academy of Science (TWAS) and University Sains, Malaysia .
  - Doctoral / post doctoral fellows:**
  - Students:**
30. **Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**  
 Conference/Workshops organized: XIX DAE-BERNS High Energy Physics Symposium held during 14-18 January, 2013 at Santiniketan, Convener- Dr. Manas Maity.
31. **Code of ethics for research followed by the departments:** As per University rules.
32. **Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
UG (2011-12)	VBCAT	35	05		
UG (2012-13)	VBCAT	31	09		
PG (2011-12)		34	09		
PG (2012-13)		43	09		
Ph.D. (2011-12)		3	0		
Ph.D. (2012-13)		7	1		

33. **Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
UG(2011-12)	40%	60%		

UG(2012-13)	35%	65%		
PG(2011-12)	57%	43%		
PG(2012-13)	58%	42%		
Ph.D(2011-12)	3	0		
Ph.D(2012-13)	6	2		

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:

Name of the Examinations	Year of examination	No. of students passed
JEST	2012	08
JEST	2013	04
GATE	2012	10
GATE	2013	08
NET	2011	04
NET	2012	06
NET	2013	07

35. Student progression:

Student progression	Percentage against enrolled
UG to PG	90% (2011-12) 91% (2012-13)
PG to M.Phil.	NA
PG to Ph.D.	20%
Ph.D. to Post-Doctoral	Not Available
Employed	Data is not Available
<ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	
Entrepreneurs	

36. Diversity of staff:

Percentage of faculty who are graduates	
of the same university	6 (24%)
from other universities within the State	19 (76%)
from universities from other States	
from universities outside the country	

37. **Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:** Prof. Subrata Chakraborty obtained D. Litt. from Visva-Bharati

Awarded Degree	No. of Faculty
M.Phil.	
Ph.D.	
D.Sc.	1 (One
D.Litt	

38. **Present details of departmental infrastructural facilities with regard to**
- Library:** 1 (One)
  - Internet facilities for staff and students:** Broadband, Wireless network
  - Total number of class rooms:** 06
  - Class rooms with ICT facility:** 01
  - Students' laboratories:** 06
  - Research laboratories:** 07

39. **List of doctoral, post-doctoral students and Research Associates:**

- a) **Doctoral list from the host institution/university –**

- RA: 1. Dr. Sibaprasad Das  
2. Dr. Puspendu Barik

Doctorial students:

- Prosenjit Bhattacharyya
- Arpita Ghosh
- Nandini Nag
- Sanchari De
- Shailedra Kumar Singh
- Saswata Ghosh
- Nasir Alam
- Khairul Islam
- Arindam Ghosh
- Subhasish Roy
- Ritesh Ghosh
- Subrata Sarkar
- Aditya Sow Mandal
- Sambhunath Chatterjee.
- V. Senthil
- Nantu Karak
- Puspendu Barik
- Arup Ratan Mandal

19. Mahesh Dabbugalla
20. Lutful Kabir
21. Supriya Chatterjee
22. Arunava Mandal
23. Sandip Pan
24. Subrata Mukherjee
25. Achintya Kumar Saha
26. Santosh Kumar Dawn
27. Chiranjib Ghosh
28. Somnath Chowdhury
29. Debdeep Sinha
30. Rimi Labor
31. Bratati Das
32. Manoj Das
33. Prajna Mukherjee
34. Amitabha Satpathi
35. Suman Sarkar
36. Siddharth Rai
37. Gulam Ali
38. Amitabha Chowdhury
39. Debasish Roy
40. Amlan Rooj
41. Haradhan Mandal
42. Dhananjoy Bhakat
43. Dinesh Sarkar
44. Debabrata Pal
45. Arindam Biswas
46. Sampad Mandal
47. Chaitali Mondal
48. Mahasin Alam
49. Tanmay Sarkar
50. Sandip Bhowmick

**b) From other institutions/universities – None**

**40. Number of post graduate students getting financial assistance from the university: None**

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:
42. Does the department obtain feedback from
- faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback: Yes, Feedback is used to modify the academic curriculum.
  - students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback: No
  - alumni and employers on the programmes offered and how does the department utilize the feedback: No
43. List the distinguished alumni of the department (maximum 10):
- Prof. Amitabha Dutta, Emiretus Prof. of Calcutta University
  - Prof. Sayan kar, IIT, Kharagpur
  - Prof. Biswajit Paul, RRI, Bangalore
  - Prof. Munsu Golam Mustafa, SINP, Kolkata
  - Prof. Prasenjit Singha Deo, SNBNCBS, Kolkata
  - Prof. Utpal Chatterjee, Dept. of Physics, University of Virginia
44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:
- Special Lectures:**
- Prof. Kaushik Roy, IACS, Jadavpur, Kolkata, March 22, 2013
  - Dr. Sibaprasad Das, University of Valencia, April 10, 2011
  - Mr. Satyaki Ganguly, University of North Dame, USA, December 11, 2011
  - Prof. B.N. Dev, IACS, Jadavpur, Kolkata, August 12, 2013
45. List the teaching methods adopted by the faculty for different programmes:
- Lecture Method
  - Demonstration Method
46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored: The department meet regularly to discuss the progress and status of various projects including students performance, placement and research activities.
47. Highlight the participation of students and faculty in extension activities:  
Our students and faculties participate in the following extension activities:
- Gandhi Purnaho
  - Halakarshan, Briksharopan
  - Vasanta Utsava

- 4) Annual Sports
- 5) Study tour, picnic
- 48. Give details of “beyond syllabus scholarly activities” of the department:**
  - a) Organize workshops/ symposium
  - b) NET / GATE / JEST coaching
  - c) Give special lectures
  - d) Organize study tour
  - e) Watching the sky at night by Astronomical Telescope
- 49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not yet
- 50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**
- 51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**
  - a) Strengths :**
    - 1) Quality human resources: dynamic faculty members with national and international exposures and specialization on diverse areas; excellent teacher-student relationship
    - 2) Curriculum: Updated syllabus with elective and special papers on contemporary topics
    - 3) Research activity in various fields
    - 4) Good Departmental Library
    - 5) Networking facility
  - b) Weaknesses:**
    - 1) Lack of required number of Lab assistants
    - 2) Workshop and manpower
    - 3) Lack of Lab space & class-room space
    - 4) No collaboration with industries
    - 5) Lack of adequate number of office staff
    - 6) Lack of sufficient infrastructure
  - c) Opportunities:**
    - 1) Invite eminent speakers from India and abroad to deliver seminar lectures
    - 2) Guide students of other departments to carry out project works
    - 3) Offers various special papers
    - 4) Material preparation and characterization using XRD, TG-DTC facilities
    - 5) Theoretical modeling of nano-materials
    - 6) Sky watch - using Astronomical Telescope

**d) Challenges :**

- 1) Research in frontier areas
- 2) Research in interdisciplinary areas
- 3) Prepare students for different competitive examinations such as NET, GATE, JAM, JEST UPSC etc.
- 4) Establish collaboration with industries and enhance research activities in science & technology
- 5) Design innovative methods for teaching & learning
- 6) Design up-to-date curriculum for advanced studies

**52. Future plans of the department:**

- a) To increase research activities in the existing areas of research in the department.
- b) To increase collaborative research with internationally reputed institutes / industries
- c) To introduce new method of teaching
- d) To set up new experiments in UG and PG laboratories



## Evaluative Report of the Department of Statistics

1. **Name of the Department :** Statistics
2. **Year of establishment :** 1999
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** UG, PG, Ph.D.
5. **Interdisciplinary programmes and departments involved:** The faculties are actively engaged in research and consultancy with the departments like : botany, zoology, chemistry, economics , rural development and others.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** NA
7. **Details of programmes discontinued, if any, with reasons:** NA
8. **Examination System:** Annual/Semester/Trimester/Choice Based Credit System – Semester / Choice Based Credit System
9. **Participation of the department in the courses offered by other departments:**
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	1	1	1
Associate Professors	2	1	1
Asst. Professors	6	4	4
Others			

11. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**
  - a) **Name** : K. Chatterjee
  - Qualification** : M.Stat., Ph.D.
  - Designation** : Professor
  - Specialization** : Design of Experiments
  - No. of Years of Experience** : 34 years
  - No. of Ph.D./M.Phil. students guided for the last 4 years** : 01

- b) **Name** : S. S. Maiti  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Reliability Analysis  
**No. of Years of Experience** : 14 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- c) **Name** : A.Chakraborty  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Biostatistics  
**No. of Years of Experience** : 09 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- d) **Name** : T. Ghosh  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Reliability Analysis  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- e) **Name** : S.I. Maiti  
**Qualification** : M.Sc.  
**Designation** : Assistant Professor  
**Specialization** : Time Series  
**No. of Years of Experience** : 08 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- f) **Name** : S. Mukhopadhyay  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Applied Stat & Data Analysis  
**No. of Years of Experience** : 01 year  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors: Nil

13. **Percentage of classes taken by temporary faculty — programme-wise :** Since no temporary faculty has been engaged in the assessment period , the situation does not arise.

14. **Programme-wise Student Teacher Ratio :**

Course	Teacher : Student
BSc Sem I	1 : 27
BSc Sem II	1 : 27
BSc III	1 : 27
BSc IV	1 : 27
BSc V	1 : 22
BSc VI	1 : 22
BSA I	1 : 20
BSA II	1 : 20
BSA III	1 : 20
BSA IV	1 : 20
MSc I	1 : 24
MSc II	1 : 24
MSc III	1 : 24
MSc IV	1 : 24

15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	-	-	-
Administrative Staff	-	2	2
Others	-	-	-

16. **Research thrust areas as recognized by major funding agencies:** Industrial statistics (includes Statistical process control, design of experiment) and biostatistics.
17. **Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:**

Name of the project	Principal Investigator	Funding agency	National /International	Grants received
Inference on non-	Arindam	UGC	National	2 lakhs

standard data	Chakraborty			
Search and supersaturated designs	Angshuman Sarkar	UGC	National	2 lakhs

18. **Inter-institutional collaborative projects and associated grants**  
 a) **National collaboration: Nil**  
 b) **International collaboration: Nil**
19. **Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received: Nil**
20. **Research facility / centre with**  
 a) **state recognition : Nil**  
 b) **national recognition: Nil**  
 c) **international recognition: Nil**
21. **Special research laboratories sponsored by / created by industry or corporate bodies: Nil**
22. **Publications:**  
 a) **No. of papers published in peer reviewed journals (national/international):** – 62

Name of the faculty	National	International
K. Chatterjee	3	25
S.S. Maiti	6	10
A. Chakraborty	2	6
T. Ghosh	1	5
S. I. Maiti	0	4
S. Mukhopadhyay	0	1
S. Rana	0	4

- b) **Monographs:** – NA  
 c) **Chapters in Books:** – NA  
 d) **Edited Book:** - NA  
 e) **Books with ISBN with details of publishers: NA**  
 f) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.): NA**  
 g) **Citation Index — range / average: NA**  
 h) **SNIP: NA**

- i) **SIR:** NA
- j) **Impact Factor — range / average:** NA
- k) **h-index:** NA

23. **Details of patents and income generated:** Nil

24. **Areas of consultancy and income generated:** Nil

25. **Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:** Three

Faculty	Laboratories visited (National/ International)
K. Chatterjee	Perdue University
A. Chakraborty	Indiana University, School of Medicine, Indianapolis, USA
T. Ghosh	Florida State University, USA

26. **Faculty serving in**

- a) **National committees:**
- b) **International committees:**
- c) **Editorial Boards:**
- d) **Any other (please specify):**

S.S. Maiti, Member of Board of Studies in a) Burdwan University b) Gaurbanga University

27. **Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**

Name of the faculty	Recharging strategies (After 2009)
A. Chakraborty	Orientation (2009), Refresher(2011)
S.I. Maiti	Refresher(2010)
S. Mukhopadhyay	
S. Rana	Workshop(2011)

28. **Student projects:**

- a) **Percentage of students who have done in-house projects including interdepartmental projects:** 80%
- b) **Percentage of students doing projects in collaboration with other universities / industry / institute:** 20%

29. **Awards / recognitions received at the national and international level by**

- a) **Faculty:** Nil
- b) **Doctoral / post doctoral fellows:**

Rajiv Gandhi Fellowship for Doctoral fellows:

i) Sudhir Murmu

DST-INSPIRE Fellowship for Doctoral fellows:

i) Piyali Kundu

c) **Students: Nil**

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

Organized XII Annual Conference of Society of Statistics, Computer and Applications, on February 24-26, 2010

Organized National Seminar on Application of Statistics in Industry and Planning, during February 25-27, 2012

**31. Code of ethics for research followed by the departments: As per University rules.**

**32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
UG (2010-11)	VB CAT	07	04	80%	75%
UG (2011-12)		12	02	100%	100%
UG (2012-13)		09	02	100%	100%
PG (2010-11)	10	03	01	100%	100%
PG (2011-12)	08	01	01	100%	100%
PG (2012-13)	14	03	04	100%	100%
Ph.D (2010-11)	04	02	02	100%	100%
Ph.D (2011-12)	03	02	01	0	33%
Ph.D (2012-13)	04	00	00	0	0

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
BSc 1	88	10	2	0
BSc 2	90	8	2	0

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

- a) NET – 01
- b) SET – Nil
- c) Civil Service/ Defence Service – Nil
- d) Other Competitive Examination/Government Service – Nil

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	98
PG to M.Phil.	-
PG to Ph.D.	100
Ph.D. to Post-Doctoral	-
Employed	
• Campus selection	20
• Other than campus recruitment	60
Entrepreneurs	20

**36. Diversity of staff:**

<b>Percentage of faculty who are graduates</b> 100%	
of the same university	
from other universities within the State	85%
from universities from other States	15%
from universities outside the country	

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	
Ph.D.	
D.Sc.	
D.Litt	

**38. Present details of departmental infrastructural facilities with regard to**

- a) **Library:** Available
- b) **Internet facilities for staff and students:** Yes, Facilities for all
- c) **Total number of class rooms:** 04
- d) **Class rooms with ICT facility:** 01
- e) **Students' laboratories:** 02
- f) **Research laboratories:** 06

39. **List of doctoral, post-doctoral students and Research Associates:**
- a) **Doctoral list from the host institution/university –**
    - i) Sutapa Ghosh
    - ii) Piyali Kundu
  - b) **From other institutions/universities – Nil**
40. **Number of post graduate students getting financial assistance from the university: 03**
41. **Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** No such new program has been announced
42. **Does the department obtain feedback from**
- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Teachers and students discuss in meetings regarding the process of teaching-learning and on the basis of the feedback of the students, teaching methodology is being modified keeping in view the interest of the students.
  - b. **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** The students verbally communicate with the Head of the Department regarding their attitude to our staff, curriculum and teaching-learning process and it is discussed in the departmental committee and action is taken based on their feedbacks.
  - c. **alumni and employers on the programmes offered and how does the department utilize the feedback:** Alumni and employers do suggest some improvements on the programs offered by the department and these suggestions are taken care of to improve the curriculum.
43. **List the distinguished alumni of the department (maximum 10):**
- a) Dr. Mahendra Saha, Asstt. Professor, Central University of Rajasthan
  - b) Mr. Sukanta Pramanik, Asstt. Professor, Siliguri College
44. **Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**
- Special Lectures:**
- a) Professor Giri Narasimhan, International Institute of Florida, USA, 2009.
  - b) Profesor Alope Dey, Indian Statistical Institute, Delhi, 2010.
  - c) Professor Asoke K. Nanda, Indian Institute of Science Education Research, Kolkata, 2011.
  - d) Dr. Omkar Prasad Ghosh, National Sample Survery Office, West Bengal(North



Zone), 2013.

45. **List the teaching methods adopted by the faculty for different programmes:**None
46. **How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:** None
47. **Highlight the participation of students and faculty in extension activities:** None
48. **Give details of “beyond syllabus scholarly activities” of the department:** None
49. **State whether the programme / department is accredited / graded by other agencies? If yes, give details:** None
50. **Briefly highlight the contributions of the department in generating new knowledge, basic or applied:** None
51. **Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**
  - a) **Strengths :**
    - i) The department achieves the best quality teaching as far as practicable. The teachers devote a lot of time both inside and outside the class to grow conceptual potency within the student.
    - ii) Apart from the research penchant amongst the teachers is always facile activity throughout the year.
    - iii) A strong co-operation and bonding between students and teachers.
    - iv) Utmost attention is given with homely atmosphere to the students since the student population is comparatively small.
    - v) Beyond the usual syllabus, some additional things necessary for job and research (e.g. power point presentation) are also taught.
  - b) **Weaknesses:**
    - i) The department is lacking proper number of teachers as per UGC decorum.
    - ii) Being understaffed causes overloading of classes to the teachers. Henceforth sometimes it is hard to prepare the allocation of the class schedule.
    - iii) Beside accommodation is getting burgeoning problem now a days. Department requires bigger class rooms to accommodate increased number of students.
    - iv) Due to lack of technical staff, laboratory facilities are not properly provided to the students.
    - v) Inadequate research infrastructure.
  - c) **Opportunities:**
    - i) The department can be expanded at its level best. Because of the teaching quality to incline the student towards the greater application field of Statistics the departmental profile can be brim in the fullest.

- ii) The handy knowledge to common statistical packages can be imparted to the common technical people so that they can attain the utilization power of statistical tools.
- iii) The subject has impact on each of the interdisciplinary subjects. So department can take opportunities to interact with others if infrastructural facilities permit.
- iv) Department has scope to conduct inferential study based on complicated phenomena.
- v) There is ample opportunity to get involved in lucrative jobs.

**d) Challenges :**

- i) Basically all challenges can be marked with the proficient funding. More sophisticated instruments are required for the development of the research laboratories of our department as well as for class room teaching.
- ii) Unawareness of people about the subjects and its opportunities.
- iii) To motivate the students to take this subject to build their career.
- iv) To motivate the students to get involved in research work.
- v) To expose the students into industrial environment and administrative arena.

**52. Future plans of the department:**

- i) Taking into account the natural growth during the XIIth Plan Period, the faculty strength is expected to increase by 14. Thus, we, require large amount of the space for office rooms and usual common facilities for the faculties.
- ii) We do have regular visitors in this department as several of our faculty members are having collaborations with different universities/laboratories/institutions. Unfortunately, we cannot provide any workable office space to them.
- iii) Moreover, in these days statistics cannot be imagined without computation. So it is very much essential to introduce the computer in each semester of UG and PG courses. This department is working in this direction but handicapped to accommodate all the students because it currently have only two computer laboratories with 11 desktop computers in each. So not only the UG-PG students of Department of Statistics facing problems but also the Ph.D. students and the students of allied subjects and of choice based credit systems are facing serious problem. It really hampers them to getting their desired jobs in Industry.
- iv) In future we try to sort out these problems at the cost of our extreme effort so that students of our department would come out with flying colours in every edge of the society as well as country.

## Evaluative Report of the Department of Zoology

1. **Name of the Department :** Zoology
2. **Year of establishment :** 1965
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana (School Of Life Sciences)
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :** UG, PG, Ph.D.
5. **Interdisciplinary programmes and departments involved:** Yes, Department of Chemistry and Department of Botany
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:**
  - a) **National collaboration with other universities, industries and institutions**

Name of the Investigator	Title of the programme	Funding Agency
Santi P. SinhaBabu (PI) Samir Bhattacharya (Co-PI)	“Isolation, molecular characterization and biological evaluation of anti-diabetic principle(s) from a few Indianmedicinal plants” with Ramachandra Medical University, Chennai and East India Pharmaceutical Works Pvt. Ltd. Kolkata	DST
Samir Bhattacharya (CCPI) Surjya Kumar Saikia (Co-Investigator) RakeshKundu (Co-Investigator)	“Stock characterization, captive breeding, seed production and culture of Hilsa ( <i>Tenualosailisha</i> )” Collaborative partners: CIFRI, Barrackpore; CIFA, Kalyani Centre; CIBA, Kakdwip; CIFE, Kolkata Centre; NBFGR, Lucknow.	ICAR
Samir Bhattacharya (Mission Director) Shelley Bhattacharya (PI) SudiptaMaitra (Program Coordinator)	“North-East exploration for pharmaceutical” (a Plan Period Project for 5 years in collaboration with CSIR-NEIST, Jorhat)	CSIR

Name of the Investigator	Title of the programme	Funding Agency
Ansuman Chattopadhyay	“Isolation, characterization and anti-cancer property of endophytic fungal metabolites from North Eastern India” (DBT-TWINING Research Project in collaboration with North Eastern Hill University, Shillong).	DBT
Sudipta Maitra	“Attempt to conserve endangered catfishes of Arunachal hill streams by manipulating germ cell maturation”. (DBT-TWINING Research Project in collaboration with Rajiv Gandhi University, Itanagar).	DBT
Ansuman Chattopadhyay (PI) Shelley Bhattacharya (Co-PI)	“Polymer based green silver nanoparticle synthesis using plants from northeast India: toxicity and anticancer study”. (DBT-TWINING Research Project in collaboration with Tejpur University, Assam)	DBT

#### b) International collaboration

Name of the Investigator	Title of the programme	Funding Agency
Saumen Kumar Maitra	“Fish Farming Development in Nepal (FFDN)” (In collaboration with Norwegian University of Science Technology (NTNU); Fisheries Research Division, Nepal Agricultural Research Council (NARC); Kathmandu University, Aquatic Research Unit (Aquatic Ecology Center); Delhi University and Sweco-Groner)	The Norwegian Ministry of Foreign Affairs
Sudipta Maitra	Collaboration with Professor Suraj Unniappan, Department of Biology, York University, Canada for Neuroendocrine Research	-
Samir Bhattacharya	Collaboration with Dr. P.P. Banerjee, Georgetown University, Washington DC	

7. **Details of programmes discontinued, if any, with reasons:** NA
8. **Examination System:** Annual/Semester/Trimester/Choice Based Credit System – Semester System for both UG and PG
9. **Participation of the department in the courses offered by other departments:** Actively involved in the teaching programs of Integrated Science Education and Research Centre (ISERC)
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	02	<b>01</b>	<b>6</b>
Associate Professors	03	<b>02</b>	<b>4</b>
Asst. Professors	12	<b>11</b>	<b>4</b>
Others	-	<b>10</b>	<b>10</b>

11. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**

- a) **Name** : Arun Kumar Ray  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Fish Biology; Aquaculture; Fish Nutrition  
**No. of Years of Experience** : 34 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- b) **Name** : V. C. Joy  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Soil Ecology, Ecotoxicology Environmental Biology  
**No. of Years of Experience** : 33 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- c) **Name** : Panchanan Nath  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Fish Endocrinology and Reproductive

- Physiology of fish  
**No. of Years of Experience** : 32 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02
- d) **Name** : Saumen Kumar Maitra  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Endocrinology, Reproductive Biology, Chronobiology, Environmental Biology
- No. of Years of Experience** : 31 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 05
- e) **Name** : Santi Prasad Sinha Babu  
**Qualification** : M.Sc., M.Tech., Ph.D.  
**Designation** : Professor  
**Specialization** : Parasitology, Nematology and Neuropharmacology
- No. of Years of Experience** : 24 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 05
- f) **Name** : Santanu Ray  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Professor  
**Specialization** : Ecological modelling of mangrove and estuarine systems
- No. of Years of Experience** : 12 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 05
- g) **Name** : Ansuman Chattopadhyay  
**Qualification** : M.Sc., M.Phil., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Radiation Genetics and Chemical Mutagenesis
- No. of Years of Experience** : 17 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 06

- h) **Name** : Dipak Kumar Mandal  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Fish Chemosensory system, Heavy metal toxicology on fish  
**No. of Years of Experience** : 15 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- i) **Name** : Larisha M. Lyndem  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Associate Professor  
**Specialization** : Parasitology  
**No. of Years of Experience** : 12 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- j) **Name** : Samar Kumar Saha  
**Qualification** : M.A., Ph.D  
**Designation** : Associate Professor  
**Specialization** : Fish Biology & Fish Pathology  
**No. of Years of Experience** : 14 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03
- k) **Name** : Sudipta Maitra  
**Qualification** : M.Sc., Ph.D  
**Designation** : Assistant Professor  
**Specialization** : Fish Molecular Endocrinology and Reproductive Biology  
**No. of Years of Experience** : 09 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 04
- l) **Name** : Surjya Kumar Saikia  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Aquatic Ecology & Fish Biology  
**No. of Years of Experience** : 04 years  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02

- m) **Name** : Rakesh Kundu  
**Qualification** : M.Sc., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Cell Signaling  
**No. of Years of Experience** : 09 months  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : NA
- n) **Name** : Sutapa Mukherjee  
**Qualification** : M.Sc., M.Phil., Ph.D.  
**Designation** : Assistant Professor  
**Specialization** : Molecular Endocrinology  
**No. of Years of Experience** : 09 months  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : NA

**12. List of senior Visiting Fellows, adjunct faculty, emeritus professors:**

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./ M.Phil. students guided for the last 4 years
Samir Bhattacharya	M.Sc., Ph.D.	Emeritus Professor	Molecular Endocrinology and Cellular Signaling	41 years	3
Shelley Bhattacharya	M.Sc., Ph.D.	NASI Senior Scientist Platinum Jubilee Fellow	Molecular Mechanisms in Environmental Toxicology	41 years	4

- 13. Percentage of classes taken by temporary faculty — programme-wise** : No temporary faculty are involved
- 14. Programme-wise Student Teacher Ratio** : 10:1
- 15. Number of academic support staff (technical) and administrative sanctioned, filled and actual:** 10 (Two posts of Senior Laboratory Assistants, one Animal Keeper)



and two Laboratory attendants are lying vacant.)

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)			
Administrative Staff			
Others			

**16. Research thrust areas as recognized by major funding agencies:**

1. Molecular Endocrinology of Fish (thrust area under CAS program of UGC in the Department of Zoology)
2. Environmental Toxicology (thrust area under CAS program of UGC in the Department of Zoology)
3. Molecular Parasitology funded by DBT
4. Fish Biology (thrust area under CAS program of UGC in the Department of Zoology)
5. Environmental Biology (thrust area under CAS program of UGC in the Department of Zoology)
6. Indian Council of Agricultural Research (ICAR), Krishi Bhavan, New Delhi has launched a research network program to resolve the problem of diminished *Hilsa* migration through Indian coast. Department of Zoology has been identified as one of the members in this network.
7. Another important research program has been initiated by the Council of Scientific and Industrial Research (CSIR) under the headings of 'North-East Exploration for Pharmaceutical' (NEEP). Department of Zoology has been recognized by CSIR as one of the participating members.

**17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:**

Details of Research Grant received during the last five years (2008-2013)

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
Samir Bhattacharya	"Development of herbal drug for non-insulin dependent Diabetes mellitus"	50.15	DBT
Samir Bhattacharya	"Chemical Standardization	25.25	DST

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
	and biological evaluation with a view to increase efficacy of herbal medicines”		
Samir Bhattacharya	“To search anti-diabetic agent from genetically cloned plants”	10.00	NCPGR
Samir Bhattacharya (CCPI) Surjya Kumar Saikia (Co-Investigator) Rakesh Kundu (Co-Investigator)	“Stock characterization, captive breeding, seed production and culture of Hilsa ( <i>Tenuialosa ilisha</i> )”	159.7478	ICAR
Shelley Bhattacharya	“Apoptotic signals in hepatic stem cells : Induction by xenobiotics”	13.50	CSIR
Shelley Bhattacharya	“Isolation and Purification of C-Reactive Protein from <i>Achatina fulica</i> and Evaluation of its Biochemical and Functional Properties”	24.00	DST
Samir Bhattacharya (Mission Director) Shelley Bhattacharya (PI) Sudipta Maitra (Program Coordinator)	“North-East exploration for pharmaceutical” (a Plan Period Project for 5 years in collaboration with CSIR-NEIST, Jorhat)	214	CSIR
Shelley Bhattacharya (PI) Samir Bhattacharya (Co-PI) Ansuman Chattopadhyay (Co-	“Expression of an epigenetically silenced tumor suppressor gene RASSF1A in human cancer cells by Mahanine: A lesson from human	172.866	DST

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
PI) Sudipta Maitra (Co-PI)	prostate cancer cell study and a promise for human cancer treatment”		
Shelley Bhattacharya (PI)	“Mechanism of toxic action of xenobiotics in rat liver: Liver function disorder, (Autophagy vis-a-vis apoptosis)”	39.35	DST
Shelley Bhattacharya (PI) Samir Bhattacharya (Co-PI) Sudipta Maitra (Co-PI)	“A flavone glycoside compound isolated from <i>Cajanus cajan</i> induces the expression of bilirubin-ugt gene that reduces cellular bilirubin accumulation in liver cells”	29.38	CSIR
<u>Arun Kumar Ray</u>	<u>“Enzyme producing microbial symbionts and their use in formulation of plant waste and weed based feeds for carps”</u>	<u>20.37</u>	<u>ICAR</u>
<u>Arun Kumar Ray</u>	<u>“Mode of association of autochthonous bacteria in the gastrointestinal tracts of some freshwater fish and their identification”</u>	<u>7.00</u>	<u>UGC</u>
<u>Arun Kumar Ray</u>	<u>“Characterization and identification of phytase-producing bacteria from fish gut and their application in formulation of plant-based carp diets”</u>	<u>12.00</u>	<u>CSIR</u>
Panchanan Nath	“ <i>In vivo</i> effects of vitellogenin on gonadotropin and estradiol- 7 in the Indian	<u>14.00</u>	<u>DST</u>

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
	catfish, <i>Clarias batrachus</i> ”		
Panchanan Nath	“Advancement of sexual maturity by vitellogenin in fish: catfish as a model”	<u>11.00</u>	<u>UGC</u>
Saumen Kumar Maitra	“Melatonin-Maturation Inducing Hormone (MIH) Interactions in the Regulation of Oocyte-Maturation in an Indian Major Carp <i>Catla catla</i> ”	11.93	CSIR
Saumen Kumar Maitra	“Processing of Photic Signal in the Pineal Organ and Ovarian Functions in Carp <i>Catla catla</i> ”	24.38	DST
Saumen Kumar Maitra	“Role of Melatonin in Gonadal Maturation in Indian Carp <i>Catla catla</i> ”	23.08	DBT
Saumen Kumar Maitra	“Functional Characterization of Gastrointestinal Melatonin in Carp <i>Catla catla</i> ”	13.42	CSIR
Saumen Kumar Maitra	“Fish Farming Development in Nepal (FFDN)” (In collaboration with Norwegian University of Science Technology (NTNU); Fisheries Research Division, Nepal Agricultural Research Council (NARC); Kathmandu University, Aquatic Research Unit (Aquatic Ecology Center); Delhi University and	18,400,000 Norwegian Kroner)	The Norwegian Ministry of Foreign Affairs

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
	Sweco-Groner);		
S.P. Sinha Babu (PI) Sudipta Maitra (Co-PI)	“Acaciaside A from <i>Acacia auriculiformis</i> : a novel compound for the control of bancroftian filariasis”	45.810	DBT
S.P. Sinha Babu	“Curcumin-a potential compound for the control bancroftian filariasis”	17.15	CSIR
S.P. Sinha Babu (PI) Samir Bhattacharya (Co-PI)	“Product development of <i>Phyllanthus niruri</i> and <i>Glycine max</i> (L.) Merr., formulation for the management of diabetes and associated complications, its validation, standardization, preclinical and pharmacological evaluation” (In collaboration with Sri Ramachandra University, Chennai and M/s. East India Pharmaceutical Works Ltd., Kolkata)	65.35	DST
Santanu Ray	“Impact of mangrove detritus on nitrogen based model of detritivorous fish dynamics in Hooghly – Matla estuarine complex”	10.00	CSIR
Santanu Ray	“Time series and dynamic modeling of plankton organic carbon cycling at the marginal ice edge zone”		Svalbard Science Foundation in collaboration

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
			with NCAOR, Goa.
Ansuman Chattopadhyay (PI) Samar Kumar Saha (Co-PI)	“A highly efficient technique for induced breeding of Indian major carp”	17.52	West Bengal Department of Science & Technology
Ansuman Chattopadhyay	“Arsenic-induced genotoxicity and modulation of trace elements in mammalian cells”	6.93	UGC-DAE Consortium for Scientific Research; Kolkata Centre
Ansuman Chattopadhyay	“Isolation, characterization and anti-cancer property of endophytic fungal metabolites from North Eastern India” in collaboration with NEHU; Shillong.	37.96	DBT
Ansuman Chattopadhyay	“Study of Low Radiation Hypersensitivity (ARS) in mammalian normal and tumor cells”.	5.00	IUAC
Dipak Kumar Mandal	“Carp culture on the basis of insect food”	5.54	UGC
Dipak Kumar Mandal	“Effect of mercury on the olfactory organ of an Indian Major carp, <i>Labeo rohita</i> (Hamilton)”	As applicable	UGC-BSR RFSMS (Fellowship to Debasree Ghosh)
Dipak Kumar Mandal	“Effect of nonylphenol ethoxylate on the gonadal	As applicable	UGC Rajib Gandhi

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
	maturation of <i>Labeo bata</i> (Hamilton)”		Research Fellowship (Fellowship to Koushik Roy)
Dipak Kumar Mandal	“Morphological and functional characterization of the olfactory system and olfaction mediated behavioural study on freshwater fish”	As applicable	UGC Rajib Gandhi Research Fellowship (Fellowship to Ishita Samajdar)
Larisha M. Lyndem	“An <i>in vitro</i> treatment of medicinal plants of West Bengal on tapeworms”	7.56	UGC
Samar Kumar Saha	“Reproductive biology of piscine ectoparasite <i>Argulus</i> sp. with special emphasis on vitellogenesis”	9.31	UGC
Sudipta Maitra (PI) Shelley Bhattacharya (Co-PI) Samir Bhattacharya (Co-PI)	“Molecular mechanism involved In the regulation of perch ( <i>Anabas testudineus</i> ) oocyte maturation”	17.64	DST
Sudipta Maitra	“Attempt to conserve endangered catfishes of Arunachal hill streams by manipulating germ cell maturation”. (DBT-TWINING Research Project in collaboration	35.46	DBT

<i>Name of the Investigator</i>	<i>Title of the project and duration</i>	<i>Amount sanctioned (In Lakhs)</i>	<i>Funding Agency</i>
	with Rajiv Gandhi University, Itanagar).		
Sudipta Maitra	“Regulation of gonadotropin dependent oocytes maturational competence in catfish <i>Clarius batrachus</i> ”	6.91	UGC
Surjya Kumar Saikia (PI) Samar Kumar Saha (Co-PI)	“Evaluation of natural feed selectivity and trophic status of rohu ( <i>Labeo rohita</i> H.) for periphyton based aquaculture system”	5.36	UGC

### 18. Inter-institutional collaborative projects and associated grants

#### a) National collaboration:

<b>Name of the Investigator</b>	<b>Title of the project and duration</b>	<b>Amount sanctioned (In Lakhs)</b>	<b>Funding Agency</b>
Santi P. Sinha Babu (PI) Samir Bhattacharya (Co-PI)	“Isolation, molecular characterization and biological evaluation of anti-diabetic principle(s) from a few Indian medicinal plants” with Ramachandra Medical University, Chennai and EPIL, Kolkata	158.56 (65.35 lakhs is the Visva-Bharati component)	DST
Samir Bhattacharya (CCPI) Surjya Kumar Saikia (Co-Investigator) Rakesh Kundu (Co-Investigator)	“Stock characterization, captive breeding, seed production and culture of Hilsa ( <i>Tenulosa ilisha</i> )”	159.7478	ICAR
Samir Bhattacharya	“North-East exploration for pharmaceutical” (a Plan Period	214	CSIR



Name of the Investigator	Title of the project and duration	Amount sanctioned (In Lakhs)	Funding Agency
(Mission Director) Shelley Bhattacharya (PI) Sudipta Maitra (Program Coordinator)	Project for 5 years in collaboration with CSIR-NEIST, Jorhat)		
Saumen Kumar Maitra	“Fish Farming Development in Nepal (FFDN)” (In collaboration with Norwegian University of Science Technology (NTNU); Fisheries Research Division, Nepal Agricultural Research Council (NARC); Kathmandu University, Aquatic Research Unit (Aquatic Ecology Center); Delhi University and Sweco-Groner)	18,400,000 Norwegian Kroner)	The Norwegian Ministry of Foreign Affairs
Ansuman Chattopadhyay	“Isolation, characterization and anti-cancer property of endophytic fungal metabolites from North Eastern India” in collaboration with NEHU; Shillong	37.96	DBT
Sudipta Maitra	“Attempt to conserve endangered catfishes of Arunachal hill streams by manipulating germ cell maturation”. (DBT-TWINING Research Project in collaboration with Rajiv Gandhi University, Itanagar)	35.46	DBT

**b) International collaboration:**

Name of the Investigator	Title of the project and duration	Amount sanctioned (In Lakhs)	Funding Agency

Saumen Kumar Maitra	“Fish Farming Development in Nepal (FFDN)” (In collaboration with Norwegian University of Science Technology (NTNU); Fisheries Research Division, Nepal Agricultural Research Council (NARC); Kathmandu University, Aquatic Research Unit (Aquatic Ecology Center); Delhi University and Sweco-Groner)	18,400,000 Norwegian Kroner)	The Norwegian Ministry of Foreign Affairs
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**19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:**

**DST-FIST :**

- For DST-FIST Level I & II : Rs. 65.00 Lakhs and Rs. 325.00 Lakhs respectively.

**UGC-SAP/CAS :**

- For CAS-Phase I (01.04.2007-31.03.2012), total grants received = Rs. 70.00 Lakhs
- For CAS-Phase II (01.04.2012-31.03.2017), total grants received up to 31.03.2013 = Rs. 19.70 Lakhs

**20. Research facility / centre with**

a) **state recognition :** Nil

b) **national recognition:** Recognized as UGC-Centre for Advanced Studies in Zoology (since 2007)

c) **international recognition:** Nil

**21. Special research laboratories sponsored by / created by industry or corporate bodies:**

- Establishment of radioisotope research laboratory.
- Establishment of cell culture facility.

**22. Publications:**

a) **No. of papers published in peer reviewed journals (national/international):** – 162

**Professor Samir Bhattacharya**

Number of papers published in peer reviewed journals (national / international): 10 (National 00; International 10)

**Professor Shelley Bhattacharya**

Number of papers published in peer reviewed journals (national / international): 19 (National 01; International 18)

**Professor Arun Kumar Ray**

Number of papers published in peer reviewed journals (national / international): 13 (National 02; International 11)

**Professor Panchanan Nath**

Number of papers published in peer reviewed journals (national / international): 01 (National 00; International 01)

**Professor V.C. Joy**

Number of papers published in peer reviewed journals (national / international): 09 (National 00; International 09)

**Professor Saumen Kumar Maitra**

Number of papers published in peer reviewed journals (national / international): 12 (National 01; International 11)

**Professor Santi P. Sinha Babu**

Number of papers published in peer reviewed journals (national / international): 13 (National 01; International 12)

**Professor Santanu Ray**

Number of papers published in peer reviewed journals (national / international): 18 (National 00; International 18)

**Dr. Ansuman Chattopadhyay**

Number of papers published in peer reviewed journals (national / international): 09 (National 01; International 08)

**Dr. Dipak Kumar Mandal**

Number of papers published in peer reviewed journals (national / international): 08 (National 01; International 07)

**Dr. Samar Kumar Saha**

Number of papers published in peer reviewed journals (national / international): 07 (National 00; International 07)

**Dr. Larisha M. Lyndem**

Number of papers published in peer reviewed journals (national / international): 03 (National 00; International 03)

**Dr. Sudipta Maitra**

Number of papers published in peer reviewed journals (national / international): 11 (National 00; International 11)

**Dr. Surjya Kumar Saikia**

Number of papers published in peer reviewed journals (national / international): 16 (National 05; International 11)

**Dr. RakeshKundu**

Number of papers published in peer reviewed journals (national / international): 09 (National 01; International 08)

**Dr. Sutapa Mukherjee**

Number of papers published in peer reviewed journals (national / international): 04 (National 01; International 03)

**b) Monographs: – 02**

- i) **Soumen Kumar Maitra** acted as Guest Editor of “Pineal Gland & Melatonin” issue of *Journal of Endocrinology & Reproduction* (2012). ?
- ii) **Sudipta Maitra**. “Estrogen Receptors” (ISBN 978-3-659-32756-8); Publisher: LAP LAMBERT Academic Publishing, Heinrich-Böcking-Str. 6-8, 66121, Saarbrücken, Germany.

**c) Chapters in Books: – 06****Professor Saumen Kumar Maitra**

- i) **Soumen Kumar Maitra**. Carp: Habitat, Management and Diseases. Nova Science Publishers, Chapter-1 (ISBN: 978-1-62081-436-9) Inc., New York, USA, 2011
- ii) Indrajit Chowdhury and **Saumen Kumar Maitra**. Melatonin in the Promotion of Health. Published by Taylor & Francis Group, Chapter-1 (ISBN: 978-1-4398-3979-9) Boca Raton, Florida, USA, 2012

**Professor Santanu Ray**

- i) Joyita Mukherjee, Madhumita Roy, **Santanu Ray**, Phani Bhusan Ghosh and Angshuman Sarkar. Mechanisms of transformation of various forms of carbon and cycling pathways in the Hooghly estuarine system. In: *Estuarines*. Editors: Steve Jordon published by Nova Science publication, Chapter 6 pp. 93–114. (ISBN: 978-1-61942-083-0) NY, USA, 2012.
- ii) **Santanu Ray**. Exergy and its assessment in ecological system. In: *Recent Trends in Zoology with Special Emphasis on Animal Diversity, Fisheries and Genetics*, Editors: L. N. Neogi and S. K. Sou. Published by Levant Books, 2012.

**Dr. Ansuman Chattopadhyay**

- i) **1182. Vinyl fluoride**. Chattopadhyay A and Podder S (Wexler P) Encyclopedia of Toxicology. 3<sup>rd</sup> ed. Elsevier (In Press).

- ii) **Transgenic animals: new vista in toxicological research.** Podder S and Chattopadhyay A (Behera K). *Advanced Frontier on Biotechnology*. Jaya Publishing House, Delhi, India. ISBN: 978-93-82471-55-4.
- d) **Edited Book: 01**  
**Professor Saumen Kumar Maitra**  
 Guest Editor of “Pineal Gland & Melatonin” issue of *Journal of Endocrinology & Reproduction* (2012).
- e) **Books with ISBN with details of publishers: 06**  
**Professor Shelley Bhattacharya and Professor Saumen Kumar Maitra**  
 Chatteraj, A., Bhattacharya, S. and **Maitra, S. K.** “Photoinduction and Reproduction”. Lambert Academic Publishing, Saarbrücken, Germany, 2011.  
**Professor Santanu Ray**  
 Sandip Mandal, Samar Kumar Roy and **Santanu Ray**, An aquatic ecosystem model: Analysis of different states – goal function and mathematical aspects. **Lambert Academic Publishing**, pp- 106. (ISBN 978-3-659-27281-3) Germany, 2012.  
**Dr. Ansuman Chattopadhyay**  
 Genotoxicity of fluoride: modulation of endogenous glutathione level. Podder S, **Chattopadhyay A**, Bhattacharya S. 2012. **Lambert Academic Publishing, Saarbrücken Germany**. ISBN: 978-3-8473-4066-9.  
**Dr. Sudipta Maitra**  
**Sudipta Maitra**. “Estrogen Receptors” (ISBN 978-3-659-32756-8); **Publisher: LAP LAMBERT Academic Publishing**, Heinrich-Böcking-Str. 6-8, 66121, Saarbrücken, Germany.  
**Dr. Surjya Kumar Saikia**  
**S.K. Saikia** and D.N. Das. Laboratory hand book on basic ecology (soil, water, plankton and feeding ecology with special mention to periphyton, ISBN 978-1-940366-08-1, Science Publishing House, New York, USA, 2014.
- f) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.): 169**  
**Professor Samir Bhattacharya : 10**  
**Professor Shelley Bhattacharya : 19**  
**Professor Arun Kumar Ray : 13**  
**Professor Panchanan Nath : 01**  
**Professor V.C. Joy : 09**

**Professor Saumen Kumar Maitra : 12**

**Professor Santi P. SinhaBabu : 13**

**Professor Santanu Ray : 18**

**Dr. Ansuman Chattopadhyay : 09**

**Dr. Dipak Kumar Mandal : 08**

**Dr. Samar Kumar Saha : 07**

**Dr. Larisha M. Lyndem : 03**

**Dr. Sudipta Maitra : 11**

**Dr. Surjya Kumar Saikia : 16**

**Dr. Rakesh Kundu : 16**

**Dr. Sutapa Mukherjee : 04**

**g) Citation Index — range / average:**

**Professor Samir Bhattacharya : 453**

**Professor Shelley Bhattacharya : 345**

**Professor Arun Kumar Ray : 342**

**Professor Panchanan Nath : 10**

**Professor V.C. Joy : 80**

**Professor Saumen Kumar Maitra : 124**

**Professor Santi P. SinhaBabu : 576**

**Professor Santanu Ray : 82**

**Dr. Ansuman Chattopadhyay : 87**

**Dr. Dipak Kumar Mandal : 33**

**Dr. Samar Kumar Saha : 16**

**Dr. Larisha M. Lyndem : 43**

**Dr. Sudipta Maitra : 148**

**Dr. Surjya Kumar Saikia : 64**

**Dr. Rakesh Kundu : 157**

**Dr. Sutapa Mukherjee : 72**

**h) SNIP:**

**Professor Samir Bhattacharya : 4.70-1.063**

**Professor Shelley Bhattacharya : 1.406-0.966**

**Professor Arun Kumar Ray : 1.456-0.924**

**Professor Panchanan Nath : 0.924**

**Professor V.C. Joy : 1.463-0.536**

**Professor Saumen Kumar Maitra : 1.276-0.429**

**Professor Santi P. SinhaBabu : 1.318-0.927**

**Professor Santanu Ray : 1.808-0.587**

**Dr. Ansuman Chattopadhyay : 1.183-0.971**

**Dr. Dipak Kumar Mandal : 1.175-0.84**

**Dr. Samar Kumar Saha : 1.456-0.924**

**Dr. Larisha M. Lyndem : 1.318-0.887**

**Dr. Sudipta Maitra : 4.70-0.996**

**Dr. Surjya Kumar Saikia : 1.563-1.075**

**Dr. Rakesh Kundu : 4.70-0.996**

**Dr. Sutapa Mukherjee : 1.234-0.773**

**i) SIR:**

**Professor Samir Bhattacharya : 8.38-1.512**

**Professor Shelley Bhattacharya : 1.515-0.451**

**Professor Arun Kumar Ray : 1.053-0.667**

**Professor Panchanan Nath : 0.667**

**Professor V.C. Joy : 1.032-0.332**

**Professor Saumen Kumar Maitra : 1.162-0.243**

**Professor Santi P. SinhaBabu : 0.992-0.702**

**Professor Santanu Ray : 0.936-0.387**

**Dr. Ansuman Chattopadhyay : 1.066-0.689**

**Dr. Dipak Kumar Mandal : 0.537-0.547**

**Dr. Samar Kumar Saha : 1.053-0.667**

**Dr. Larisha M. Lyndem : 0.992-0.57**

**Dr. Sudipta Maitra : 8.32-0.451**

**Dr. Surjya Kumar Saikia : 1.063-0.618**

**Dr. Rakesh Kundu : 8.38-0.451**

**Dr. Sutapa Mukherjee : 2.723-0.515**

**j) Impact Factor — range / average:**

**Professor Samir Bhattacharya : 25.43-3.75**

**Professor Shelley Bhattacharya : 1.0-4.7**

**Professor Arun Kumar Ray : 0.79-1.87**

**Professor Panchanan Nath : 1.422**

**Professor V.C. Joy : 2.0**

**Professor Saumen Kumar Maitra : 0.5-5.576**

**Professor Santi P. SinhaBabu : 0.3-2.852**

**Professor Santanu Ray : 1.0-2.2**

**Dr. Ansuman Chattopadhyay : 0.8-5.22**

**Dr. Dipak Kumar Mandal : 1.0-2.2**

**Dr. Samar Kumar Saha : 21.98**

**Dr. Larisha M. Lyndem : 0.981-2.852**

**Dr. Sudipta Maitra** : 1.1-25  
**Dr. Surjya Kumar Saikia** : 0.9-2.2  
**Dr. Rakesh Kundu** : 1.1-25.0  
**Dr. Sutapa Mukherjee** : 1.195-4.651

**k) h-index:**

**Professor Samir Bhattacharya** : 18  
**Professor Shelley Bhattacharya** : 16  
**Professor Arun Kumar Ray** : 17  
**Professor Panchanan Nath** : 5  
**Professor V.C. Joy** : 6  
**Professor Saumen Kumar Maitra** : 5  
**Professor Santi P. SinhaBabu** : 13  
**Professor Santanu Ray** : 8.0  
**Dr. Ansuman Chattopadhyay** : 5  
**Dr. Dipak Kumar Mandal** : 2.0  
**Dr. Samar Kumar Saha** : 6  
**Dr. Larisha M. Lyndem** : 01  
**Dr. Sudipta Maitra** : 05  
**Dr. Surjya Kumar Saikia** : 5  
**Dr. Rakesh Kundu** : 4  
**Dr. Sutapa Mukherjee** : 3

**23. Details of patents and income generated:**

- a) An Indian Patent for a hepatoprotective and anti-jaundice compound, Carniloside, has been applied to the Department of Science & Technology (DST), Govt. of India, New Delhi (0136DEL2010).
- b) A new Vanadium compound showing anti-diabetic activity has been applied for International patent in collaboration with Tezpur University (PCT/IN2011/000386).
- c) A volatile oil from an endemic plant of Assam showing anti-cancer activity on lung cancer cells has been applied for an Indian Patent in collaboration with North-East Institute of Science & Technology, Jorhat Assam (0670DEL2011).

**24. Areas of consultancy and income generated:** Prof. Santanu Ray - TATA steel (1.0 lakh), C-STEP, Bangalore (1.0 lakh)

**25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**

*Samir Bhattacharya, Emeritus Professor*



- Invited to deliver a lecture in the School of Medicine, East Tennessee State University, USA on August 28, 2013 on the topic “Lipid induced insulin resistance, inflammation and immunity are associated events.”
- Delivered an invited lecture on April, 2009 at the North-East Institute of Science and Technology (A CSIR Institute) on the topic entitled “*Why we should concentrate our effort on Cancer Research?*”
- Delivered an invited lecture on April, 2009 at the Tezpur University on the topic entitled “*Insulino-mimetic activity of a Vanadium Compound VO(O<sub>2</sub>)<sub>2</sub> dmpz*”.
- Invited to deliver a lecture in the Platinum Jubilee Indian Science News Association on July 9, 2009 at the Bose Institute, Kolkata in the topic entitled “*Confronting the Problems of World Epidemic Disease, Diabetes Mellitus*”
- Delivered an invited lecture on August 12, 2009 at the University of Hyderabad, Hyderabad on the topic entitled “*Molecular Mechanism of Insulin Resistance and type 2 diabetes*”.
- Invited to deliver a lecture on August, 2009 at Tezpur University on the topic entitled “*Trials and Tribulations to Meet the Success in Herbal Medicine*”
- Delivered an invited lecture on October 20, 2009 at the Central Mechanical Engineering Research Institute (CMERI, A CSIR Institute), Durgapur on the topic entitled “*Journey of a normal cell towards abnormality*”.
- Invited to give a Platinum Jubilee lecture in International Conference Integrative Physiology: Modern Perspective and Platinum Jubilee Celebration of Physiological Society of India held at University of Calcutta on November 12, 2009. Title of the lecture was “*Molecular mechanism of lipid induced insulin resistance and type 2 diabetes*”.
- Invited to give a lecture in *INSA Platinum Jubilee International Symposium*” on November 21, 2009 at National Chemical Laboratory (NCL), Pune. Title of the lecture was “*Lipid induced phosphorylation of a protein kinase in insulin target cells causes insulin resistance: C901, a plant based compound, inhibits lipid action*”.
- Invited to give a lecture in 14<sup>th</sup> AICCG Meeting at Indian Institute of Chemical Biology (IICB), Kolkata on December 1, 2009. Title of the lecture was “*Lipid regulated gene expressions are associated with insulin resistance and type 2 diabetes*”.
- Invited to give a lecture in 42<sup>nd</sup> Annual Conference of the Indian Pharmacology Society (IPSCON) on December 9, 2009. Title of the lecture was “*Lipid induced insulin resistance: Detection of meaningful targets for therapeutic intervention*”
- Invited to give a lecture in XXXIII All India Cell Biology Conference on December 10, 2009 at University of Hyderabad, Hyderabad. Title of the lecture

was “*Insulin resistance in skeletal muscle cell is orchestrated by lipid induced molecules and its meaningful therapeutic intervention*”.

- Delivered an invited lecture in *CSIR Programme on Youth for Leadership in Science* on January 1, 2010 at the Central Mechanical Engineering Research Institute (CMERI, A CSIR Institute), Durgapur.
- Invited to deliver a lecture in the 6<sup>th</sup> Asian Network of Research on Antidiabetic Plants (ANRAP) International Seminar on January 15, 2010 at Dhaka, Bangladesh. The title of the lecture was “*Lipid induced deafening of insulin signals leads to insulin resistance and type 2 diabetes: therapeutic interventions by plant based compounds*”.
- Invited to give a lecture in the *International Symposium on Endocrinology and Reproduction: Molecular Mechanisms to Molecular Medicine* at Jawaharlal Nehru University (JNU), New Delhi on February 5, 2010 and title of the lecture was “*Deafening of insulin signals by lipid*”.
- Delivered the prestigious *N. R. Dhar Memorial Award Lecture* at University of Allahabad on February 6, 2010. The title of the lecture was “*Prospects of plant based chemical compounds in the amelioration of critical diseases like diabetes and cancer*”.
- Invited to give a lecture in the *Colloquium* series at Tata Institute of Fundamental Research (TIFR), Mumbai on February 17, 2010 and the title of the lecture was “*Molecular Mechanism of Insulin Resistance and Type2 Diabetes*”.
- Delivered an invited lecture in the *Series of Lectures in Modern Areas of Life Sciences* on March 13, 2010. The title of the lecture was “*Molecular Mechanism of Insulin Resistance and Type2 Diabetes*”.
- Delivered invited lecture in an International Symposium organized by Korean Endocrine Society (KES) during their Anniversary Meeting from April 29-30, 2011 in Seoul, Korea and the title of the lecture was “*Underlying Mechanism of Insulin Resistance*”.
- Invited by University of Cambridge MRC-LMB, UK to give a “Guest Lecture” on “*Molecular mechanisms of insulin resistance*”, on September 23, 2011.
- Invited to deliver a lecture in an International Symposium on “Recent Trends in Cellular and Molecular Signaling” which was held at NEST, Shankarpur, West Bengal from December 25-27, 2011. The title of the lecture was “*Fetuin-A: A new member in the family of insulin activity regulators*”.
- Indian National Science Academy (INSA), New Delhi organized a Symposium on “Discovery of Medicine: Involvement of North-East” during 77<sup>th</sup> Anniversary Meeting which was held at Tezpur University, Assam on December 30, 2011. The title of the lecture was “*Innovative alteration of a metal converts it for disease*”.

*amelioration*".

- "Wonders in Science" INSPIRE Science Camp, DST, Govt. of India organized by NIT Durgapur during June 26-30, 2011.
- "How to enjoy science? A lecture given to the students under the program of Indian Academy of Science held at Burdwan Raj College, Burdwan on August 16, 2011.
- "What can you do for cancer?" at Cachar Cancer Hospital and Research Centre. Silchar, Assam on September 7, 2011.
- One day seminar program organized by the National Academy of Science, India which was held at Sarat Sadan, Howrah on November 16, 2011. The title of the lecture was "Enjoy Science".
- Invited to deliver Lecture at the National Centre for Cell Science, Pune on July 27, 2012.
- Invited to deliver Lecture at the Indian Institute of Technology, Roorkee on August 01, 2012.
- Participated in the 3<sup>rd</sup> Indian National Seminar on Prevention & Management of Diabetes: Prospects & Challenges at R.G. Kar Medical College, Kolkata held from September 14–16, 2012.
- Delivered an Invited Lecture in the Annual Meeting of the Society of Biological Chemists at Science City, Kolkata on November 08, 2012.
- Delivered Keynote Lecture in the Annual Meeting of the Association of Physicians of India (APICON) held at Jorhat, Assam during December 21–22, 2012.
- Delivered lecture in the Annual Meeting of the Indian National Science Academy jointly organized by NCL and IISER, Pune during December 27–29, 2012.
- Delivered Keynote Lecture at "Animal, Veterinary and Fisheries Sciences" section of the 100<sup>th</sup> Indian Science Congress held in Kolkata on January 06, 2013.
- Organized and delivered a lecture at the International Symposium on Molecular Signaling in the Department of Zoology, Visva-Bharati, Santiniketan during February 18–21, 2013.

***Shelley Bhattacharya, NASI Senior Scientist Platinum Jubilee Fellow***

- Invited to deliver a lecture in the School of Medicine, East Tennessee State University, USA during August 2013.
- Delivered lecture on Children's Exposure to Arsenic through Breast Milk Pathway Invited lecture delivered at TRAC 2009, Toxicology and Risk Assessment from the Trenches April 27-30, 2009, Cincinnati, Ohio, USA.
- Delivered lecture on Apoptosis as a General Biomarker of Toxicity Stress in

Animals. Shelley Bhattacharya, Soumik Agarwal, and Atish Ray. Recent Trends in Life Science Researches vis-a-vis Natural Resource Management, Sustainable Development and Human Welfare, Vinoba Bhave University, Hazaribagh, June 27-29, 2009.

- Delivered lecture on Your Environment delivered on August 12, 2009 at the DST INSPIRE Internship Camp, 2009, Visva Bharati, August 9-14, 2009.
- Delivered lecture on Mechanism of Arsenic Toxicity in Fish. International Conference on Integrative Physiology: Modern Perspective and Platinum Jubilee Celebration of Physiological Society of India. November 12-14, 2009.
- Chairperson in Orator Lecture Session IV International Conference on Integrative Physiology: Modern Perspective and Platinum Jubilee Celebration of Physiological Society of India. Nov 12-14, 2009.
- Delivered lecture on Metallothionein sensitivity in *Lampito mauritii* exposed to Pb, Zn and fly ash Sulata Maity, Shelley Bhattacharya and Shibani Chaudhury II<sup>nd</sup> National Seminar on Earthworm Ecology and Environment and IX<sup>th</sup> National Symposium on Soil Biology and Ecology. Palli Siksha Bhavana, Visva Bharati, Santiniketan, November 21-23, 2009.
- Chairperson: Session 3- Soil Ecology and Eco-toxicology. II<sup>nd</sup> National Seminar on Earthworm Ecology and Environment and IX<sup>th</sup> National Symposium on Soil Biology and Ecology, Palli Siksha Bhavana, Visva Bharati, Santiniketan, November 21-23, 2009.
- Delivered lecture on Arsenic trioxide induced caspase mediated death in rat hepatocyte: A self signal amplification loop. Fogarty International Workshop on Molecular Epidemiology, Environmental Health and Arsenic Exposure Assessment. December 1-4, 2009.
- Delivered lecture on In vivo and in vitro expressions of arsenic toxicity in rat liver. 14th All India Congress of Cytology and Genetics at Indian Institute of Chemical Biology, Kolkata December 1-4, 2009.
- Delivered lecture: The Path to Success of Nation-Building: Ushering Creativity in Education. Workshop on "Creativity and Education" at Ramakrishna Mission Institute of Culture, Kolkata November 14-15, 2009.
- Delivered lecture: The Perils of Human Civilization: An Environmental Analysis Shelley Bhattacharya, Surrendra Paul Lecture, Ramakrishna Mission Institute of Culture, Dec. 29, 2009.
- Chairperson: Plenary Lecture given by Paul Rose, BBC Correspondent and also Chaired the Session I: Climate Change and Biodiversity, International Conference on Global Climate Change (ICGCC-2010), February 19-21, 2010, Organized by Centre for Environmental Studies and Integrated Science Education and Research,

Visva Bharati.

- Presidential Address delivered in the Inauguration Ceremony of a Series of Lectures in Modern Areas of Life Sciences Department of Botany, Visva Bharati, March 13, 2010.
- Chairperson in Technical session –III, Genetic Diversity, National Conference on Biodiversity & Natural Resource Utilization, Department of Botany, Visva Bharati, March 15, 2010.
- Basic elements of research leading to good publications. Invited Lecture NASI (Varanasi Chapter) Workshop on Writing Research Papers, BHU, Varanasi, June 10-11, 2011.
- Invited lecture; Environmental pollution; INSPIRE programme held at Dibrugarh University, Assam, July 20-22, 2011.
- Symposium on Recent Trends in Cellular & Molecular Signalling, December 25-27, 2011. Chaired the Session on- Molecular regulators of signaling processes on December 25, 2011. Invited lecture on Carbaryl Signals Apoptosis through Caspase Independent AIF mediated pathway.
- Platinum Jubilee Award Lecture on Acetylcholinesterase inhibition and detection of Acetylcholinesterase agents in water samples in the Section of Environmental Science at 99th Indian Science Congress, Bhubaneswar.
- Stress signals in Adult Stem Cells: Induction of Apoptosis by Carbaryl is mediated by a Caspase Independent AIF mediated pathway, AOSCE, Malaysia, March 3-7, 2012.
- Delivered Invited Lecture on Environmental Toxicology: Emerging Paradigms at Workshop on “Defining the role of women scientists and teachers in promotion and application of science and technology”, organized by NASI, Allahabad from October, 5–6, 2012.
- Delivered Invited Lecture on Advent of Animal Biotechnology and its Future Prospects at National Seminar organized by Indian Woman Scientist Association NASI, Allahabad on February 06, 2013.
- Delivered Invited Lecture on Generation and culture of adult rat hepatic stem cells: An alternate methodology for toxicological studies at National Seminar organized by Indian Woman Scientist Association NASI, Allahabad on February 06, 2013.
- Delivered Invited Lecture on Expression paradigms of pesticide toxicity in fish: Remembering Rachel Carson, at National Seminar on Echoes of Silent Spring: Human Impact on Environment, organized by the Department of Environmental Studies, Visva-Bharati, Santiniketan on March 09, 2013.
- Delivered Invited lecture (R. P. Chaudhuri Endowment Lecture) on Expression of

Xenobiotics Toxicity: Paradigms in Fish. at the Department of Zoology, Guwahati University, Guwahati 781014, Assam on March 20, 2013.

- Presented Paper: Sandip Mukherjee, Soma Barman, Shuvasree Sarkar, Narayan Chandra Mandal, Shelley Bhattacharya, “Anti-bacterial effect of C-reactive protein isolated from *Achatina fulica* (Bowdich)” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Sarmishtha Chatterjee, Ansuman Chattopadhyay, Shelley Bhattacharya, “Autophagy in rat hepatocytes is induced by mercury at a low concentration” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Shuvashree Sarkar, Sandip Mukherjee, Ansuman Chattopadhyay, Shelley Bhattacharya, “Arsenic induced changes in brain AChE profiles in *Danio rerio*” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Ritu Srivastava, Archya Sengupta, Sandip Mukherjee Sarmishtha Chatterjee, Muthammal Sudarshan, Anindita Chakraborty, Shelley Bhattacharya, Ansuman Chattopadhyay, “Effect of arsenic on Keap1-Nrf2 signaling pathway with reference to antioxidant responsive element driven genes related to glutathione metabolism in mouse liver *in vivo*” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Sandip Mukherjee, Shuvasree Sarkar, Sarmishtha Chatterjee and Shelley Bhattacharya, “*In vivo* lead hepatotoxicity in mice is reversed by a molluscan C-reactive protein purified from *Achatina fulica* (Bowdich)” at the 52<sup>nd</sup> Annual Meeting of the Society of Toxicology (SOT), held in San Antonio, Texas from March 10–14, 2013.

***Professor Arun Kumar Ray***

- Participated in the 9<sup>th</sup> Asian Fisheries and Aquaculture Forum in Shanghai, China on April 21 to 25, 2011 and presented paper.
- Delivered plenary lecture in the National Seminar on “Advances in Zoology and Life Processes” organized by Department of Zoology, Goa University, Goa on February 9 to 11, 2012.
- Delivered lead paper in the National Seminar on “Safe Food for All” organized by Palli Siksha Bhavana (Institute of Agriculture), Visva-Bharati, Sriniketan held on February 21-23, 2012.

- Delivered lecture as Invited Speaker on the topic entitled “Improvement of nutritive value of sesame (*Sesamum indicum*) oilseed meal in formulated diets for rohu, *Labeo rohita* (Hamilton) fingerlings after fermentation with two phytase-producing bacterial strains isolated from fish gut” in the National Workshop on Application of Solid State Fermentation Technology in Aquaculture held in the Central Institute of Freshwater Aquaculture (ICAR), Bhubaneswar on May 29, 2012.
- Delivered lectures as a Resource Person on the topics entitled (1) “Nutritional enrichment of plant ingredients by solid state fermentation with cellulase- and phytase-producing fish gut bacteria” and (2) “Microbiota associated with fish gut: A probiotic approach” in the ICAR sponsored Winter School on “Sustainable Fish Feeds and Nutraceuticals to grow health promoting fish” held in the Central Institute of Freshwater Aquaculture (ICAR), Bhubaneswar on February 4, 2013.

#### **Professor V.C. Joy**

- Presented paper: Roy, S. and Joy, V.C. 2009. Impact of litter quality on the feeding and assimilation efficiency of detritivore soil arthropods. 16<sup>th</sup> West Bengal Science Congress, Univ. of Burdwan, Feb. 28-March, 01 2009.
- Presented paper: Roy, G., Chakraborty, Y. and Joy, V.C. 2009. Effect of coal ash application on the growth and metabolism of beneficial soil microflora in red laterite soil. II National Seminar on Earthworm Ecology and Environment & IX National Symposium on Soil Biology and Ecology, 21-23 Nov. 2009, Sriniketan.
- Presented paper: Sahana, A. and Joy, V.C. 2009. Ecotoxicity of coal fly ash on the growth and reproduction of soil microarthropod *Cyphoderus javanus* Börner (Collembola: Insecta). II National Seminar on Earthworm Ecology and Environment & IX Nat. Symp. on Soil Biology and Ecology, 21-23 Nov. 2009, Sriniketan.
- Presented paper: Roy, S. and Joy, V.C. 2009. Ecological suitability of forest tree leaf litters for improving edaphic characteristics in afforested ecosystems. II National Seminar on Earthworm Ecology and Environment & IX Nat. Symp. on Soil Biology and Ecology, 21-23 Nov. 2009, Sriniketan.
- Presented paper: Joy, V.C. Invited Lecture: Soil microarthropods for safe utilization of fly ash in agro-ecosystems. National workshop on Use of vermicomposted fly ash in agriculture. Institute of Agriculture, Visva-Bharati, Sriniketan. 26 May, 2011.
- Presented paper: V.C. Joy, G. Roy, “Problems and prospects of fly ash utilization in laterite agricultural soil” in the Golden Jubilee Seminar on Advances in Agricultural Research Towards Food Security and Environmental Sustenance held

at the Institute of Agriculture, Visva-Bharati, Sriniketan during September 1–3, 2012.

- Presented paper: A. Sahana, V.C. Joy, “Comparison of sub-lethal toxicity of coal fly ash in laterite agricultural soil using antioxidant and stress enzyme parameters in *Cyphoderus javanus* Börner (Collembola)” in the Golden Jubilee Seminar on Advances in Agricultural Research Towards Food Security and Environmental Sustenance held at the Institute of Agriculture, Visva-Bharati, Sriniketan during September 1–3, 2012.
- Presented paper: A. Sahana, V.C. Joy, “Oxidative stress responses in Collembola (Insecta) for ecotoxicological evaluation of soil pollution”, at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.

#### ***Professor Panchanan Nath***

- Invited Lecture on “Evidences for the duality of gonadotropin in walking catfish, *Clarias batrachus*” In: International Conference on Integrative Physiology: Modern perspective & Platinum Jubilee Celebration of the Physiological Society of India, p107, Science City Convention Centre, Kolkata (November 12-14, 2009).
- Presented paper: Sarkar S, and Nath P (2009) Biological neutralization of LH activity by using its antiserum in catfish, *Clarias batrachus* In: National Symposium on Comparative Endocrinology and Reproductive Physiology: Current Advances, p174, Department of Zoology, The Institute of Science, Mumbai.
- Presented paper: Bhattacharya, D. and Nath P (2009) In vitro induction of oocyte maturation by catfish vitellogenin 2, In: National Symposium on Comparative Endocrinology and Reproductive Physiology: Current Advances, p175, Department of Zoology, The Institute of Science, Mumbai.
- Delivered a lecture on Vitellogenin influences catfish (*Clarias gariepinus*) body weight gain. in: International Symposium on Comparative Endocrinology and Stress Physiology, Department of Zoology, University of Kerala, Thiruvananthapuram ( February 16-18, 2012).
- Invited Lecture: Duality of gonadotropins in Indian catfish, *Clarias batrachus*. In: International Symposium on Comparative Endocrinology and Stress Physiology, Department of Zoology, University of Kerala, Thiruvananthapuram February 16-18, 2012.

#### ***Professor Saumen Kumar Maitra***

- Participated and delivered an Invited lecture in the International Conference on Novel Updates in Reproductive Biology and Comparative Endocrinology held at



University of Hyderabad, during January 19-21, 2009.

- Delivered two lectures in the Refresher Course in Life Sciences in the Department of Zoology, Utkal University, Bhubaneswar on 19<sup>th</sup> February, 2009.
- Participated, delivered an Invited lecture and Chaired a Scientific Session in the Symposium on Functional Biology: Comparative Aspects held in the Department of Zoology, University of Lucknow, Lucknow, India during 19th- 21st March 2009.
- Delivered a n Invited lecture and Chaired a Scientific Session in the “International Conference on Frontiers in Biomedical Sciences” held at Holly Cross College, Trichurapalli, August 26-28 2009.
- Delivered an Invited lecture in the Symposium on ‘Recent advances in Fish Reproduction’ held in the Department of Zoology Madras Christian College (Autonomous), Chennai during 28th-29th October 2009.
- Delivered an Invited lecture and Chaired a Scientific session in the “International Conference on Integrative Physiology: Modern Perspective & Platinum Jubilee Celebration of the Physiological Society of India” held during 12-14th November, 2009 at Science City Convention Centre, Kolkata.
- Delivered a State of the Art Lecture in the “National Symposium on Comparative Endocrinology and Reproductive Physiology: Current Advances” held in the Department of Zoology, The Institute of Science, Mumbai during 17th – 19th December 2009.
- Delivered a plenary lecture at the “Sixth Intercongress Symposium of the Asia and Oceania Society for Comparative Endocrinology (AOSCE)” held at Massey University, Palmerston North, New Zealand from 19 to 22 January 2010.
- Delivered Presidential Address and Chaired a Scientific Session in “International Symposium on Endocrinology and Reproduction: Molecular Mechanisms to Molecular Medicine” held in Jawaharlal Nehru University, New Delhi during February 4-6, 2010.
- Chaired a Scientific Session in “International Conference on Reproductive Health & 20th Annual Meeting of ISSRF” held in Department of Zoology, University of Rajasthan, Jaipur during February 8-10, 2010.
- Delivered a series of lectures for Graduate students on course B13020 in Advanced Physiology at the Department of Biology, Norwegian University of Technology and Science (NTNU), Trondheim, Norway during 10-15 May, 2010.
- Delivered a lecture in *DST-Sponsored INSPIRE Program* in Visva-Bharati, Santiniketan during 26-30 July, 2010.
- Delivered an Invited lecture in the Department of Biotechnology, Utkal University, Bhubaneswar during 7-8 September, 2010.

- Acted as Coordinator in a Session of CSIR-Sponsored Workshop on ‘Creativity in Education’ held at Ramakrishna Mission Institute of Culture, Kolkata during 27-28 November 2010.
- Delivered an Invited lecture in the Department of Zoology, University of Calcutta, Kolkata on 15th December 2010.
- Delivered an Invited lecture and Chaired a Scientific Session in the Physiology Section during 98<sup>th</sup> Session of Indian Science Congress held at SRM University, Chennai from January 3 to 7, 2011.
- Delivered an Invited lecture in the Department of Endocrinology, PG Institute of Basic Medical Sciences, University of Madras, Taramani, Chennai on 06 January, 2011.
- Delivered Presidential Address and Chaired a Scientific Session in “*International Symposium on Current Trends in Endocrine and Reproductive Health and 29<sup>th</sup> Annual Meeting of the Society for Reproductive Biology and Comparative Endocrinology*” held in Mysore University, Mysore during 10-12 February 2010.
- Delivered an Invited lecture in the Department of Zoology, School of Life Sciences, Bharathiar University, Coimbatore, Tamilnadu on 16<sup>th</sup> February, 2011.
- Delivered an Invited lecture and Chaired a Scientific Session in the *XXII National Symposium on Chronobiology*, held in Kurukshetra University, Kurukshetra during 15-17 March 2011.
- Delivered an Invited lecture in an *International Brainstorming Meet on Recent Advances in Fish Reproductive Physiology* held in the Central Institute of Freshwater Aquaculture, Kausalyaganga, Bhubaneswar on 16 August, 2011.
- Delivered an Invited lecture and Chaired a Scientific Session in the Physiology Section during 98<sup>th</sup> Session of Indian Science Congress held at SRM University, Chennai from January 3 to 7, 2011.
- Acted as Resource person and delivered a lecture in “International Brainstorming Meet on Recent Advances in Fish Reproductive Physiology”, held at Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar - 751 002 on 16 August, 2011.
- Delivered an Invited lecture in a Symposium under the auspices of UGC–SAP program in the Department of Zoology, University of Udaipur, Rajasthan on 29<sup>th</sup> and 30<sup>th</sup> September 2011.
- Delivered an Invited lecture in the sponsored National Level Seminar on Recent Trends in Zoology held in Jadavpur University on 2<sup>nd</sup> December, 2011.
- Delivered lecture in DST-Sponsored Innovation in Science Pursuit for Inspired Research (INSPIRE) Program in Visva-Bharati, Santiniketan during 12-16 December, 2011.

- Delivered lectures in DST-Sponsored Innovation in Science Pursuit for Inspired Research (INSPIRE) Program in Tripura University, Agartala, Tripura during 17-21 January, 2012.
- Delivered Presidential Address and Chaired a Scientific Session in “National Conference on Novel Aspects and Emerging Trends in Reproduction and Endocrinology & 30<sup>th</sup> Annual Meeting of the Society for Reproductive Biology and Comparative Endocrinology” held in Udaipur University, Udaipur during 30 January- 01 February 2012.
- Delivered a Plenary talk and Chaired a Scientific Session in the National Seminar on Advances in Zoology & Life Processes held in the Department of Zoology, Goa University, Goa during 09-11 February 2012.
- Delivered a State-of-the Art Lecture and Co-chaired a Scientific Session in the 7<sup>th</sup> Congress of the Asia-Oceania Society for Comparative Endocrinology held in Kuala Lumpur, Malaysia during 03-07 March 2012.
- Delivered lecture in Science Academies’ Lecture Workshop “Emerging Paradigms in Life Sciences” in Visva-Bharati, Santiniketan during November 19–20, 2012.
- Delivered lecture in DST-Sponsored Winter Camp under its Innovation in Science Pursuit for Inspired Research (INSPIRE) Program in Visva-Bharati, Santiniketan during December 10–14, 2012.
- Acted as a member of the National Advisory Committee, delivered an Invited Lecture and Chaired a Scientific Session in the International Conference ‘Global Meet of Biologists’, held in ICT Hyderabad during December 26–28, 2012.
- Delivered plenary talk in the International Workshop on Fish Farming in Nepal held in Kathmandu, Nepal during January 25–26, 2013.
- Delivered Presidential Address and Chaired a Scientific Session in ‘National Conference on Endocrinology and Reproduction: Innovative in Reproductive Biotechnology’ and 31<sup>st</sup> Annual Meeting of the Society for Reproductive Biology & Comparative Endocrinology” held in Karnataka University, Dharwad during February 11–13, 2013.
- Delivered an Invited Lecture in the Faculty Improvement Program in the Department of Zoology, Ranchi University on March 19, 2013.

***Professor Santi Prasad Sinha Babu***

- Participated and presented papers at the 21<sup>st</sup> National Congress of Parasitology held at the Department of Zoology, Punjab University, Chandigarh during November 14-16, 2009 ( The paper entitled “ Doxycycline and its possible role in the control of lymphatic filariasis” presented by Smt. P. Gayen, SRF (CSIR) awarded the best oral presentation).

- Nayak, A., Gayen, P., Saini, P., Maitra, S. and Sinha Babu, S.P. Albendazole-induced apoptosis in *Setaria cervi*. Presented at the 22nd National Congress of Parasitology held at the Dept. of Zoology, Kalyani University, Kalyani during October 30 to November 1, 2010.
- Saini, P., Nayak, A., Gayen, P., Maitra, S., Brahmachari, G. and Sinha Babu, S. P. Antifilarial activity of acaciaside A. Presented at the 22nd National Congress of Parasitology held at the Dept. of Zoology, Kalyani University, Kalyani during October 30 to November 1, 2010.
- Gayen, P., Nayak, A., Saini, P. and Sinha Babu S.P. Curcumin and its possible role in the control of lymphatic filariasis. Presented at the 22nd National Congress of Parasitology held at the Dept. of Zoology, Kalyani University, Kalyani during October 30 to November 1, 2010.
- Saini, P., Nayak, A., Gayen, P. Maitra, S., Brahmachari, G. and Sinha Babu, S.P. Isolation of acaciaside A from *Acacia auriculiformis* and its potential role in the control of lymphatic filariasis. Presented at the National Conference on “Emerging Trends in Natural Product Research” held at the School of Natural Product Studies, Jadavpur University, Feb. 12-13, 2011.
- Nayak, A. Gayen, P., Saini, P. and Sinha Babu, S.P. Curcumin induces apoptosis in *Setaria cervi*. Presented at the National Conference on “Emerging Trends in Natural Product Research” held at the School of Natural Product Studies, Jadavpur University, Jadavpur during February 12-13, 2011.
- Presented papers in 23<sup>rd</sup> National Congress of Parasitology, Anna University, Chennai, November 18-20, 2011.
- Delivered invited talk at recent trends in cellular and molecular signaling held at Shankarpur, Digha during December 25-27, 2011.
- Presented papers in 12th congress of the International Society for Ethnopharmacology held at Science City, Kolkata during Feb 17-19, 2012.
- Delivered lecture at the 5<sup>th</sup> Asean Congress of Tropical Medicine and Parasitology on “Improved efficacy of anti-*Wolbachia* antibiotic by albendazole: a new approach for the control of bancroftian filariasis”, held at University of Philippines, Manila during May 15–17, 2012.
- Presented paper: Prasanta Saini, Niladri Mukherjee, Suprabhat Mukherjee, Priya Roy, Santi P. Sinha Babu, “Molecular evidence of ursolic acid-induced apoptosis in the filarial worm *Setaria cervi* ” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented paper: Niladri Mukherjee, Prasanta Saini, Suprabhat Mukherjee, Priya Roy, Santi P. Sinha Babu, “Resveratrol, a possible remedy towards lymphatic

filariasis: A molecular and biochemical study” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.

- Presented paper: Suprabhat Mukherjee, Rakesh Kundu, Prasanta Saini, Niladri Mukherjee, Sandip Mukherjee, Samir Bhattacharya, Santi P. Sinha Babu, “Filarial parasite activates macrophage through Toll-like Receptor (TLR4)-mediated signaling pathway” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.

***Professor Santanu Ray***

- National Symposium on Dimensions of Animal Science Researches and Human Need – 7 September to 9 September, 2009, Presidency College, Kolkata.
- National Symposium on Theoretical and Mathematical Biology – 10 October to 11 October, 2009 – IISER, Pune.
- National Symposium on Impact of Climate Change on Aquatic Ecosystems – 18 February to 19 February, 2010 – Cochin University of Technology and Science, Cochin, Kerala.
- Biodiversity and its conservation - 5 March to 6 March, 2010 – P G Department of Zoology, Jamshedpur Women’s College, Jamshedpur.
- Workshop and Symposium on Mathematical Ecology – IISER, Kolkata, 14 December 2010.
- National Seminar on Science and Nature: Tagore’s vision and its relevance –12 March – 13 March, 2011, Siksha Bhavana, Visva-Bharati, Santiniketan.
- One day seminar on ecological modeling – 7 January, 2011 – Graduate School of Engineering, Yamaguchi University, Ube, Japan.
- Editorial training workshop for the journal editors nationwide (participated as keynote speaker) – 16 June 2011 - China population resources and environment, Qingdao, China, 15 June, 2011.
- International conference on mangroves for coastal area management – 7 August to 10 August 2011 - M. S. Swaminathan Research Foundation, Chennai, India.
- The 18<sup>th</sup> Biennial conference of International Society for ecological modeling for global change and coupled human and natural systems – Beijing, China, 20 September to 23 September, 2011.
- National seminar on Global warming – Burdwan Raj College, India, 23 November to 24 November, 2011.
- DST-INSPIRE Internship summer Camp – ISERC, Visva-Bharati, Santiniketan, 12 of 16 December, 2011.

- National seminar on Recent trends in zoology with special emphasis on animal diversity, fisheries and genetics – Kulti College, India, 28-29 November, 2011.
- Impact of climate change on mangrove ecosystem in South Asia – Inception workshop, Colombo, Sri Lanka, 16 January to 18 January, 2012.
- National seminar on Biodiversity and its Conservation – Motijheel College, Kolkata, 7-8 Feb., 2012.
- Ecosystem and Biodiversity: Bank of Natural Capital – The graduate school, college for women, Jamshedpur, 27 March, 2012.
- Participated in ‘Biodiversity and sustainability vis-à-vis economic development in the Northern parts of West Bengal’ held in Raiganj Surendranath Mahavidyalaya, Raiganj, Uttar Dinajpur, from August 26–27, 2012.
- Participated in the 4<sup>th</sup> International Ecosummit– ‘Ecological Sustainability – Restoring the planet’s ecosystem service’ held in Columbus, Ohio, USA, from September 30 to October 05, 2012.
- Acted as Resource Person for Refresher Course, Academic Staff College, Burdwan University, Burdwan, held on November 07, 2012.
- Keynote Speaker at the International Workshop on Ecological Modeling of Low Carbon Cities and International Society of Ecological Modeling–Pacific chapter meeting; delivered lecture on “Estimation of sustainability of an industrialized area using carbon cycle model”, during March 19–20, 2013.

***Dr. Ansuman Chattopadhyay***

- Podder A, Bhattacharya S, Chattopadhyay A, Roy MR. In vivo genotoxic effects of fluoride in mammalian cells. 2<sup>nd</sup> International Conference on Ecotoxicology and Environmental Sciences, Organized by Institute of Ecotoxicology and Environmental Sciences, December 14-16, 2009, Jadavpur University, Kolkata.
- Podder A, Bhattacharya S, Chattopadhyay A, Roy MR. Fluoride induced in vivo genotoxicity in mouse bone marrow cells. Golden Jubilee International Seminar Research in Zoology – Basic and Applied Organised by Department of Zoology, The University of Burdwan March 17-19, 2010., Burdwan.
- Chaired session at the National Seminar on Biodiversity Resources: Applications and Conservation – 11-12 December, 2010 Homi Bhabha Centre for Science Education, TIFR, Mumbai.
- Presented papers in 3<sup>rd</sup> International Conference on Ecotoxicology & Environmental Sciences, November 28-30, 2011, Panaji, Goa- 403001.
- Presented paper on Fluoride induced histopathology, genotoxicity and synthesis of stress protein in mice. Symposium on Recent Trends in Cellular and Molecular Signalling. December 25-27, 2011. Sankarpur, Digha.

- Presented paper on Fluoride induced hepato-nephrotoxicity and synthesis of stress protein in mice. National Seminar on “Emerging trends in biophysical researches” September 12-13. 2011 Ramananda College, Bishnupur.
- Presented Paper: Ritu Srivastava, Archya Sengupta, Sandip Mukherjee, Sarmishtha Chatterjee, Muthammal Sudarshan, Anindita Chakraborty, Shelley Bhattacharya and Ansuman Chattopadhyay. “Effect of arsenic on Keap1-Nrf2 signaling pathway with reference to antioxidant responsive element driven genes related to glutathione metabolism in mouse liver *in vivo*” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Sarmishtha Chatterjee, Ansuman Chattopadhyay and Shelley Bhattacharya. “Autophagy in rat hepatocytes is induced by mercury at a low concentration” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Shuvashree Sarkar, Sandip Mukherjee, Ansuman Chattopadhyay and Shelley Bhattacharya. “Arsenic-induced changes in brain AChE profiles in *Danio rerio*” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Debdip Mukhopadhyay and Ansuman Chattopadhyay. “Expression of toxicological biomarker genes related to oxidative stress in fluoride-treated adult zebrafish (female) liver” at the International Symposium on Molecular Signaling organized by the Department of Zoology, Visva-Bharati, Santiniketan from February 18–21, 2013.
- Presented Paper: Ritu Srivastava, Archya Sengupta, Sandip Mukherjee, Muthammal Sudarshan, Anindita Chakraborty, Shelley Bhattacharya and Ansuman Chattopadhyay. “Effect of arsenic on Keap1-p62-Nrf2 signaling pathway with reference to antioxidant responsive element-driven genes related to glutathione metabolism in mouse liver *in vivo*” at the Thematic Orientation Workshop on Trace Element Analysis and Radiological Sciences, held at Manipur University, Imphal, from March 12–14, 2013.

***Dr. Dipak Kumar Mandal***

- Paper presented in ‘8<sup>th</sup> Indian Fisheries Forum’ held at Kolkata from November 22-26, 2008.
- Paper presented in International conference on ‘Mother Earth: Save it for Future generation’ held at Environmental Science Department, Burdwan University from

February 13-15, 2010.

- Paper presented in Golden Jubilee International conference on 'Researches in Zoology- Basic and Applied' held at the Department of Zoology, Burdwan University from March 17-19, 2010.
- Presented paper in the UGC sponsored National level Seminar on "Recent Trends in Zoology with special emphasis on animal diversity, fishery and genetics" at Kulti College, Burdwan from 28-29 November 2011.
- Paper presented in 'International level Seminar on the Problems and Prospects in Aquaculture' at Vidyasagar University during March 1-3, 2013.

**Dr. Larisha M. Lyndem**

- Suman Kundu and L.M.Lyndem (2010). "An in vitro study of the medicinal plants of West Bengal on the cestode parasite *Raillietina tetragona*. Golden Jubilee International Seminar Researches in Zoology – Basic and Applied, University of Burdwan March 17-19, 2010, Burdwan.
- Presented a paper 'Anticestodal effect of medicinal plants from West Bengal' at 22<sup>nd</sup> National Congress of Parasitology, October 30-November 01, 2010. University of Kalyani, West Bengal.
- Presented a paper 'Anthelmintic effect of Cassia plant on the cestode parasite *Raillietina tetragona*' at the International Seminar on Recent trends in Zoology on March 8<sup>th</sup> 2011 at Jhargram Raj College, West Bengal.
- Presented a paper 'Comparative *in vitro* anthelmintic efficacy of Cassia plant extracts on the helminths of fowl intestine' at 12<sup>th</sup> International congress of Ethnopharmacology 17-19 February 2012 at Jadavpur University, Kolkata.
- Presented a paper 'Structural studies on the integument of *Hymenolepis diminuta* after in vitro treatment with Cassia plant extracts' at the 23<sup>rd</sup> National Congress of Parasitology, 18-20 November 2011 at Anna University Chennai.
- Presented paper "An in vitro broad spectrum anthelmintic potential of three Cassia plants on different intestinal helminthes" at National Conference on Utilisation of plant and Microbial resources held at Department of Botany, Visva-Bharati during March 17-18 2012.
- Research scholars participated in National Workshop on Capacity Building in Disease Control and Sustenance and presented paper "Comparative *in vitro* study on the anthelmintic efficacy of *Cassia* plant on helminthes of domestic fowl" in Mini Symposium on Parasitic Diseases at University of Allahabad during November 5-7, 2012.

**Dr. Samar Kumar Saha**

- Arun Guha and Samar Kumar Saha: (2009). "Life table of fish ectoparasite



- Argulus* sp. in a laboratory culture” (Oral). 21<sup>st</sup> National Congress of Parasitology, November 14-16, 2009, Department of Zoology, Panjab University, Chandigarh.
- Sanghamitra Das, Anirban Banerjee, S.P. Sinhababu and Samar Kumar Saha 2010. “Arsenicosis in thyroid and testes of albino mice, *Mus Musculus*”. National Symposium on Pesticide Stress on Target, Non-target Organism and Human Health, February 11-12, 2010, Department of Zoology, University of North Bengal, Siliguri.
  - Arun Guha and Samar Kumar Saha: 2010. “Life table & fecundity of *Argulus siamensis*: A cohort based study”. Golden Jubille International Seminar: Research in Zoology – Basic and Applied. March, 17 – 19, 2010. Department of Zoology, The University of Burdwan, Burdwan.
  - Arun Guha, Anirban Banerjee and Samar K. Saha: 2010. “Feeding apparatus of *Argulus siamensis* Wilson with comments on associated glandular structure”. National Seminar on Modern Biology and human Welfare. March 28-29, 2010. Department of Zoology, Berhampur University.
  - Samar K. Saha, Arun Guha, Anirban Banerjee and Samir Banerjee: 2010. “Feeding apparatus and associated glands in freshwater fish ectoparasite *Argulus siamensis* Wilson, 1926 (Branchiura)”. Golden Jubille International Seminar: Research in Zoology – Basic and Applied. March, 17 – 19, 2010. Department of Zoology, The University of Burdwan, Burdwan.
  - Samar K. Saha and Samir Banerjee: “Biphasic control of *Argulus siamensis* (Crustacea: Branchiura) with plant derivatives”. Golden Jubille International Seminar: Research in Zoology – Basic and Applied. March, 17 – 19, 2010. Department of Zoology, The University of Burdwan, Burdwan.
  - Sanghamitra Das, Anirban Banerjee, SP Sinhababu and Samar K. Saha. 2010. “Toxicity of Arsenic in thyroid and testis of Swiss albino mice, *Mus musculus*”. Golden Jubille International Seminar: Research in Zoology – Basic and Applied. March, 17 – 19, 2010. Department of Zoology, The University of Burdwan, Burdwan.
  - Presented Paper in an International level Seminar on “Problems and Prospects of Coastal Aquaculture and Application of Biotechnological Tools for Rural Development” organized by Department of Aquaculture Management & Technology, Vidyasagar University, Midnapore during March 1–3, 2013.

**Dr. Sudipta Maitra**

- Invited Lecture on the topic entitled, “Inhibition of PKA upregulates synthesis of MOS and promotes CDC25 activation during meiotic maturation in perch *Anabas testudineus* oocytes” at The National Colloquium on Recent Advances in

Molecular and Cellular Endocrinology, September 23-25, 2011, Dept. of Zoology, Benaras Hindu University, Varanasi, India.

- Invited Lecture on the topic entitled “Crosstalk between cAMP/PKA and MAP kinase signalling in the regulation of meiotic maturation in perch oocytes’ at International Symposium on Comparative Endocrinology and Stress Physiology (CESP2012). February 16-18, 2012, University of Kerala, Thiruvananthapuram, India.
- Acted as Joint Secretary and delivered an Invited Lecture in the International Symposium on Molecular Signaling, held in Visva-Bharati, Santiniketan during February 18–21, 2013.
- Delivered an Invited Lecture in the International Symposium on Comparative Endocrinology and Stress Physiology (CESP) held in University of Kerala, Thiruvananthapuram during February 16–18, 2012.

***Dr. Rakesh Kundu***

- Presented poster in the international symposium on “Perspective of Cell Signaling and Molecular Medicine” held at Bose Institute, Kolkata during November 2008.
- Presented poster in the INSA Platinum Jubilee International Symposium on Research in Molecular Medicine Based on Natural Resources and Traditional Knowledge held at the National Chemical Laboratory, Pune during November, 2009.
- Presented poster in the Symposium on Cellular & Molecular Signaling held at Shankarpur, Digha during December 26-27, 2011.

***Dr. Sutapa Mukherjee***

- Invited Seminar Lecture at the Departmental Seminar of Human Genetics Unit, Indian Statistical Institute, Kolkata, on 21<sup>st</sup> May, 2010.
- Presented paper entitled “Enhanced oxidative stress correlates with TLR4 expression in peripheral blood mononuclear cells of Down syndrome children” at the 81<sup>st</sup> Annual Meeting of The Society of Biological Chemists (India) and National Symposium on ‘Chemistry and Biology: Two Weapons against Diseases’ held at Science City Auditorium Complex, Kolkata during November 8–11, 2012.

**26. Faculty serving in**

**a) National committees:**

***Samir Bhattacharya, Emeritus Professor***

- Ø Member in DST-FIST committee in Biological Sciences.
- Ø Chairman DBT committee for Excellence in Aquaculture.
- Ø Member, CSIR EMR-II Committee for Animal Science and Biotechnology
- Ø Member in ICAR committee for assessing Central Agriculture University, NE

- Ø Chairman, CSIR-Research Council for IHBT, Palampur
- Ø Member in various committees of INSA, National Academy of Science, Allahabad

***Shelley Bhattacharya, NASI Senior Scientist Platinum Jubilee Fellow***

- Ø Member, Sectional Committee IX- Biochemistry and Biophysics, WB Academy of Science & Technology.
- Ø Member in Task Force of National Funding Agencies: DBT, UGC.
- Ø Examiner of CSIR NET Examination and Joint Biotechnology Admission Test conducted by JNU, New Delhi.

***V. C. Joy, Professor***

- Ø Vice-president, Indian Society for Soil Biology and Ecology.
- Ø Examiner of CSIR NET Examination.

***Saumen Kumar Maitra, Professor***

- Ø Elected Vice-President of the Society for Reproductive Biology and Comparative Endocrinology for the period 2006-2009.
- Ø Elected President, Society for Reproductive Biology and Comparative Endocrinology (SRBCE), 2009-2012.
- Ø Nominated as Member of the Board of Studies in Endocrinology, University of Madras for the period 2010-2013.
- Ø Nominated by the Govt. of West Bengal as a Member of the Executive Committee and Council of the 'West Bengal State Council of Science & Technology.'

***Santanu Ray, Professor***

- Ø Selected and represented Indian team as a part of International program: NyAlesud, Arctic from 15 June, 2009 to 18 July, 2009 for global climate change program.

***Ansuman Chattopadhyay, Associate Professor***

- Ø Nominated as Executive committee member of Association for Teachers in Biological Science (based at HBCSE, TIFR, Mumbai).
- Ø Acted as Resource Person for the "National Initiative for Undergraduate Students (NIUS)" programme of Homi Bhabha Centre for Science Education, TIFR, Mumbai.

***Dipak Kumar Mandal, Associate Professor***

- Ø External member of Under Graduate Board of Studies in Zoology, Burdwan University.

***Surjya Kumar Saikia, Assistant Professor***

- Ø Acting as a **Member, Board of Editors** in 'Indian Journal of Social and Natural

Sciences' published by Raigaunj Gour Banga Research Forum, West Bengal.

**b) International committees:**

***Shelley Bhattacharya, NASI Senior Scientist Platinum Jubilee Fellow***

- Ø Honorary Appointment as Professional Women's Advisory Board by the American Biographical Institute, 2002.

***Saumen Kumar Maitra, Professor***

- Ø Elected Secretary, Asia Oceania Society for Comparative Endocrinology (AOSCE), 2009-2012.

***Santanu Ray, Professor***

- Ø Secretary, Austral-Asia Chapter, International Society of Ecological Modelling (ISEM), Head Office, Maryland, USA.
- Ø Selected as an International Organizing Committee Member of the International Conference on "Ecological Modelling for Ecosystem Sustainability in the Context of Global Change", scheduled on October 28-31, 2013 at Toulouse, France.

***Ansuman Chattopadhyay, Associate Professor***

- Ø Acted as scientific observer from India in the, "International Biology Olympiad, 2010", held at Changwon, South Korea.

**c) Editorial Boards:**

***Samir Bhattacharya, Emeritus Professor***

- Ø Member of the Editorial Board of the journals:  
*PLoS One*  
*General and Comparative Endocrinology* (Academic Press, New York, USA).  
*Comparative Biochemistry & Physiology*, (Elsevier (Canada))  
*Journal of Biosciences* (Indian Academy of Sciences, Bangalore)

***Shelley Bhattacharya, NASI Senior Scientist Platinum Jubilee Fellow***

- Ø Member of the Editorial Board of the journals:  
*Toxicology and Industrial Health* (Sage Publication);  
*Indian Journal of Experimental Biology*, (CSIR).

***Arun Kumar Ray, Professor***

- Ø Member of the Editorial Board of the journal: *Acta Ichthyologica et Piscatoria* (Poland).

***V. C. Joy, Professor***

- Ø Member of Editorial Board of the *Journal of Ecotoxicology and Environmental Monitoring*.

Ø Member of the Editorial Advisory Board of the *Journal of Current Sciences*.

**Saumen Kumar Maitra, Professor**

- Ø Member of the Editorial Board of the *Journal of Endocrinology and Reproduction*.
- Ø Member of the Editorial Board of *PAVO*, the Journal of the Ornithological Society of India.
- Ø Editor of the volume entitled *Frontiers in Environmental and Metabolic Endocrinology*.
- Ø Guest Editor of “Pineal Gland & Melatonin” issue of the *Journal of Endocrinology & Reproduction* (2012).

**Santanu Ray, Professor**

- Ø Selected as one of the editors of Proposed Encyclopedia of Ecology (9 volumes are expected and total pages would be approx. 7200), published jointly by Elsevier, Academic and Pergamon press.
- Ø Associate Editor of "*Ecological Modelling – An International Journal on Ecological Modelling and System Ecology*" published by Elsevier, Netherlands (ISSN 0304-3800).
- Ø **Member of the Editorial Board of the following Journals:**
  - *Ecological Informatics* (Elsevier); (First and only member from India from November, 2011)
  - *Network Biology* (International Academy of Ecology and Environmental Sciences, ISSN 2220-8879)
  - *Computational Ecology and Software* (International Academy of Ecology and Environmental Sciences, ISSN 2220 - 721X)
  - *Journal of Ecosystem* (Hindawi publications)
  - *Chinese Journal of Population Resources and Environment* (Taylor and Francis)
  - *Biospectra–International Journal of Life Sciences* (Madhawi Shyam Educational Trust, Ranchi, Jharkhand, India)
  - *Journal of Theoretical and Experimental Biology – An International Journal on Basic and Applied Biology* (Elias Academic Publishers, India)

**Ansuman Chattopadhyay, Associate Professor**

Ø **Member of Editorial Board:** Science Education Review.

**d) Any other (please specify):**

**Samir Bhattacharya, Emeritus Professor**

Ø **Membership in Societies:** SBC, ISCA, President, AOSCE, Asian Fisheries

Society, Indian Branch, ZSC.

**Shelley Bhattacharya, NASI Senior Scientist Platinum Jubilee Fellow**

Ø **Reviewer of the following Journals:**

- *Indian Journal of Experimental Biology* (NISCAIR)
- *Journal of Biosciences* (Indian Academy of Sciences & Springer)
- *Proceedings of the INSA*
- *Toxicology and Industrial Health* (Sage publication)
- *Ecotoxicology Environmental Safety*

Ø **Membership in Societies:** SBC, ISCA, AOSCE, Asian Fisheries Society, Indian Branch, Executive Committee Member, Environmental Mutagen Society of India, ZSC, New York Academy of Sciences.

**Arun Kumar Ray, Professor**

Ø **Reviewer of the following Journals:**

- *Aquaculture* (Elsevier)
- *Aquaculture Research* (Blackwell)
- *Aquaculture Nutrition* (Blackwell)
- *Journal of the World Aquaculture Society* (Blackwell)
- *Bioresource Technology* (Elsevier)
- *Acta Ichthyologica et Piscatoria* (Poland)
- *Natural Product Radiance* (CSIR, India)
- *Israeli Journal of Aquaculture* (Bamidgheh, Israel)
- *Food and Chemical Toxicology* (Elsevier)
- *Proceedings of the Zoological Society* (Kolkata, Springer)

Ø **Membership in Societies:** Executive Committee, Asian Fisheries Society, Indian Branch; Asian fisheries Society, Manila, Philippines; Asian Fish Nutrition Network, Manila, Philippines.

**V. C. Joy, Professor**

Ø **Reviewer of the following Journals:**

- *Geoderma* (Elsevier)
- *Environmental Biology*
- *Entomon*

Ø **Membership in Societies:** Executive Committee member, Indian Society for Soil Biology and Ecology.

**Saumen Kumar Maitra, Professor**

Ø **Reviewer of the following Journals:**

- *Journal of Biosciences* (Indian Academy of Sciences, & Springer)
- Ø *Indian Journal of Experimental Biology* (NISCAIR)
- Ø *Indian Journal of Poultry Science*
- Ø *Proceedings of the Zoological Society*
- Ø *General and Comparative Zoological Science* (Elsevier)
- Ø *Comparative Biochemistry and Physiology* (Elsevier)
- Ø *Neurochemistry International* (Elsevier)
- Ø *Aquaculture Research* (Elsevier)
- Ø *Therapeutic Advances in Endocrinology and Metabolism* (SAGE Publications)
- Ø *Ecotoxicology and Environmental Safety* (Elsevier)
- Ø *Veterinary Clinical Pathology* (Wiley-Blackwell)
- Ø *Journal of Fish Biology* (Wiley Blackwell)
- Ø *African Journal of Environmental Science and Technology*
- Ø *Asian Fisheries Science Journal* (Selangor, Malaysia)
- Ø *Indian Journal of Biochemistry and Biophysics (CSIR)*
- Ø *Indian Journal of Physiology and Allied Sciences*
- Ø **Membership in Societies:** President, Indian Pineal Study Group; Vice President, All India Society for Reproductive Biology and Comparative Endocrinology; Executive Committee Member, Indian Society for Chronobiology, Executive Committee Member, Zoological Association of Burdwan, ISCA, ZSC, New York Academy of Sciences, Fellow, West Bengal Academy of Science and Technology, Fellow of the Society of Reproductive Biology and Comparative Endocrinology, Council Member of the Asia and Oceania Society for Comparative Endocrinology.

***Santi P. Sinha Babu, Professor***

Ø **Reviewer of the following Journals:**

- *Microscopy Research and Technique* (John Wiley and Sons)
- *Immunological Investigations* (Taylor & Francis)
- *Pharmaceutical Biology* (Informa Pharmaceutical Science)
- *Journal of Parasitic Diseases* (Springer)
- *Cell Proliferation*
- *BMC Cancer*
- Ø **Membership in Societies:** Indian Society for Parasitology; Indian Society for Nematology.

***Santanu Ray, Professor***

Ø **Reviewer of the following Journals:**

- *Ecological Modelling* (Elsevier, Netherlands)
- *Ecological Complexity* (Elsevier, USA)

- *Journal of Biological Systems* (World Scientific Publication Co., Canada)
- *BMC Ecology* (Biomedical Centre, Michigan, USA)
- *International Journal of Phytoremediation* (Taylor and Francis, USA)
- *Journal of Theoretical Biology* (Elsevier, Netherlands)
- *Mathematical and Dynamical Systems in Biological Sciences* (France)
- *Current Science* (Indian Academy of Science, Bangalore, India)
- *Research and Reviews in BioSciences* (Trade Science Inc., India)
- *Journal of Theoretical and Experimental Biology* (Elias Academic Publishers, India)
- *Science and Culture* (Indian Science News Association)
- *Climate Change* (Springer)
- *Ecological Engineering* (Elsevier)
- *Applied Mathematical Modelling* (Elsevier)
- *Ecological Informatics* (Elsevier)

**Ansuman Chattopadhyay, Associate Professor**

Ø **Member of Society:** Indian Society of Radiation Biology, Zoological Society of India

Ø **Reviewer of the following Journals:**

- *British Journal of Medicine and Medical Research* (SCIENCEDOMAIN International)
- *Cell Proliferation* (John Wiley and Sons)
- *International Journal of Medicine and Medical Sciences* (IJMMS)
- *Cell Biology Education* (American Association for Cell Biology)

**Dipak Kumar Mandal, Associate Professor**

Ø **Reviewer of the Journal:** *Polish Journal of Fisheries*

Ø **Membership of Society:** Inland Fisheries Society of India, Zoological Society of India, Environmental, Social and Biological Association of India

**Samar Kumar Saha, Associate Professor**

Ø **Reviewer of the following Journal:** *Zootaxa* (Magnolia Press)

**Sudipta Maitra, Assistant Professor (Senior Scale)**

Ø **Reviewer of the following Journals:**

- *Indian Journal of Experimental Biology* (CSIR-NISCAIR)
- *Proceedings of the Zoological Society, Kolkata, India* (Springer)

Ø **Membership in Societies:** Indian Society of Comparative Endocrinology.



**27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**

***Dipak Kumar Mandal, Associate Professor***

- Ø Participated in 23<sup>rd</sup> National workshop on Scanning Electron Microscopy held at USIC Burdwan University from March 24-27, 2009.
- Ø Participated in National workshop on “ Interaction of ionizing radiation with Biological system’ organized by UGC-DAE consortium for Scientific Research, Kolkata centre held at the Department Zoology, Visva-Bharati from March 29-30, 2010.
- Ø Participated in National Seminar cum exposition ‘Modern microscopes and their application’ held at USIC, Burdwan University from April 08 - 09, 2010.
- Ø Participated in UGC sponsored National Symposium on ‘Pollution: Disbalancing the Global Environment: Treats and prevention” held at Bolpur during 05-06 March 2011.
- Ø Participated in National Seminar on ‘Science and Nature: Tagore’s Vision and its Relevance.” Held at Siksha-Bhavana, Visva-Bharati during March 12-13, 2011.
- Ø Participated in the National Seminar on “Application of Statistics in the Biological Sciences and Engineering” held at PSB, Visva-Bharati from 10-11 December 2011.
- Ø Participated in the “1<sup>st</sup> National workshop for college teachers on application of Flow Cytometer, cell sorting and Imaging in Biological research held at Centre for Research in Nano-Science and Nanotechnology, Kolkata from 18-24 December 2011.
- Ø Participated in the hands on training on “Disease management and diagnostic in brackish water Aquaculture” Held at Kakdwip Research Centre of CIBA, Kakdwip from 13-17 February, 2012.
- Ø Participated in the National seminar on ‘Rabindrabichitra’ organized by Visva-Bharati Adhyapaka Sabha from February 11-12, 2012 at Visva-Bharati.
- Ø Participated in the ‘Fourth Refresher course in Life Sciences’ at ASC, Burdwan University during November 3–23, 2012.
- Ø Participated in ‘One day Workshop on National e-Governance Plan ( NeGP)’ held at Visva-Bharati on December 03,2012

***Larisha M. Lyndem, Associate Professor***

- Ø 5<sup>th</sup> National Workshop on Immunological Techniques. Centre for Fish Immunology, Lady Doak College, Madurai, Tamilnadu, 3<sup>rd</sup>-15<sup>th</sup> May 2010.
- Ø National Workshop on Interaction of Ionizing Radiation with Biological Systems, UGC-DAE consortium for scientific research, Kolkata and Department of Zoology, Visva-Bharati, Santiniketan 29<sup>th</sup>-30<sup>th</sup> March 2010.

- Ø Participated in the National Seminar on Science and Nature: Tagore's Vision and its Relevance at Visva-Bharati Santiniketan on 12<sup>th</sup> -13<sup>th</sup> March, 2012.
- Ø Participated in 20<sup>th</sup> National Congress of Parasitology "Food-borne Zoonoses of Parasitic origin: Molecular Taxonomy and Epidemiology" held at North Eastern Hill University, Shillong, Meghalaya (3-5 November 2012).

***Samar Kumar Saha, Associate Professor***

- Ø National Workshop on Interaction of Ionizing Radiation with Biological systems Organised by UGC- DAE Consortium for Scientific Research, Kolkata and Department of Zoology, Visva-Bharati, Santiniketan from 29 – 30 th March, 2010.
- Ø UGC sponsored National Level Symposium on Pollution: Disbalancing the Global Environment: Threats and Prevention – Organised by Faculty of Science, Bolpur College in collaboration with NIT, Durgapur from 5- 6 March, 2011.
- Ø International Seminar on Recent Trends in Zoology- Organised by the Post Graduate Department of Zoology Jhargram Raj College on 8th March, 2011.
- Ø UGC-Sponsored National Level Seminar "Recent Trends in Zoology with Special Emphasis on Animal Diversity, Fisheries and Genetics" Organised by Department of Zoology Kulti College, Kulti on 28-29 November, 2011.
- Ø National Conference on Application of Statistics in Life Science and Engineering. Organised by Palli Siksha Bhavana, Visva-Bharati on 10-11 December, 2011.
- Ø 1<sup>st</sup> National Workshop for College Teachers on Applications of Flow Cytometry, Cell Sorting & Imaging in biological Research, University of Calcutta, Kolkata on 18- 24 Dec. 2011.
- Ø Attended Science Academies' Education Programme Lecture Workshop on "Recent Development in Chemistry" organized by Department of Chemistry, Visva-Bharati, Santiniketan from November 29 to December 01, 2012.
- Ø Attended Workshop on National e-Governance Plan (NeGP) organized by the Computer Centre, Visva-Bharati, Santiniketan on December 03, 2012.
- Ø Participated in Winter School on "Sustainable Fish Feeds and Nutraceuticals to Grow Health Promoting Fish" organized by ICAR at the Central Institute of Freshwater Aquaculture, Bhubaneswar from January 15 to February 07, 2013.

***Sudipta Maitra, Assistant Professor (Senior Scale)***

- Ø INSA Platinum Jubilee International Symposium on Research in Molecular Medicine base on Natural resources and Traditional Knowledge. Nov. 21-23, 2009, National Chemical Laboratory, Pune.
- Ø 9th International Symposium on Reproductive Physiology of Fish, August 9-14, 2011, Kochin.
- Ø Golden Jubilee International Seminar in Researches In Zoology-Basic and

Applied, March 17-19, Dept. of Zoology, University of Burdwan.

- Ø Rediscovering 100 years of journey on the field of Immunology: Present status of immunological research in India (UGC Sponsored National Level Seminar). September 19-20, 2011, West Bengal State University, West Bengal, India.
- Ø Symposium on Recent Trends in Cellular and Molecular Signalling, December 25-27, 2011 under the joint organization of Indian Institute of Chemical Biology, Kolkata and Dept. of Zoology, Visva-Bharati at Shankarpur, Digha.
- Ø Participated in International Workshop on Applications of Flow Cytometry and Imaging in Cell Biology and Nano-Biotechnology, organized by the Centre for Research in Nanoscience and Nanotechnology, University of Calcutta, Kolkata from August 11–18, 2012.

***Surjya Kumar Saikia, Assistant Professor***

- Ø Participated ‘National Workshop on Interaction of Ionizing Radiation with Biological systems’ Organised by UGC- DAE Consortium for Scientific Research, Kolkata and Department of Zoology, Visva-Bharati, Santiniketan from 29 – 30th March, 2010.
- Ø Participated ‘National Conference on Application of Statistics in Life Science and Engineering’, 10<sup>th</sup> -11<sup>th</sup> December, 2011, Department of Agriculture Extension, Agriculture Economics and Statistics, Palli Siksha Bhavana, Visva Bharati, Santiniketan.
- Ø Participated in ‘Biodiversity and sustainability vis-à-vis economic development in the Northern parts of West Bengal’ held in Raiganj Surendranath Mahavidyalaya, Raiganj, Uttar Dinajpur, from August 26–27, 2012.
- Ø Participated in ‘International Symposium on Molecular Signaling’ in the Department of Zoology, Visva-Bharati, Santiniketan during February 18–21, 2013.

***Rakesh Kundu, Assistant Professor***

- Ø Attended Science Academies’ Lecture Workshop on “Emerging Paradigms in Life Sciences” held at the Department of Zoology, Visva-Bharati, Santiniketan during November 19–20, 2012.
- Ø Organized an International Symposium on Molecular Signaling in the Department of Zoology, Visva-Bharati, Santiniketan during February 18–21, 2013.
- Ø Acted as member in the International Symposium on Molecular Signaling in the Department of Zoology, Visva-Bharati, Santiniketan during February 18–21, 2013.

***Sutapa Mukherjee, Assistant Professor***

- Ø Attended National Hands-on Workshop on Genomics and Proteomics. DBT-BIF Centre, Department of Bioinformatics, West Bengal University of Technology, Kolkata; 15-16 March, 2011.

- ∅ Participated in Continued Medical Education (CME)-cum-Workshop on Stem Cell Therapy and Research. Netaji Subhash Chandra Bose Cancer Research Institute, Kolkata. 27-28 December, 2011.
- ∅ Attended Workshop on Bioinformatics (WBI'12). Centre for Soft Computing Research, Indian Statistical Institute, Kolkata. 15-17 February, 2012.
- ∅ Participated in a One Day National Symposium on “Genetic Analyses of Complex Traits”, held at the Indian Statistical Institute, Kolkata on September 15, 2012.
- ∅ Participated in the 5<sup>th</sup> Annual Meeting of The Cytometry Society, India, and National Symposium on “Cytometry and its Role in Tackling Infectious Diseases” and the 13<sup>th</sup> Indo-US Workshop on Advanced Flow Cytometric Techniques, organized by the Centre for Research in Nanoscience and Nanotechnology, University of Calcutta, Kolkata during October 14–17, 2012.
- ∅ Attended the 3<sup>rd</sup> International Cancer Research Symposium held at Swissotel, Kolkata during December 19–21, 2012.
- ∅ Acted as Member of the Organizing Committee of the International Symposium on Molecular Signaling in the Department of Zoology, Visva-Bharati, Santiniketan during February 18–21, 2013.
- ∅ Participated in an Awareness Workshop of NFBSFARA organized by the Indian Council of Agricultural Research at the National Institute of Research on Jute and Allied Fibre Technology, Kolkata during August 23-24, 2013.

**28. Student projects:**

- a) **Percentage of students who have done in-house projects including interdepartmental projects: 25%**
- b) **Percentage of students doing projects in collaboration with other universities / industry / institute: 0.5%**

**29. Awards / recognitions received at the national and international level by**

a) **Faculty:**

*Samir Bhattacharya, Emeritus Professor*

- ✓ **First N. R. Dhar Memorial Lecture Award** at University of Allahabad on February 6, 2010.
- ✓ Prestigious **Professor S. C. Mahalanobis Memorial Oration Award** for the year 2012 from the Physiological Society of India.
- ✓ Professor Samir Bhattacharya was awarded the prestigious **Professor S. C. Mahalanobis Memorial Oration Award** for the year 2012 from the Physiological Society of India.
- ✓ Professor Samir Bhattacharya was awarded the prestigious **CSIR Technology Award 2012**.

**Saumen Kumar Maitra, Professor**

- ✓ Received the '**GMB Award of Excellence in Integrative & Comparative Biology**' (2012) for outstanding achievement in biology as biologist.
- ✓ Professor Saumen Kumar Maitra received the '**GMB Award of Excellence in Integrative & Comparative Biology**' (2012) for outstanding achievement in biology as biologist.

**Santanu Ray, Professor**

- ✓ Awarded grant from Czech Academy of Sciences to visit as a **Research Scientist** at Czech Academy of Science

**Sudipta Maitra, Assistant Professor (Senior Scale)**

- ✓ **Visiting Fellow** under Centre with Potential for Excellence in Biodiversity in the Faculty of Life Science at Rajiv Gandhi University, Itanagar, Arunachal Pradesh, India.

**Rakesh Kundu, Assistant Professor**

- ✓ Awarded **Dr. D.S. Kothari Post-Doctoral Fellowship** from UGC, 2012.
- ✓ Awarded **Research Associateship (RA)** from CSIR, 2011.
- ✓ **Project Associate Level-I (CSIR)**, 2010 (**CSIR-NEIST, Jorhat, Assam**).
- ✓ Dr. RakeshKundu was awarded **Dr. D.S. Kothari Post-Doctoral Fellowship** from UGC, 2012.
- ✓ Dr. RakeshKundu was awarded **Research Associateship (RA)** from CSIR, 2011.

**Sutapa Mukherjee, Assistant Professor**

- ✓ Appointed Research Associate (**RA-CSIR-SCHEME**) from 06-09-2010 to 09-08-2011.
- ✓ Awarded Research Associate (**ICMR-RA**) from 10-08-2011 to 31.12.2012.
- ✓ Dr. Sutapa Mukherjee was awarded **Research Associateship (RA)** from ICMR, 2011.

**b) Doctoral / post doctoral fellows:**

- ✓ Joyita Mukherjee, a doctoral fellow, was selected in Southern African Young Scientists Summer Programme (SA-YSSP), in collaboration with International Institute of Applied Systems Analysis (IIASA), Austria and University of Free State, South Africa and completed project from December 2012-February 2013 on 'Robustness Measures of Aquatic Ecosystems using Network Analysis'.
- ✓ **INSA-Young Scientist Award (2012)**: Dr. SumanDasgupta
- ✓ **Dr. D.S. Kothari Post-doctoral Fellowship**: Dr. SudiptaMondal (2009),

Dr. AsamanjaChattoraj (2011), Dr. SantoshPoddar (2011), Dr. SumanDasgupta (2012), Dr. Rakesh Kundu (2012), Dr. SoumikAgarwal (2013), Dr. Atish Ray (2013)

- ✓ **CSIR-Pool Scientist/RA:** Dr. AsamanjaChattoraj (2011), Dr. Rakesh Kundu (2011)
- ✓ **DBT-Post doctoral Fellow:** Dr. PragyaGayen (CCMB)
- ✓ **CSIR-Post doctoral Fellow:** Dr. PragyaParamita Khan (CCMB)

c) **Students:**

- ✓ **NET-JRF & LS (Research Scholars):** Ms. Soma Seal, Mr. Suhash Dan, Mr. ChandanMallick, Ms. Priya Roy, Mr. Niladri Mukherjee, Mr. SantoshPoddar, Mr. AnanyaNayek, Mr. Md. Moniruzzaman, Mr. PradipMondal, Mr. KaziNurulHasan, Ms. RituSrivastava, Mr. DebdeepMukhopadhyay, Mr. Arnab Banerjee, Mr. Nabyendu , Mr. ShankhadipMondal, Mr. Debabrata Das, Mr. Soumyajit Pal, Mr. ArijitGanguly
- ✓ **NET-JRF & LS (Students):** Moumita Adak, Kishore Mondal, Santanabha Das, Chaitali Banerjee, Sohini Banerjee
- ✓ **GRE:** Ms. Prattusha Nandi, Mr. Sankhasubhra Das, Mr. ChayanMunshi
- ✓ **West Bengal Merit cum Means (2009-10):** Mr. Palash K. Pal

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

**International-level Seminar:** The Department organized “International Symposium on Molecular Signaling (ISMS-2013)” during February 18–21, 2013. “Molecular Signaling” was selected as the focal theme because signaling is central to the life of an organism and defects in the various signaling pathways are intricately involved in impairment of life processes. This international meeting was deemed to be highly relevant as to provide a platform for exchange of ideas and knowledge in valuable areas of research, particularly related to the critical diseases. The Symposium was inaugurated by the Hon’ble Vice-Chancellor Professor Sushanta Dattagupta at 2:00 p.m. on February 18, 2013 at Lipika Auditorium, Visva-Bharati. Professor Samir Bhattacharya acted as the Chairman and Professor Santi P. Sinha Babu was the Convener. The Dean, Faculty of Science, Professor Arun Kumar Ray also addressed the gathering. Following the Inaugural Program, Hon’ble Vice-Chancellor delivered a Special Lecture on the topic “Diffusion - Interdisciplinarity at its best.” Over the four days, the Symposium had twelve Technical Sessions

comprising 43 Symposium Lectures of 20 minutes each and 23 Invited Lectures of 15 minutes each. The Speakers were from different Institutes/Universities located in India as well as abroad. The majority of lectures dealt with different aspects of molecular signaling involved in the pathogenesis of various diseases viz. cancer, diabetes, cardiac hypertrophy, tuberculosis, arsenic toxicity, gastric ulcer, liver diseases and others. During the Poster sessions, about 40 students presented their posters which were thoroughly evaluated by jury and awards were given to the best posters. Cultural programmes were held in the evening. All distinguished scientists and researchers were unanimous in their opinion that the Symposium provided an excellent academic platform for understanding and unraveling the complexities of molecular signaling in human health and disease.

**Science Academies' Lecture Workshop** - The Department organized Science Academies' Lecture Workshop entitled "Emerging Paradigms in Life Sciences" during November 19–20, 2012. This was sponsored and supported by the Indian Academy of Sciences, Bangalore; Indian National Science Academy, New Delhi and The National Academy of Sciences, Allahabad, India. Dr. Sudipta Maitra acted as the Coordinator and Professor Shelley Bhattacharya was the Convener of the Workshop. The Lecture Workshop was inaugurated by the Hon'ble Vice Chancellor, Professor Sushanta Dattagupta at 10 a.m. on November 19, 2012 preceded by an introduction to the program by the Convener, and addresses by the Dean, Faculty of Science, Professor Arun Kumar Ray and the then Head of the Department of Zoology, Professor Saumen Kumar Maitra. The Hon'ble Vice-Chancellor encouraged such activities in the campus and stimulated the students to actively participate during the lecture sessions. He also dwelt upon the mandate of all three Science Academies in India to spread Science teaching from the Universities to the undergraduate colleges. The target audience of the workshop was the undergraduates who have just stepped in to the realm of life sciences. The Hon'ble Vice-Chancellor hoped that such workshops would drive the students to become researchers in basic sciences rather than taking up lucrative jobs. The workshop was planned for two days and there were 75 undergraduate students including two faculty members from Bolpur College (Burdwan University), a well known undergraduate college in the vicinity of Santiniketan. The undergraduate students of the Botany and Zoology departments and all

research scholars of the Department of Zoology also attended the workshop. The active participation of the students in all the lecture sessions of one and half hour each was evident from the highly energetic and lively interactions they had with the speakers. The topics of the lectures were varied. All students were unified in their opinion that the Lecture Workshop has boosted their interest in life sciences.

**31. Code of ethics for research followed by the departments:** As The Department follows the guidelines laid by the Institutional Ethics Committee for animal experiments and handling involved in academic and research programmes.

**32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
B.Sc. (2009-10)	(Through VB-CAT)	22	12	100%	100%
M.Sc. (2009-10)	110	20	12	100%	100%
B.Sc. (2010-11)	(Through VB-CAT)	20	12	100%	100%
M.Sc. (2010-11)	120	24	14	100%	100%
B.Sc. (2011-12)	(Through VB-CAT)	31	08	100%	100%
M.Sc. (2011-12)	84	22	21	100%	100%
B.Sc. (2012-13)	(Through VB-CAT)	22	17	100%	100%
M.Sc. (2012-13)	86	26	17	100%	100%

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
B.Sc. (2009-10)	50	50	00	00



M.Sc. (2009-10)	60	40	00	00
B.Sc. (2010-11)	50	50	00	00
M.Sc. (2010-11)	60	40	00	00
B.Sc. (2011-12)	50	50	00	00
M.Sc. (2011-12)	60	40	00	00
B.Sc. (2012-13)	50	50	00	00
M.Sc. (2012-13)	60	40	00	00

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

NET: 1 (2008); 2 (2009); 2 (2010); 3 (2011); 1 (2012)

GATE: 2 (2008); 3 (2009); 2 (2010); 1 (2011); 1 (2012)

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	99%
PG to M.Phil.	5%
PG to Ph.D.	10%
Ph.D. to Post-Doctoral	3-4%
Employed	-
<ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	
Entrepreneurs	-

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	18%
from other universities within the State	82%
from universities from other States	18%
from universities outside the country	0%

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: None**

**38. Present details of departmental infrastructural facilities with regard to**

**a) Library:**

- Area in (Sq. meters) quoted for the library: **1250 sft.**

- Is there separate provision for Reading Room? **No**
  - Total No. of books: **1395+30+10=1435**
  - Total Number of books purchased during the year: **41**
  - Total Number of Periodicals: **03**
  - Total Number of Periodicals purchased during the year: **Nil**
  - Total Number of Readers: **232 (All teachers, research scholars and students of the Department)**
  - Total Number of Books and Periodicals issued: **Books are regularly issued to teachers and research scholars**
- b) **Internet facilities for staff and students:** LAN connectivity and Wi-Fi
- c) **Total number of class rooms:** 6 lecture rooms
- d) **Class rooms with ICT facility:**
- e) **Students' laboratories:** 02
- f) **Research laboratories:** Individual laboratory for each faculty
39. **List of doctoral, post-doctoral students and Research Associates:**
- a) **Research Associate:** 02
- b) **Post-Doctoral Fellow:** 01
- c) **Jr. / Sr. Research Fellow (Ad-hoc, in ongoing projects under teachers):** 45
40. **Number of post graduate students getting financial assistance from the university:** About 30% students qualify for the merit and means scholarship.
41. **Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:** Suggestions and feedback from faculty and students
42. **Does the department obtain feedback from**
- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Yes
- b. **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:**
- c. **alumni and employers on the programmes offered and how does the department utilize the feedback:**
43. **List the distinguished alumni of the department (maximum 10):**
- a) Dr. Pradip K. Chakraborti, FNA, FASc., FNASc., Deputy Director, Institute of Microbial Technology.
- b) Dr. N. R. Jana, distinguished scientist, National Brain Research Centre (a DBT Institute at Noida).

- c) Professor Alok Agrawal, Professor and distinguished scientist in USA.
  - d) Dr. Partha Banerjee, Professor and distinguished scientist in USA.
  - e) Professor Rakesh Tyagi, FNASc., School of Molecular Medicine, JNU.
  - f) Dr. Swapan De, Director, FDA, USA.
  - g) Dr. Mamata De, Director, FDA, USA.
  - h) Professor Bimal Nath, Head, Department of Zoology, University of Pune.
  - i) Professor Md. Jamaluddin, University of Texas, USA.
- 44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**
- Seminars/Lectures held at Seminar Hall, Department of Zoology, Visva-Bharati:**
- a) Professor Satinath Mukherjee, Institute of P.G. Madical Education, Kolkata delivered lecture on 'Dia-Obesity Management' on 30<sup>th</sup> January, 2011 at 3:00 p.m.
  - b) Professor Kjell J. Nilssen, Department of Biology, Norwegian University of Science and Technology, Norway, delivered lecture on 'Animal Survival Strategies at High (Arctic) Latitudes on 5<sup>th</sup> February, 2011 at 3:00 p.m.
  - c) Professor Debashish Chowdhury, Department of Physics, Indian Institute of Technology, Kanpur, delivered lecture on the topic 'From Living Machines to Machines of Life: Biological Phenomena as Machine-driven Processes' on 26<sup>th</sup> March, 2013 at 11 a.m.
  - d) Professor Colin D. Butler, University of Canberra, Australia, delivered lecture on 'Global Environmental Change and Health: Challenging the Social Contract that Risks Civilization' on 3<sup>rd</sup> September, 2013 at 11 a.m.
- 45. List the teaching methods adopted by the faculty for different programmes:**
- a) Lectures (using blackboard, whiteboard, overhead projector and LCD projector)
  - b) Tutorial
  - c) Continuous assessment
  - d) Internal examinations/Class tests
  - e) Hands-on Practical demonstrations and experiments
  - f) Seminars/Projects during the final semester evaluated by experts
- 46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**
- a) **Teaching:**
    - i) Syllabi of Undergraduate (B.Sc. Hons.) and Postgraduate (M.Sc.) courses in Zoology have been thoroughly revised and implemented
    - ii) Semester system with revised syllabus implemented in M.Sc. course in Zoology with effect from 2009-2010 academic session.

- iii) Semester system with Choice Based Credit System (CBCS) implemented in B.Sc. (Hons) course in Zoology with effect from 2010-2011 academic session.
- b) New courses introduced:**
  - i) New courses namely Immunology, Molecular Biology, Animal Behaviour, Comparative Endocrinology, Methods in Biology, Ecological Modeling are introduced in addition to the conventional Zoology courses in the M.Sc. syllabus (both theory and practical courses).
  - ii) New special papers namely Environmental Toxicology, Molecular Cell Biology and Genetics, Fish and Fisheries, Entomology, Parasitology, and Ecology introduced in M.Sc. Zoology.
- c) Curriculum last revised & significant changes:**
  - i) B.Sc. (Hons) Syllabus in Zoology revised in tune with UGC model syllabus and implemented from 2007-2008 academic session onwards.
  - ii) M.Sc. Syllabus in Zoology thoroughly revised with Semester system and new special papers namely Environmental Toxicology, Molecular Cell Biology and Genetics, Fish and Fisheries, Entomology, Parasitology, Ecology introduced, syllabus implemented from 2009-2010 academic session onwards.
  - iii) Semester system and CBCS implemented in B.Sc. (Hons) course in Zoology from 2010-2011 academic session.
- d) Examination reforms last made with special features:**
  - i) Semester system of examination with 20% Internal Assessment in all Theory and Practical papers in M.Sc. Zoology course implemented from 2009-2010 session.
  - ii) Semester system of examination with 20% Internal Assessment in all Theory and Practical papers in B.Sc. (Hons) Zoology course implemented from 2010-2011 academic session.
- e) Teaching lab./equip./new facilities created:**
  - A. List of Classroom facilities added** (with UGC (plan, SAP, COSIST, CAS) and DST-FIST grants)
    - i) Renovation of laboratories for practical classes
    - ii) Renovation of research laboratories
    - iii) Renovation of animal house and working sheds
    - iv) Modernisation of 5 lecture rooms with overhead/LCD projectors and cushioned seats
    - v) Instrument rooms for sophisticated equipments
    - vi) Upgradation of Computer lab with internet / broadband / wi-fi facility

- vii) Modernization of Seminar Hall with state of art audiovisual facility
- viii) Seminar library and reading room facility
- ix) Tissue culture laboratory, Cold room
- x) Wet laboratories, continuous flow aquariums

**B. List of Equipments purchased**

- i) From FIST DST Phase II grant (2007-2012)
  - Ø Soxtec apparatus for C estimation
  - Ø Biorad PCR machine
  - Ø CN analyser
- ii) From UGC plan grants and Ad-hoc research projects (1994 onwards)
  - Ø Beckman floor model ultracentrifuge
  - Ø Beckman automatic LS system
  - Ø Wallach Gamma counter
  - Ø Hoeffler DNA sequencer
  - Ø Cryostat
  - Ø Beckman Benchtop Ultracentrifuge
  - Ø Biorad Gel documentation system with image analyser
  - Ø Olympus Inverted microscope
  - Ø -80 Deep freeze
  - Ø Biorad LP purification system
  - Ø Virtis Lyophilizer
- iii) From CAS grant (2007-2012)
  - Ø Computer based advanced protein chromatography system
  - Ø Real time PCR Applied biosystem
  - Ø Standby generator and accessories
  - Ø Microanalytical balance
  - Ø UV-Vis spectrophotometer

**47. Highlight the participation of students and faculty in extension activities:**

- a) Annual Study tours are regularly organized by the Department during December or January. Students from M.Sc. and B.Sc. courses actively participate. They are escorted by Teacher-in-charge and other teaching and non-teaching staff members.
- b) The Teachers, Non-teaching staff, Research scholars and the students actively participate in celebrating the 'Gandhi Punyaha', 'Ananda Bazar', 'Briksharopan' and other such occasions in true spirit in the Department and University campus every year.

**48. Give details of "beyond syllabus scholarly activities" of the department:**

The Department organized Science Academies' lecture workshop for spreading

awareness among the students towards science. The students were enlightened on various aspects of science by distinguished scientists, researchers and teachers. From time to time, the students are taken for visit to different well-established research institutes and laboratories. They are also taken for field studies for sample collection and specimen collection. They regularly are taken on study tours and excursions.

**49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** No

**50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**

In order to expose the students to latest information in the modern fields of Biology and to attract them into active scientific research, our curriculum contains provisions for student initiatives like write-ups, seminars, project works, field works. Thus they get exposed to the vast biological literature other than text books. The subject of Zoology cannot be learned without practical classes and direct experience with the vast array of animals, their external and internal morphology, structural and functional relationships with other animal groups, interaction with the environment and ecological strategies, and evolutionary trends in the anatomical, biochemical, genetic and molecular architecture. Therefore the existing syllabus gives more or less equal importance to both theoretical and practical courses. The department has trained persons to handle the live/preserved animal specimens used for teaching and research. The department takes all measures to ensure the ethical aspects of preparing the animals for class and research purposes. The existing syllabus contains the minimum use of only easily available/cultivable groups of animals for practical demonstration and other experiments. Our students in undergraduate and postgraduate courses receive the best practical training not only in all aspects of Zoology but also in other branches of Life sciences like Biochemistry, Cell Biology, Genetics, Ecology, Immunology, and learn modern experimental techniques using sophisticated equipment. We proudly acknowledge that this type of advanced facilities could be created for the benefit of students only through the generous grants received from the UGC and DST for infrastructure development and by the hard labor of teachers.

A special achievement of our University in the field of international research:

The Nature Publishing Index ranks institutions according to the number of primary research articles they publish in Nature journals. *Nature* and its family of Nature-branded sister journals is world-renowned as the pre-eminent platform for publication of the very best international research. These rankings are based on the number of papers that were published within the last 12 months. These rankings only include papers that were published as research articles (Articles, Letters and Brief Communications) or reviews in *Nature* and/or Nature monthly research journals. The

index is updated weekly. According to the Index date range: 16-04-2012 to 15-04-2013 for Research Articles, Visva-Bharati ranked 179 among 725 Institutions/Universities in the Asia-Pacific region. The Department is proud of this achievement of our University in international research arena, which could be possible due to the following publication:

Durba Pal, Suman Dasgupta, Rakesh Kundu, Sudipta Maitra, Gobardhan Das, Satinath Mukhopadhyay, Sukanta Ray, Subeer S. Majumdar and Samir Bhattacharya. Fetuin-A opens toll gate for lipid-induced insulin resistance. *Nature Medicine* 18(8):1279–1285, 2012.

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**

**a) Major Strengths:**

- i) Competent faculty;
- ii) Student-friendly approach;
- iii) Excellent research output;
- iv) Grants from funding agencies;
- v) Good infrastructure.

**b) Major Weaknesses:**

- i) Technical staff wanting;
- ii) Generator back-up;
- iii) More classrooms required;
- iv) More laboratories required;
- v) Networking facility needs to be strengthened.

**c) Major Opportunities:**

- i) Periodically updated syllabus;
- ii) Designing effective curriculum;
- iii) Implementation of new methods of teaching;
- iv) New special papers introduced;
- v) Increased intake of students for in-house projects.

**d) Major Challenges:**

- i) To develop state-of-the-art infrastructure for research;
- ii) To acquire modern facilities for teaching and learning;
- iii) To establish animal house and fish room as per the standards laid down by the Govt. of India;
- iv) To strengthen international and national collaborations;
- v) To develop tie-up with industry.

**52. Future plans of the department:**

The Department of Zoology has a proud history of dedicated academic service for more than 45 years in teaching and research. The steady progress and development of the department is evident from our noteworthy achievements like the introduction of new courses of higher education, increase in the student intake capacity and faculty positions, interdisciplinary teaching and research in the frontier fields of Life Sciences, quantum of external funding for research, number of on-going research projects, number of Ph.Ds produced, number of research papers published in international and national journals, number of patents filed, and MOU signed for collaborative research with Research Institutes. The courses offered by the department at present are B.Sc. (Honours) and M.Sc in Zoology.

Our continued efforts in the coming years would be to build up this department to a centre of excellence with all modern facilities for teaching and research, to attract best students and researchers from all parts of the country and to provide quality education in this serene ashram campus of Santiniketan where the world makes a home in a single nest.



## Evaluative Report of Department of Computer and System Sciences

1. **Name of the Department:** Department of Computer and System Sciences
2. **Year of establishment:** 1998
3. **Is the Department part of a School/Faculty of the university?** Yes, Siksha-Bhavana
4. **Names of programmes offered:** B.Sc.(Hons.), B.Sc.(Allied), M.Sc., Ph.D
5. **Interdisciplinary programmes and departments involved:** Yes  
Research Methodology and Techniques (Computer Application) paper in Ph.D. Coursework is offered to all enrolled Ph.D. students under Science Faculty including Integrated Science.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** Not yet
7. **Details of programmes discontinued, if any, with reasons:** Not applicable
8. **Examination System:** Semester (Under Choice Based Credit System)
9. **Participation of the department in the courses offered by other departments:** Yes. In Allied Courses in Physics, Statistics and Mathematics (Siksha Bhavana), Tagore Studies (Rabindra Bhavana) and Environmental Sciences (Siksha Bhavana).
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	2	2	3 (1 under CAS)
Associate Professors	2	2	2 (1 under CAS)
Asst. Professors	6	5	4
Others	Nil	Nil	Nil

11. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:**
  - a) **Name** : Balaram Bhattacharyya
  - Qualification** : B.Sc.(Physics Hons), M.Sc(Physics), Ph.D. (Science),  
M.Tech (Computer Science & Data

- Processing)
- Designation** : Professor & Head
- Specialization** : Machine Learning, Data Mining, Bioinformatics, Color Image Processing
- No. of Years of Experience** : 21 years in teaching, 6 years in Ph.D and Post-doc
- No. of Ph.D./M.Phil. students guided for the last 4 years** : 01 (registered)
- b) **Name** : Alak Kumar Datta
- Qualification** : B.Sc. (Mathematics Hons), M.Sc. (Mathematics), Ph.D (Science)
- Designation** : Professor
- Specialization** : Approximation Algorithms, Graph Algorithms, Parallel Algorithms, VLSI Routing Algorithms
- No. of Years of Experience** : 20 years in teaching, 6 years in Ph.D and Post-doc
- No. of Ph.D./M.Phil. students guided for the last 4 years** : 1 with co-supervisor
- c) **Name** : Paramartha Dutta
- Qualification** : B.Stat (Hons.), M.Stat, M.Tech (Computer Science), Ph. D. (Engineering)
- Designation** : Professor
- Specialization** : Computational Intelligence, Machine Learning, Pattern Recognition, Image Processing, Quantum Dot Cellular Automata
- No. of Years of Experience** : 15 years in teaching, 5 years in Ph.D.
- No. of Ph.D./M.Phil. students guided for the last 4 years** : 2 Awarded + 5 Registered, 3 with co-supervisor
- d) **Name** : Utpal Roy
- Qualification** : B.Sc. (Physics Hons.) M.Sc. (Physics), Ph.D.(Science)
- Designation** : Associate Professor
- Specialization** : Interdisciplinary Research & Computer Science
- No. of Years of Experience** : 16 years in teaching, 7 years in Ph.D and Post-doc

- No. of Ph.D./M.Phil. students guided for the last 4 years** : 1 awarded + 1 submitted, both with co-supervisor + 3 registered
- e) **Name** : Tathagato Mukhopadhyay  
**Qualification** : B.Sc. (Physics Hons.), M.E. (Electrical Communication Engineering)  
**Designation** : Associate Professor  
**Specialization** : Cellular Wireless Networks  
**No. of Years of Experience** : 6 years in teaching, 9 years in Industry  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- f) **Name** : Kakali Datta  
**Qualification** : B.Sc. (Statistics Hons.), B.Tech. (Computer Science & Engg), M.E. (Computer Science & Tech.)  
**Designation** : Assistant Professor (Stage-II)  
**Specialization** : Quantum Cellular Automata  
**No. of Years of Experience** : 14 years in teaching  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- g) **Name** : Subhasis Banerjee  
**Qualification** : B.Sc. (Mathematics Hons.), M.Sc. (Statistics), M.Tech. (Computer Science)  
**Designation** : Assistant Professor (Stage-II)  
**Specialization** : Wireless Communication  
**No. of Years of Experience** : 11 years in teaching  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil
- h) **Name** : Sanchita Pal Choudhuri  
**Qualification** : B.Sc. (Mathematics Hons.), M.Sc. (Mathematics), M.Tech. (Computer Science)  
**Designation** : Assistant Professor (Stage-II)  
**Specialization** : Algorithmic Graph Theory  
**No. of Years of Experience** : 12 years in teaching  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

- i) **Name** : Madhusudan Paul  
**Qualification** : B.Sc. (Computer Science Hons.), M.Sc. (Computer Science), M.Tech. (Computer Science & Engg.)  
**Designation** : Assistant Professor  
**Specialization** : Computational Systems Biology, Complex Networks Theory, Machine Learning  
**No. of Years of Experience** : 1 year in teaching, 2 years in research  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : Nil

12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors:** Nil

13. **Percentage of classes taken by temporary faculty - programme-wise :** Nil

14. **Programme-wise Student Teacher Ratio:**

- a) UG (2012-2014) – 11:1  
b) PG (2013-2015) – 11:1  
c) Ph.D Course Work 2013 – 2:1

15. **Number of academic support staff (technical) and administrative sanctioned, filled and actual:**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)	Nil	Nil	Nil
Administrative Staff	Centrally provided	N.A.	2 (Office Assistant-1 and Peon-1)
Others	Nil	N.A.	Nil

16. **Research thrust areas as recognized by major funding agencies:** Not yet

17. **Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:** 3

- (a) Dr. Utpal Roy: Completed UGC funded project entitled, “*Statistical Approach for Segmentation of Color Image and Its Application for Text Extraction from Color Backgrounds*” during Feb, 2008- Feb, 2010 with total grant of Rs. 1.25 lakhs.  
(b) Prof. Paramartha Dutta: Completed DST funded project entitled “*Development of an Intelligent Recognizer of Component Analysis of Manhole Gas Mixture*”

in Collaboration with Prof. Hiranmay Saha, Bengal Engineering and Science University, Shibpur of amount **Rs. 33.00 lakhs** (approx.) during **October 2010** till **March 2013**.

- (c) Dr. Utpal Roy and Sri Subhasis Banerjee: Board of Research in Nuclear Science(BRNS), DAE funded in collaboration with Professor Bidyut Roy, BARC; *“Development of Track Tracing and Track Finding Algorithm for Charged Particles Produced in High Energy Antiproton Collision Experiments”* with total grant of **Rs. 16 lakhs** (approx.), for three years starting from the Financial year 2013-2014.

**18. Inter-institutional collaborative projects and associated grants**

**a) National collaboration:**

- (i) Prof. Paramartha Dutta: *“Development of an Intelligent Recognizer of Component Analysis of Manhole Gas Mixture”* in Collaboration with Bengal Engineering and Science University, Shibpur, of amount **Rs. 33.00 lakhs** (approx.).
- (ii) Dr. Utpal Roy (PI) and Sri Subhasis Banerjee(Co-PI): *“Development of Track Tracing and Track Finding Algorithm for Charged Particles Produced in High Energy Antiproton Collision Experiments”* in Collaboration Department of Atomic Energy(DAE), Board of Research in Nuclear Science(BRNS), with total grant of **Rs. 16 lakhs**.

**b) International collaboration: Nil**

**19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:**

Prof. Paramartha Dutta: Completed DST funded project entitled *“Development of an Intelligent Recognizer of Component Analysis of Manhole Gas Mixture”* in Collaboration with Bengal Engineering and Science University, Shibpur of amount **Rs. 33.00 lakhs** (approx.) during **October 2010** till **March 2013**.

**20. Research facility / center with**

- a) state recognition :** Nil  
**b) national recognition:** Nil  
**c) international recognition:** Nil

**21. Special research laboratories sponsored by / created by industry or corporate bodies: N.A.**

**22. Publications: (Faculty-wise)**

- a) No. of papers published in peer reviewed journals (national/international):**

**Dr. Alak Kumar Datta**

- i) A. Pal, T. N. Mandal, D. Kundu, **A. K. Datta** and R. K. Pal, “Algorithms for Generating Random Channel Instances for Channel Routing Problem”, International Journal of Applied Research on Information Technology and Computing (IJARITAC) (ISSN: 0975-8070), 2010. vol 1, no 1, pp 106-129
- ii) A. Pal, T. N. Mandal, D. Kundu, **A. K. Datta** and R. K. Pal, “Algorithms for Generating Random Channel Instances for Channel Routing Problem”, International Journal of Applied Research on Information Technology and Computing (IJARITAC) (ISSN: 0975-8070), 2010. vol 1, no 1, pp 106-129.
- iii) A. Pal, T. N. Mandal, **A. K. Datta**, R. K. Pal, and A. Choudhuri, “Approximate and Bottleneck High Performance Routing for Self-healing VLSI Circuits”, Proc. of 2nd IEEE International Workshop on Reliability Aware System Design and Test (RASDAT) (In conjunction with the 24th International Conference on VLSI Design), Chennai, India, Jan. 6-7, 2011.
- iv) A. Pal, T. N. Mandal, S. Saha Sau, **A. K. Datta**, R. K. Pal, and A. Chaudhuri, “Graphs – The Tool to Visualize the Problems in VLSI Channel Routing”, Assam University Journal of Science & Technology: Physical Sciences and Technology, ISSN: 0975-6572, vol. 7, no. II, pp. 73-83, 2011.
- v) A. Pal, S. Saha Sau, T. N. Mandal, **A. K. Datta**, R. K. Pal, and A. Chaudhuri, “A Graph based Reduced Area VLSI Channel Routing Algorithm with Floating Terminals”, Proc. of 3rd International Conference on Recent Advances in Mathematics, Technology and Management, BITM, Santiniketan, WB, India, Mar. 19-20, 2011.
- vi) A. Pal, S. Saha Sau, T. N. Mandal, **A. K. Datta**, R. K. Pal, and A. Chaudhuri, “A Graph based Algorithm to Minimize Total Wire Length in VLSI Channel Routing”, Proc. of 2011 IEEE International Conference on Computer Science and Automation Engineering (CSAE 2011), Shanghai, China, vol. 3, pp. 61-65, Jun. 10-12, 2011.
- vii) A. Pal, S. Saha Sau, T. N. Mandal, R. K. Pal, **A. K. Datta**, and A. Chaudhuri, “Yet an Efficient Algorithm for Computing Reduced Area VLSI Channel Routing Solutions with Floating Terminals”, Proc. of the 14th International Conference on Computer and Information Technology (ICCIT 2011), AIUB, Dhaka, Bangladesh, December 22-24, 2011.

**Dr. Paramartha Dutta**

- i) S. Bhattacharyya, U. Maulik and **P. Dutta**, “High speed target tracking by fuzzy hostility induced segmentation of optical flow fields”, International Journal on Applied Soft Computing, Vol. 9, No. 1, pp. 126 – 134, 2009.

- ii) Banerjee and **P. Dutta**, “Fuzzy-Controlled Intelligent and Robust Broadcasting (FIRB) in Ad Hoc”, International Transactions on Systems Science and Applications, Vol. 5, No. 1, pp. 44 - 59, 2009.
- iii) J. P. Singh and **P. Dutta**, “Temporal Modelling of Node Mobility in Mobile Adhoc Network”, International Journal of Computing and Information Technology, Vol. 8 No. 1 2010.
- iv) Banerjee, **P. Dutta**, “Fuzzy Controlled Source Initiated Multicasting (FSIM) in Ad Hoc Network”s, Lecture Notes in Computer Science, Vol. 5966/2010, pp. 55-71, doi: 1007/978-3-642-11659-9\_5, 2010.
- v) Banerjee, **P. Dutta**, “Binary Location Search-based Scalable Routing Protocol For Ad Hoc Networks”, International Journal of Computer Networks and Communications (IJCNC) Vol. 2 No. 5, September 2010
- vi) Banerjee, **P. Dutta**, “Reputation-based Attack Resistant Cooperation Stimulation (RACS) for Mobile Ad Hoc Networks”, International Journal of Artificial Intelligence and Applications, Vol. 1 Vo. 3, 2010
- vii) Banerjee, **P. Dutta**, “Fuzzy Controlled Route Discovery For Mobile Ad Hoc Networks”, International Journal of Engineering, Science and Technology, Vol. 2 No. 6, pp. 2337-2346, June 2010.
- viii) Banerjee, **P. Dutta**, “Fuzzy Controlled Adaptive and Intelligent Route (FAIR) Selection in Mobile Ad Hoc Networks”, European Journal of Scientific Research, Vol. 45 No. 3, September 2010
- ix) Banerjee, **P. Dutta**, “Fuzzy Controlled Localized Route-Repair (FLRR) for On-demand Routing Protocols in Ad Hoc Networks”, International Journal of Computer Applications, Vol. 7, No. 6, pp. 1169-1444, September 2010
- x) Banerjee, **P. Dutta**, “Link Stability and Node Energy Conscious Local Route-Repair Scheme for Mobile Ad Hoc Networks”, American Journal of Applied Sciences, Vol. 7(8), pp. 1129-1138, 2010
- xi) Banerjee, **P. Dutta**, “A Survey of Unicast Routing Protocols in Ad Hoc Networks”, International Journal of Advances in Science and Technology, Vol. 1 No. 3, 2010
- xii) S. De, S. Bhattacharyya and **P. Dutta**, “Efficient Gray Level Image Segmentation Using An Optimized MUSIG (OptiMUSIG) Activation Function”, International Journal of Parallel, Emergent and Distributed Systems pp. 1-39, 2010, <http://dx.doi.org/10.1080/17445760903546618>.
- xiii) K. Dasgupta, S. Bhattacharyya and **P. Dutta**, “Three-Dimensional Object Extraction Using A Three-Dimensional Self-Organizing Neural Network (3DSONN) and its Two-Dimensional Counterpart: A Comparative Study”, HETC Journal of Computer Engineering and Applications, 2010.

- xiv) S. Bhattacharyya, U. Maulik and **P. Dutta**, “Multilevel image segmentation with adaptive image context based thresholding”, Applied Soft Computing, vol. 11, No. 1, pp. 946-962, 2011.
- xv) Banerjee and **P. Dutta**, “Limited Area Route Discovery For Mobile Ad Hoc Networks”, Journal Of Scientific And Industrial Research, vol. 70, No. 4, pp. 264 – 269, 2011.
- xvi) Banerjee and **P. Dutta**, “An Efficient Method for Tracking Nodes (EMTN) in Mobile Adhoc Networks”, International Journal of Advances in Science and Technology, vol. 2, No. 3, 2011.
- xvii) D. Mukhopadhyay, S. Dinda and **P. Dutta**, “Designing and Implementation of Quantum Cellular Automata 2:1 Multiplexer Circuit”, International Journal of Computer Applications, vol. 25, No. 1, 2011.
- xviii) J. P. Singh and **P. Dutta**, “Temporal modeling of link characteristic in mobile ad hoc network”, International Journal of Computing and Information Technology, vol. 18, No. 3, pp. 143 – 154, 2011.
- xix) J. P. Singh and **P. Dutta**, “The Temporal Effect of Mobility on Path Length in MANET”, International Journal of Wireless Information Networks, vol. 19, No. 1, pp. 38 – 48, 2012.
- xx) Banerjee and **P. Dutta**, “Fuzzy controlled multi-hop adaptive clustering (FMAC) mobile ad hoc networks”, Scientific Research and Essays, vol. 7, No. 2, pp. 114 – 127, 2012.
- xxi) S. Dasgupta and **P. Dutta**, “An Energy Efficient Genetic Approach for Clustering of Wireless Sensor Network”, International Journal of Information Engineering vol. 2, Issue. 2, pp. 54 - 58, 2012.
- xxii) K. Dasgupta, J. K. Mandal, **P. Dutta**, “Hash Based Least Significant Bit technique for Video Steganography (HLSB)”, International Journal of Security, Privacy and Trust Management (IJSPTM), ISSN 2277-5498, Academy & Industry Research Collaboration Center (AIRCC), pp 1-11, April 2012 DOI: 10.5151/ijstpm.2012.2201.
- xxiii) K. Mondal, **P. Dutta** and S. Bhattacharyya, “Fuzzy Logic Based Gray Image Extraction and Segmentation”, International Journal of Scientific and Engineering Research, vol. 3, No. 4, pp. 1 – 14, 2012.
- xxiv) S. Bhattacharyya, U. Maulik and **P. Dutta**, “A Parallel Bi-Directional Self Organizing Neural Network (PBDSONN) Architecture For Color Image Extraction and Segmentation”, Neurocomputing, vol. 86, pp. 1 – 23, 2012.
- xxv) S. Dasgupta, **P. Dutta**, “An Energy Efficient Genetic Approach for Clustering of Wireless Sensor Network”, International Journal of Information Engineering (IJIE), Vol. 2, No. 2, pp 54-58, Jun 2012.



- xxvi) V. K. Ojha, **P. Dutta**, and H. Saha,. “Performance Analysis Of Neuro Genetic Algorithm Applied On Detecting Proportion Of Components In Manhole Gas Mixture”, International Journal of Artificial Intelligence & Application, vol. 3, No. 4, pp. 83-98. 2012. DOI : 10.5121/IJAIA.2012.3406
- xxvii) S. Dasgupta and **P. Dutta**, “A Democratic Head Election Strategy for Clustering in Wireless Sensor Network”, International Journal of Computer Applications (0975 – 8887) vol. 54, No.16, pp. 32 – 36, 2012.
- xxviii) V. K. Ojha and **P. Dutta**,. “Performance Analysis of Neuro Swarm Optimization Algorithm Applied on Detecting Proportion of Components in Manhole Gas Mixture”, Artificial Intelligence Research, vol. 1, pp. 31 – 46, 2012. DOI: 10.5430/JNEP.V1N1PX.
- xxix) D. Mukhopadhyay and **P. Dutta**, “Quantum Cellular Automata Based Novel Unit Reversible Multiplexer”, Advanced Science Letters, vol. 16, pp. 163-168, 2012.
- xxx) D. Mukhopadhyay and **P. Dutta**, “Quantum Cellular Automata Based Novel Unit 2:1 Multiplexer”, International Journal of Computer Applications, vol. 43, No. 2, pp. 22-25, 2012.
- xxxi) Banerjee, **P. Dutta** and S. Ghosh, “Fuzzy Controlled Energy Efficient Routing Protocol (FE<sup>2</sup>RP) for Mobile Ad Hoc Networks”, International Journal of Computer Applications, vol. 61, No. 7, 2013.
- xxxii) S. Dasgupta and **P. Dutta**, “A Novel Game Theoretic Approach for Cluster Head Selection in Wireless Sensor Network”, International Journal of Innovative Technology and Exploring Engineering, vol. 2, No. 3, pp. 40-43, February 2013.
- xxxiii) S. Dasgupta and **P. Dutta**, “CIAC: Cluster Head Induced Affinity based Clustering for prolonging the Lifetime of Wireless Sensor Network”, International Journal of Computer Application, vol. 75, No. 10, pp. 18-23, August 2013.
- xxxiv) Banerjee, **P. Dutta** and S. Ghosh, “Experience Based Energy efficient Reactive Routing Protocol (EXERP) for Mobile Ad-hoc Networks”, Arabian Journal for Science and Engineering, Springer, 2013, ISSN 1319-8025, DOI 10.1007/s13369-013-0813-9
- xxxv) J. Hazra, A. RoyChowdhury and **P. Dutta**, “An approach for determining angle of rotation of a gray image using weighted statistical regression”, International Journal of Scientific and Engineering Research, vol. 4, issue 8, pp. 100 – 1013, 2013.

- xxxvi) D. Dutta, **P. Dutta**, and J. Sil, “Categorical Feature Reduction Using Multi Objective Genetic Algorithm in Cluster Analysis”, LNCS Transactions on Computational Science, Springer (Accepted).
- xxxvii) D. Dutta, **P. Dutta**, and J. Sil, “Simultaneous Feature Selection and Clustering with Mixed Features by Multi Objective Genetic Algorithm”, International Journal on Hybrid Intelligence Systems, IOS Press (In press).
- xxxviii) **P. Dutta**, “A theoretical study on measuring performance of binary encodable evolutionary class of algorithms”, in Proceedings of the National Conference on Computing and Communication Systems (Cocosys '09), pp. 15 – 25, 2009.
- xxxix) **P. Dutta** and A. Banerjee, “Fuzzy-controlled Power-aware Multicast Routing (FPMR) For Mobile Ad Hoc Networks”, in Proceedings of the second International Conference on Computer, Communication, Control and Information Technology (C3IT – 2012), Procedia Technology, Volume 4, 2012, Pages 38-49, 2012.

**Dr. Balaram Bhattacharyya**

- i) R Bhattacharyya, **B Bhattacharyya** and A Chowdhuri, “Encrypted Prefix Tree for Pattern Mining”, Foundations of Computing and Decision Sciences, **34**, 1, pp.3-22, 2009.
- ii) **B Bhattacharyya** and B Mandal, “Color Image Segmentation through Graded Clustering”, accepted for presentation and publication in Int'l Conference on *Advances on Computer Vision and Information Technology* (IEEE conference), Aurangabad, India, Dec. 16-19, 2009.
- iii) B Mandal and **B Bhattacharyya**, “An Improved Clustering for Color Image Segmentation”, *Proceedings of National Conference on Information and Communication Technology* held in NMIMS University, Mumbai, 2009.
- iv) T. Mukhopadhyay and **B Bhattacharyya**, “Congestion in SMS-based Query-Response Mechanism - A Possible Solution”, accepted for presentation and publication in Proc. of *Int'l Con. On Advances in Computing, Control, and Telecommunication Technologies*, Trivandrum, India, Dec 28-30, 2009.
- v) T. Mukhopadhyay and **B Bhattacharyya**, “Mechanism for Railway Season Ticketing through Mobile Telephony”, *Proceedings of National Conference on Information and Communication Technology-09* held in NMIMS University, Mumbai, March 2009.
- vi) T. Mukhopadhyay and B Bhattacharyya, “A novel local IP access framework for data applications over 3G femtocells”, *Proc. of International*

*Conference on Mobile Internet Devices: Ubiquitous Computing in a World on the Move*, Hyderabad, India, December 17-18, 2010.

- vii) T. Mukhopadhyay and **B Bhattacharyya**, “A Novel M-ticketing Solution for Unreserved Railway Booking”, *Proc. of National Conference on Emerging Technologies in Computer Science*, Bangalore, India, August 26-28, 2010.
- viii) Byomkesh Mandal and **Balaram Bhattacharyya**, “A Rough Set Integrated Fuzzy C-Means Algorithm for Color Image Segmentation”, ICT2010:339-343
- ix) **Bhattacharyya, B.**, Mandal, B., Mukhopadhyay, T., “Robust Segmentation of Color Image for Wireless Applications”, In Fourth International Conference on Machine Vision (ICMV 2011), Proc. of SPIE, vol. 8349, 83490R, Singapore, (December 9-10, 2011)
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#### **Dr. Utpal Roy**

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- ii) Soumen Roy, Utpal Roy and D D Sinha, “**Combined User Authentication Technique**”, International Conference on Recent Trends in Science & Technology(ICRTST 2013) )(College of Engineering & Management, Kolaghat, West Bengal) 27-29 December, 2013, [ISBN No. 978-93-603-08449-9] Page no. 106(2013).
- iii) Bhaskar Das, Sudip Misra, Utpal Roy, and Mohammad S. Obaidat, “Dynamic Relay Selection for MAC-level Retransmission in Vehicular Ad Hoc Networks,” **Global Telecommunications Conference (GLOBECOM 2013)**, (published in IEEE Explorer), 9-13 Dec. 2013, Atlanta, US(2013).
- iv) Soumen Saha, Dr. Utpal Roy and D D Sinha, “VANET Simulation in Different City Scenario”, **International Journal of Advances in Electronic and Electronic Engineering**, (ISSN 2231-1297), Vol.3, No. 9, pp1219-1226(2013).
- v) Soumen Saha, Dr. Utpal Roy and D D Sinha, “**Comparative Study of Ad-Hoc Protocols in MANET and VANET**”, **International Journal of**

- Advances in Electronic and Electronic Engineering**, (ISSN 2231-1297), Vol.3, No. 8, pp1083-1096(2013).
- vi) Anandarup Roy, S K Parui and Utpal Roy, “**A Pair-copula Based Scheme for Text Extraction from Digital Images**”, 19<sup>th</sup> International Conference in Document Analysis and Recognition -2013, 892-896, (**ICDAR 2013, IEEE Publication**).
- vii) T K Bhowmik, U. Roy and S K Parui, “**Lexicon Reduction Technique for Bangla Handwriting Word Recognition**”, - IEEE Computer Society (CPS) 10<sup>th</sup> **IAPR Workshop in Document Analysis System 2012 (DAS 2012)** , held during March 27<sup>th</sup> -29<sup>th</sup> , 2012, Gold Coast, Queensland, Australia. Bound volume ISBN No. 13:978-0-7695-4661-2, Page 196.
- viii) **B.Das and U. Roy**, Numerical Simulation of Plankton Dynamics in the Gulf of Kutch-, IGARSS 2013, **International Geosciences and Remote Sensing Symposium**, 21-26, July, 2013 [978-1-4799-1114-1/13/\\$31.00@2013](http://www.ieee.org/ieeexplore/iel5/9781479911141/13/$31.00@2013) IEEE(p314-317).
- ix) S. Saha, U. Roy, D. D. Sinha, “**Performance Analysis of VANET Scenario in Ad-Hoc network by NCTUNS Simulators**”, International Journal of Information and Computational Technology (IJICT), Vol 3, No.7, p575, 2013.
- x) A. Roy, S K Parui and U. Roy, “**A Finite Mixture Model Based on Pair-Copula Construction of Multivariate Distributions and its Application to Color Image Segmentation**” ICVGIP(The Eight Indian Conference on Vision, Graphics and Image Processing) 2012, ACM Digital Library.
- xi) U. Roy, Achintya K. Mandal, A. C. Mondal, “**A Simple Approach to E-Content Management and Delivery in Digital Library**”, **The IUP Journal of Information Technology, [ISSN 0973-2896]**, Vol. VIII, No. 1, March 2012, pp. 7-21,
- xii) Achintya K. Mandal, U. Roy, “**An efficient Approach for E-Content Management and Delivery in Digital Library**”, **World Digital Libraries[ISSN No.: 0974 – 567X]**, Vol. 5, Issue-1, June 2012, pp. 1-10.
- xiii) B. Das and U Roy, “**Secured Geocast Routing in VANET (Vehicular Ad-Hoc Network) with two Stage Efficient Communication Protocol**”, **International Journal Computer Application [ 973-93-80870-40-8 ]**, Vol-53, No. 12 p34-38(2012)
- xiv) S Saha and U Roy, “**Partial Temporal Ordering in Distributed Network**”, **International Journal Computer Application [ISSN No. 973-93-80870-40-8] Vol-53, No.12, Page 19(2012).**

- xv) B. Das and U Roy “**Accident Avoidance System in VANET Using Mobile Communication**” , , *International Journal of Information and Communication Technology*, [ISSN 0974-2255]. *Vol-2, No.-3*, 2012, pp-355-358
- xvi) A. Roy, S K Parui and U Roy, “**A Mixture Model of Circular-Linear Distributions for Color Image Segmentation**”, *International Journal of Computer Application [ ISSN 973-93-80870-39-1]*, Vol- 58, No-9, p-6(2012).
- xvii) *Utpal Roy and Achintya K. Mandal*, “**The Digital Age and the Librarian**”, Proceedings of National Conference on Beyond Librarianship: Search for New Frontier (NCBLSNF 2012)[ ISBN No. 978-93-81583-60-9],(2012) pp 128.
- xviii) Soumen Roy, Utpal Roy and Debdatta Sinha, **Intelligent Road Traffic Control Using Multi-Level Feedback Queue**, Proceedings of First International Conference on Intelligent Infrastructure( 47th Annual Convention of Computer Society of India, CSI\_2012, IEEE)TMH Education Private Limited, Page p111, (ISBN-13:978-1-25-908170-7, ISBN-10: 1-25-906170-1)(2012)
- xix) Utpal Roy, Achintya K Mandal and Anandarup Roy, “Color Image segmentation Using Graph Theoretic Approach”, 6<sup>th</sup> International Conference on Mathematical Sciences and Information Technology, 21-23 December, 2012 .
- xx) Utpal Roy and Susmita Nayek, “Classical and Quantum Steganography”, Proceeding of National Seminar on Intellectual Property Rights and Patent Laws(IPRPL-2012), P.90 .
- xxi) Utpal Roy and Susmita Das, Agile Software Development Methodology and its Cost Estimation Technique: **National Journal of System and Information Technology** (ISSN No. 0974-3380), **Page 209-225(2012)**.
- xxii) **P K Bhattacharjee and Utpal Roy**, “ADOV Routing Protocol Is the Most Useful Routing Protocol in VANET Communications”, **Proceeding 2<sup>nd</sup> National Conference on Computing and Systems-2012**(ISBN No. **93-80813-18-X**) **page-1(2012)**.
- xxiii) Bhaskar Das and Utpal Roy, “**Development of Collision avoidance Algorithm in VANET (Vehicular Ad-hoc Network)**”, **Proceeding 2<sup>nd</sup> National Conference on Computing and Systems-2012**(ISBN No. **93-80813-18-X**) **page 252(2012)**.

- xxiv) Susmita Nayek and Utpal Roy, **“Underlying Physics of Quantum Cryptography”**; **Proceeding 2<sup>nd</sup> National Conference on Computing and Systems-2012**(ISBN No. 93-80813-18-X) page 248(2012).
- xxv) Susmita Das and Utpal Roy, **“Agile Software Development Methodology and Its advances in Quality Assurance”**, **Proceeding 2<sup>nd</sup> National Conference on Computing and Systems-2012**(ISBN No. 93-80813-18-X) page-81(2012).
- xxvi) Soumen Saha and Utpal Roy, **“Partial temporal Ordering in Distributed Ad-Hoc Network”**, **Proceeding 2<sup>nd</sup> National Conference on Computing and Systems-2012**(ISBN No. 93-80813-18-X) Page-289(2012).
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- xxviii) Bhaskar Das and Utpal Roy, **“Collision Warning System with monitoring Traffic in VANET using mobile communication with Android based devices based on geocast routing protocol on Indian highway scenario”**, **Proceeding of UGC Sponsored National Conference on Research and Higher Education in Computer Science and Information Technology**(ISBN 978-81-923820-0-5) Page-63(2012).
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- xxxi) Bhaskar Das and Utpal Roy, **“Secured Geocast Routing in VANET (Vehicular Ad-Hoc Network)with two stage efficient communication protocol”**, **International Conference on Emerging Trends in Soft Computing and ICT, SCICT 2011, 16-17 March, 2011 , Proceeding**(ISBN 978-81-920913-3-4) page No. 202
- xxxii) Utpal Roy, Achintya Kr. Mandal and Anandarup Roy, **“PRIM’S ALGORITHM FOR COLOR IMAGE SEGMENTATION”**, **International**

- Conference on Emerging Trends in Soft Computing and ICT, SCICT 2011, 16-17 March, 2011, Proceeding ISBN 978-81-920913-3-4)Page no. 193(2011)
- xxxiii) Pijush Kanti Bhattacharjee and Utpal Roy, “A Novel Approach for Authentication Techniques in Vehicular Ad-hoc Network” , National Conference on Computing and System 2010, Proceeding Page No. 113, ISBN no. 8190744174(2010).
- xxxiv) Subhasis Banerjee and Utpal Roy, “Vehicular Transmission Control Protocol”, National Conference on Computing and System 2010, Proceeding Page No. 203, ISBN no. 8190744174(2010)
- xxxv) **Utpal Roy**, A.K. Mandal, A.C. Mandal, “Greedy Approach to Graph-Based Algorithm for Color Image Segmentation”, Proceeding International Conference on Computing and Systems -2010 p42-47(2010).
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- xxxvii) Utpal Roy and A. K. Mandal and S. Mukherjee, “Detection and Analysis of Forest Cover Changes of Indian Sundarbans with the help of Satellite Data”, Journal of Environmental Science and Engineering, **Vol.53, No.3, p309-318(2011)**.
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- xxxix) A.K. Mandal and Utpal Roy, Novel Approach for E-Content Management and Delivery in Digital Library –International Conference in Digital Library- 2010(ICDL10), proceeding p453.
- xl) Utpal Roy, Sanchita Pal Choudhuri and Susmita Nayek, “Introduction to Quantum Computing and solution of Travelling Salesman problem” National Journal of Science and Information Technology , Vol-2, No.1, p54-72(2009).
- xli) Subhasis Banerjee and Utpal Roy, “Passive Cluster based Routing Protocol”, ICFAI, Journal of Information Technology- Dec. 2009, Vol. V. No. 4, Page 7(2009).
- xlii) Utpal Roy, “Computation of resonances below  $P_s(n=2)$  threshold in positron-hydrogen system using stabilization method”, Indian journal of Physics(IJP) Vol. 83(12), 1637-1645(2009).

- xliii) Somnath Mukherjee, Utpal Roy and Achintya Mandal, “Forest Cover Changes with the help of Remote Sensing and GIS in Lothian, South-Surendranagar and Dhanchi Island of Indian Sundarbans”, Proceeding IEEE National Conference on Computing and Communication 2009(CoCosys09), Page 87-93(2009) .

**Mr. Tathagato Mukhopadhyay**

- i) B Bhattacharyya, B Mandal and **T. Mukhopadhyay**, “Robust Segmentation of Color Image for Wireless Applications”, ICMV 2011, Proc of SPIE, Vol. 8349R Singapore, Dec., 2011.
- ii) **T. Mukhopadhyay** and B Bhattacharyya, “A novel local IP access framework for data applications over 3G femtocells”, *Proc. of International Conference on Mobile Internet Devices: Ubiquitous Computing in a World on the Move*, Hyderabad, India, December 17-18, 2010.
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- vi) **T. Mukhopadhyay** and B Bhattacharyya, “Possible Optimization Approaches of Network Search Algorithm in GSM+UMTS Environment”, Chapter in book titled “Trends in Networking and communication” published by Atlantic, 2009; ISBN10 :8126910526, ISBN13 : 9788126910526

**Mr. Subhasis Banerjee**

- i) **S. Banerjee**, U. Roy , S. Begam, “Passive Cluster based Routing Protocol”, ICFAI, Journal of Information Technology- Dec. 2009, Vol. V. No. 4, Page 7
- ii) **S. Banerjee** and U. Roy, “Vehicular Transmission Control Protocol” , National Conference on Computing and System 2010, Proceeding Page No. 203, ISBN no. 8190744174.



**Mrs. Sanchita Pal Choudhuri**

- i) Utpal Roy, **Sanchita Pal Choudhuri** and Susmita Nayek, “Introduction to Quantum Computing and Solution of Travelling Salesman Problem”, National Journal of Science and Information Technology, Vol-2, No.1, p54-72(2009).

**Mr. Madhusudan Paul**

- i) **M. Paul**, “A Relationship Oriented Framework for Learning in Structured Domains”, et. al., IJCSET, ISSN: 2044-6004, 2010, 1:193-198.
- b) **Monographs:** – Nil
- c) **Chapters in Books:**

**Prof. Paramartha Dutta**

- i) S. Bhattacharyya and **P. Dutta**, (eds. Md. A. Khan and A. Q. Ansari), “Fuzzy logic: concepts, system design and applications to industrial informatics”, in *Handbook of Research on Industrial Informatics and Manufacturing Intelligence: Innovations and Solutions*, Chapter 3, pp. 33 – 71, IGI Global, Hershey PA, USA, **2012**.
- ii) **P. Dutta**, P. Bhattacharyya and S. Bhattacharyya, (eds. Md. A. Khan and A. Q. Ansari), “Evolutionary computing: principles and applications to portfolio optimization”, in *Handbook of Research on Industrial Informatics and Manufacturing Intelligence: Innovations and Solutions*, Chapter 12, pp. 271 – 295, IGI Global, Hershey PA, USA, **2012**.
- iii) B. Chakraborty, S. Bhattacharyya and **P. Dutta**, (eds. S. K. Pal, A. Petrosino and L. Maddalena), “An unsupervised video shot boundary detection technique using fuzzy entropy estimation of video content”, in *Handbook on Soft Computing for Video Surveillance*, Chapter 9, pp. 237 – 253, Taylor & Francis, CRC Press, **2012**.
- iv) V. K. Ojha and **P. Dutta**, (eds. S. Bhattacharyya and P. Dutta), “Performance Comparison of Different Intelligent Techniques Applied on Detecting Proportion of Different Component in Manhole Gas Mixture”, in *Handbook of Research on Computational Intelligence for Engineering, Science, and Business*, **IGI Global**, USA, DOI: 10.4018/978-1-4666-2518-1, ISBN13: 9781466625181, ISBN10: 146662518X, EISBN13: 9781466625198. **2012**.
- v) V. K. Ojha and **P. Dutta**, “Conjugate Gradient Trained Neural Network for Intelligent Sensing of Manhole Gases to Avoid Human Fatality”, in *Recent Trends in Knowledge Representation and Computational Intelligence*, **IGI Global**, (Accepted).
- d) **Edited Book:**

**Prof. Paramartha Dutta**

- i) S. Bhattacharyya and **P. Dutta**, Edited Book entitled “*Handbook of Research on Computational Intelligence for Engineering, Science, and Business*” (2 Volumes) to be published by **IGI Global, USA** in **November 2012**.

e) **Books with ISBN with details of publishers:**

**Prof. Paramartha Dutta**

- i) **P. Dutta**, K. Dasgupta and K. P. Banerjee, Authored Book entitled “*Complete Reference for System Programming and Administration*”, published by Matrix Educare
- Fourth Edition **March 2009**.
  - Fifth Edition in **February 2010**.
  - Sixth Edition in **January 2011**.
  - Seventh Edition in **December 2011**
- ii) **P. Dutta**, K. Dasgupta and S. Bhattacharyya, Authored Book entitled “*Complete Reference for Inter Networking*”, published by Matrix Educare
- Fourth Edition in **September 2009**.
  - Fifth Edition in **October 2010**.
  - Sixth Edition in **June 2011**.
  - Seventh Edition in **June 2012**.
- iii) **P. Dutta** and A. Pal, Authored Book entitled “*Complete Reference for Design and Analysis of Algorithms*”, (for Computer Science and Engineering) published by Matrix Educare
- Fourth Edition in **August 2009**.
  - Fifth Edition in **October 2010**.
  - Sixth Edition in **June 2011**.
  - Seventh Edition in **July 2012**.
  - Eighth Edition in **June 2013**.
- iv) **P. Dutta** and A. Pal, Authored Book entitled “*Complete Reference for Advanced Computer Architecture*”, published by Matrix Educare
- Third Edition in **March 2009**.
  - Fourth Edition in **February 2010**.
  - Fifth Edition in **January 2011**.
  - Sixth Edition in **April 2012**.
  - Seventh Edition in **January 2013**.
- v) J. P. Singh, **P. Dutta** and A. Nag, Authored Book entitled. “*Operating System*”. Published by Tata Mcgraw Hill, New Delhi, India.
- vi) V. K. Ojha and **P. Dutta**, Authored Book entitled “*Intelligent Gas Recognition System: Analysis and Design Issues*”, published by **Lambert**

**Academic Publishing, Saarbrücken, Germany, 2012, ISBN: 978-3-659-21734-0.**

- vii) **P. Dutta** and D. DuttaMajumder, Authored Book entitled “*Performance Analysis of Evolutionary Algorithms*”, published by **Lambert Academic Publishing, Saarbrücken, Germany, 2012, ISBN: 3659183490, 978-3-659-18349-2.**

c) **Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.): N/A**

d) **Citation Index — range / average: N/A**  
**Prof Paramartha Dutta : 246 AS PER Google Scholar Citation**  
**Dr Utpal Roy : 126 as per Google Scholar Citation**

e) **SNIP: N/A**

f) **SIR: N/A**

g) **Impact Factor — range / average: N/A**

h) **h-index:**  
**Prof Paramartha Dutta : 8**  
**Dr Utpal Roy: 8**

23. **Details of patents and income generated: Nil**

24. **Areas of consultancy and income generated: Nil**

25. **Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**

a) Prof Paramartha Dutta

b) Dr Utpal Roy

26. **Faculty serving in**

a) **National committees:**

**Prof Paramartha Dutta**

i) Advisor to the West Bengal Pollution Control Board for their networking of different branches across West Bengal in 1998.

ii) Member of the recruitment board for inducting Programmer in the West Bengal Pollution Control Board in the year 1999.

iii) Member of the recruitment board for inducting IT Officers in the Allahabad Bank in the year 2004.

iv) Member of the Research Board of Advisors of the American Biographical Institute for distinguished standing since 2004.

- v) Member of Board of Studies in Computer Applications of the University of Kalyani in 2005.
- vi) Member of Board of Studies in Computer Science of the University of Kalyani in 2007.
- vii) Member of Academic Council of Visva Bharati, Santiniketan since November, 2007.
- viii) Member of the Departmental Promotion Committee of Visva Bharati, Santiniketan since 2009.
- ix) Reviewer of various Journals including –
  - ✓ IEEE Transactions on System, Man and Cybernetics
  - ✓ Pattern Recognition
  - ✓ Signal Processing
  - ✓ IEEE Communication Letters
  - ✓ Journal of Phytopathology
- x) Member Expert nominated by the Ministry of Human Resource and Development, Government of India of the Selection Committee for award of Commonwealth Scholarship offered by the Government of United Kingdom, 2010.
- xi) Member of panel of Judges of the Young IT Professional Awards, Eastern Regional Contest, conducted by the Computer Society of India, Kolkata Chapter, held on 16.01.2010.
- xii) Member of Technical Committee of the West Bengal Board of Joint Entrance Examination during 2009 to 2011.
- xiii) Member of Board of Undergraduate Studies in Computer Science of Kalyani University since 2011.
- xiv) Member of Board of Studies in Computer Science, Information Technology and Computer Application of West Bengal University of Technology since 2011.
- xv) Member of the School Board of Triguna Sen School of Technology of Assam University, Silchar since 2011.
- xvi) Member Chairman nominated by the University Grants Commission, Govt. of India of the Review Committee of the Special assistance Programme in the Department of Computer Science and Automaton, Indian Institute of Science, Bangalore in November 2011.
- xvii) Member of Scientific Committee and Editorial Review Board on Engineering and Applied Sciences of World Academy of Science Engineering and Technology.
- xviii) Member of Board of Studies in Computer Science and Engineering of Narula Institute of Technology, Kolkata since 2012.

- xix) Member of panel of Judges of the Student Research Convention, conducted by the West Bengal University of Technology on 29.01.2013.
- xx) Member of Board of Studies in Post Graduate Studies in Computer Science and Engineering of Tripura University since 2013.
- xxi) Advisor to the Central Mechanical Engineering Research Institute, Durgapur funded by the Council of Scientific and Industrial Research (CSIR), Govt. of India for their Research project on “Smart Home Energy Efficient Technology Environment” at Embedded System Laboratory since 2013.
- xxii) Member of the Expert Inspection Team appointed by the West Bengal University of Technology in a visit on 13/03/2013.
- xxiii) Member of Expert Committee for Faulty Appraisal of the Asansol Engineering College held on 17.08.2013.
- xxiv) Session Chair in various Conferences/seminars/seminars –
  - ✓ Technical Session in International Conference on Computational Intelligence and Communication Networks (CICN2012), Mathura, India, November 2012.
  - ✓ Technical session in Zonal Seminar on ICT in present Wireless Revolution on 31.08.2013
  - ✓ Technical Session in International Conference on Computational Intelligence: Modeling, Techniques and Applications (CIMTA 2012), Kalyani, India, September 2013.
- xxv) Member of Selection Board for Faculty recruitment in various Universities/Institutes encompassing
  - ✓ National Institute of Technology, Arunachal Pradesh
  - ✓ Assam University, Silchar, Assam
  - ✓ Sambalpur University, Orissa
  - ✓ Visva Bharati University, Santiniketan, West Bengal
  - ✓ Burdwan University, Burdwan, West Bengal
  - ✓ Bengal Institute of Technology and Management, Santiniketan
  - ✓ Supreme Knowledge Foundation Group of Institutions, Mankundu
  - ✓ College of Engineering and Management, Kolaghat

**Prof. Balaram Bhattacharyya:**

- i) External Member, BoS, Department of Computer Science, Benaras Hindu University, Varanasi
- ii) External member, PG Board of Studies in Comp Science, University of Burdwan, 2009

**b) International committees:****Prof. Paramartha Dutta**

- i) Senior Member IEEE
- ii) Senior Member ACM

**Prof. Balaram Bhattacharyya:**

- i) Member, Programme Committee and Reviewer, International Conference 'ITBAM', DEXA, Austria since 2010.

**c) Editorial Boards:**

**Prof. Balaram Bhattacharyya:** Member, Editorial Board of the journal 'Sajosps'\

**Dr Utpal Roy:** Member, editorial board, 2<sup>nd</sup> International Conference in Artificial Intelligence in Computer Science, 2014, Indonesia.

**d) Any other (please specify):****27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):****Prof. Paramartha Dutta**

- i) **Joint International Conference** on “*Swarm, Evolutionary & Memetic Computing*” (SEMCCO) and “*Fuzzy and Neural Computing Conference*” (FANCCO) organized by the Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, India held during **19/12/2011 – 21/12/2011**.
- ii) **First International Symposium** on “*Physics and Technology of Sensors*” (ISPTS - 1) held at Pune, India during **08/03/2012 – 10/03/2012**.
- iii) **International Conference on “Computational Intelligence and Communications Networks”** (CICN 2012) held at GLA University Mathura, India during **03/11/2012 – 05/11/2012**.

**Prof. Balaram Bhattacharyya**

- i) National Workshop on Modern Biology and Development of Research Programme at Jawaharlal Nehru University, Delhi, India during December 14-16, 2009

**Prof. Alak Kumar Datta**

- i) 3-day workshop, RHECSIT-2012, UGC sponsored, Kolkata 2012

**Dr. Utpal Roy**

- i) International Conference on Recent Trends in Science & Technology (ICRTST 2013), (College of Engineering & Management, Kolaghat, West Bengal), 27-29 December, 2013.

- ii) Global Conference on “Recent Trends in Electronic Communication Engineering, Power and Control(ECEPC-2013) held in JNU during 7-8 September -2013” - Delivered keynote address & Chaired the Technical sessions III & IV.
- iii) Second International Conference on Computing and System-2013, ICCS-2013. 21-22 September, 2013 Univ. of Burdwan (Proceeding ISBN(13): 978-9-35-134273-1)
- iv) 8<sup>th</sup> Conference on Computer Vision, Graphics and Image Processing 2012 (ICVGIP 2012) held at IIT Bombay during 16-19 Dec. 2012.
- v) The First International Conference on Intelligence Infrastructure CSI 2012, 47<sup>th</sup> Annual National Convention Computer Society of India 1-2 December, 2012.
- vi) 10<sup>th</sup> IAPR Workshop in Document Analysis System 2012 (DAS 2012) , held during March 27<sup>th</sup> -29<sup>th</sup> , 2012, Gold Coast, Queensland, Australia.
- vii) International Conference on Pattern Recognition and Machine Intelligence(PReMI-2011) held in National Research University and Higher School of Economics, MOSCOW, Russia during June 27 – 1 July. Delivered a Talk and Chaired a Session of the Conference.
- viii) UGC Sponsored National Conference on Research and Higher Education in Computer Science and Information Technology RHECSIT 2012.
- ix) Second National Conference on Computing and Systems – 2012, March 15-16, 2012, The University of Burdwan, West Bengal.
- x) International Conference on Computing and Systems – 2010, Nov. 19-20, 2010
- xi) National Conference on Computing and System 2010, 29<sup>th</sup> January, 2010.
- xii) 5<sup>th</sup> International Conference of IMBIC (Institute for Mathematics, Bio-informatics, Information-Technology and Computer Science, Kolkata) December 18-20<sup>th</sup>, 2011.
- xiii) First International Conference on Emerging Trends in Soft Computing and ICT, Bilaspur University, C.G 16-17 March, 2011.
- xiv) Seventh Conference on Computer Vision, Graphics and Image Processing 2010 (ICVGIP 2010), IIT Chennai, India. 12-15 Dec. 2010 (IEEE) [deliver a talk].
- xv) Sixth Conference on Computer Vision, Graphics and Image Processing 2008 (ICVGIP 2008), Bhubaneswar, India. 16-19 Dec. 2008(IEEE Kharagpur Section).
- xvi) IEEE National Conference in Computing and Communication System 2009(CoCosys 09), UIT Burdwan, 2 – 4 January, 2009.

**Sri Tathagato Mukhopadhyay**

- i) National Conference on Information and Communication Technology at NMIMS University, Mumbai, during March 2009.
- ii) DST Sponsored Programme on “Science Administration and Research Management” at Department of Science and Technology, ASCI, Hyderabad; during April 2010.
- iii) Two-day Tutorial Workshop on Cryptology by University of Calcutta and Centre for Excellence in Cryptology, Indian statistical Institute, Kolkata at Rajabazar Science College, Kolkata; during July 2011.

**Smt Kakali Datta**

- i) 1<sup>st</sup> Refresher Course in Information and Communication Technology [ICT(MD)]at UGC Academic Staff College, University of Burdwan during March 09-29, 2010
- ii) A Short Term Course on ‘Data Mining and Data Warehousing’at Quality Improvement Programme, All India Council for Technical Education, Dept. of Computer Science & Technology, Bengal Engineering College (Deemed University), Howrah during March 24-27, 2009
- iii) Two-day seminar on ‘Engineering Application of Computational Intelligence’at St. Thomas’ College of Engineering and Technology, 4, Diamond Harbour Road, Kolkata – 700023 during April 3-4, 2009.
- iv) “National Seminar on Science and Nature: Tagore's vision and its relevance” at Siksha-Bhavana, Visva-Bharati, Santiniketan, during 12-13 March, 2011

**Sri Subhasis Banerjee**

- i) 70<sup>th</sup> Orientation Programme at UGC Academic Staff College, University of Burdwan during June , 2009
- ii) 1<sup>st</sup> Refresher Course in Information and Communication Technology [ICT(MD)]at UGC Academic Staff College, University of Burdwan during March 09-29, 2010
- iii) *National Conference on Computing & Systems* at University of Burdwan on 29 January, 2010
- iv) “National Seminar on Science and Nature: Tagore's vision and its relevance” at Siksha-Bhavana, Visva-Bharati, Santiniketan, during 12-13 March, 2011

**Sri Madhusudan Paul**

- i) Short term course on Computational Biology, Bioinformatics & Their Application to Healthcare at Department of Computer Science & Engineering, IIT Kharagpur, during 28<sup>th</sup> October – 1<sup>st</sup> November, 2013



- ii) Three-Day Research Promotion Workshop on Introduction to Graph and Geometric Algorithms sponsored by National Board of Higher Mathematics, Department of Atomic Energy, Government of India at Department of Computer Science & Engineering, IIT Guwahati, 21<sup>st</sup> -23<sup>rd</sup> October, 2011
- iii) One-Day Workshop on Web Services, Service Composition & Agent Technology at Department of Computer Science, Pondicherry University, 31<sup>th</sup> July, 2009
- iv) One-Day Workshop on Grid Computing: Technology and Future Research at Department of Computer Science, Pondicherry University, 18<sup>th</sup> April, 2009
- v) Two-Day National Workshop on Data Mining and Data Warehousing at Department of Statistics & Department of Computer Science, Pondicherry University, during 25<sup>th</sup> - 26<sup>th</sup> March, 2009
- vi) Three-Day Workshop on Information Security For Banks at Department of Banking Technology, School of Management, Pondicherry University, during 19<sup>th</sup> – 21<sup>th</sup> February, 2009

**28. Student projects:**

- a) **Percentage of students who have done in-house projects including interdepartmental projects:** 100%
- b) **Percentage of students doing projects in collaboration with other universities / industry / institute:** Nil

**29. Awards / recognitions received at the national and international level by**

- a) **Faculty:** Nil
- b) **Doctoral / post doctoral fellows:** Nil
- c) **Students:** Inspire fellowship - 2

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any: NIL**

**31. Code of ethics for research followed by the departments: As per University rules.**

**32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
UG 2013-2016	Not applicable as admission is through VBCAT.	10	2	-	-
UG 2012-2015		4	0	-	-
UG 2011-2014		8	6	-	-
UG 2010-2013		9	2	8	2
UG 2009-2012		8	2	7	2

PG 2013-2015	90	15	5	-	-
PG 2012-2014	88	7	3	-	-
PG 2011-2013	165	7	2	7	2
PG 2010-2012	104	10	10	10	10
PG 2009-2011	87	13	5	11	5
Ph.D Course Work 2013	20	6	2	-	-
Ph.D Course Work 2012	24	2	2	100	100
Ph.D Course Work 2011	22	4	0	100	0
Ph.D Course Work 2010	4	3	3	33.3	100

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same University	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
PG (2009 -2013)	55.84	44.16	0.0	0.0
Ph.D (2010- 2013)	40.00	40.00	20.00	0.0

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

- NET – 5
- GATE – 6
- DST INSPIRE – 2
- GRE - 1

**35. Student progression:**

Student progression	Percentage against enrolled
UG to PG	90 % (approx.)
PG to M.Phil.	Not Applicable
PG to Ph.D.	7 % (approx.)
Ph.D. to Post-Doctoral	Nil
Employed <ul style="list-style-type: none"> <li>Campus selection</li> <li>Other than campus recruitment</li> </ul>	No scope As good as 80 % students are absorbed in Govt. and private sectors.

Entrepreneurs	5 % (approx.)
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**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	11.1
from other universities within the State	66.7
from universities from other States	22.2
from universities outside the country	None

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	Not applicable
Ph.D.	Nil
D.Sc.	Nil
D.Litt	Not applicable

**38. Present details of departmental infrastructural facilities with regard to**

- a) **Library:** 393
- b) **Internet facilities for staff and students:** Yes
- c) **Total number of class rooms:** 03
- d) **Class rooms with ICT facility:** 01
- e) **Students' laboratories:** 1
- f) **Research laboratories:** Nil

**39. List of doctoral, post-doctoral students and Research Associates:**

- a) **Doctoral list from the host institution/university –**  
Anandarup Roy, Byomkesh Mondal, Susmita Nayek
- b) **From other institutions/universities –**  
Koushik Mondal, Bhaskar Das

**40. Number of post graduate students getting financial assistance from the university: 20****41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology: No new programme was introduced after 2009.****42. Does the department obtain feedback from**

- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:** Yes, the Department regularly organizes faculty meeting for sharing individual experiences regarding the

students and classes taken.

- b. **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:** Students feedback for teachers are taken directly by higher authority
- c. **alumni and employers on the programmes offered and how does the department utilize the feedback:** not taken yet

**43. List the distinguished alumni of the department (maximum 10):**

<i>Sl. No.</i>	<i>Name</i>	<i>Affiliation</i>	<i>E-mail</i>	<i>Mobile</i>
1.	<i>Bikash Ghosh</i>	<i>IT, Principal Consultant, Oracle India, Bangalore</i>	<a href="mailto:ghosh.bikash@gmail.com">ghosh.bikash@gmail.com</a>	
2.	<i>Amit Banerjee</i>	<i>Asst. Prof., South Asian University, New Delhi</i>	<a href="mailto:amit.banerjee@gmail.com">amit.banerjee@gmail.com</a>	
3.	<i>Madhusudan Paul</i>	<i>Asst. Prof., Visva-Bharati University</i>	<a href="mailto:msh.cse@gmail.com">msh.cse@gmail.com</a>	9264802315
4.	<i>Tapan Bhowmik</i>	<i>Postdoc, Ruen University, France</i>	<a href="mailto:tkbhowmik@gmail.com">tkbhowmik@gmail.com</a>	
5.	<i>Achintya Kumar Mandal</i>	<i>Deputy Registrar (Academics &amp; Establishment), Assam University, Silchar</i>	<a href="mailto:achintya.kumar.mandal@aus.ac.in">achintya.kumar.mandal@aus.ac.in</a>	

**44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**

Three special lectures/Seminars were arranged with experts from outside.

**45. List the teaching methods adopted by the faculty for different programmes:**

- a) Lectures using Chalk & Talk.
- b) Power-Point presentations.
- c) Demonstration using available software or self-written programs.  
Teaching is done in an interactive manner and study material is also provided in both soft and hard copy as and when needed.

**46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**

- a) Syllabi are updated and modernized on a regular basis. Feedback from students and course curriculum of peer institutes are taken into account.
- b) Seminar lectures are arranged by inviting the eminent experts on frontline research areas from country and abroad.

**47. Highlight the participation of students and faculty in extension activities:**

**Faculty:**

- a) **Dr. Utpal Roy**
  - i) Coordinator of NSS programme organized by the university.
- b) **Mr. Tathagato Mukhopadhyay**
  - ii) Participation in automation of university examination system.

**48. Give details of “beyond syllabus scholarly activities” of the department:**

- a) **Professor Paramartha Dutta**
  - i) Life Member of the Indian Science Congress Association (6799 vide year 1994)
  - ii) Life Fellow of the Institution of Electronics and Telecommunication Engineers (F 152182 vide year 2002)
  - iii) Life Member of the Indian Society for Technical Education (LM 33643 vide year 2002)
  - iv) Life Fellow of the Optical Society of India (L 429 vide year 2004)
  - v) Life Member of the Indian Unit of International Association for Pattern Recognition (Indian Affiliate of *International Association for Pattern Recognition*) (L 038 vide year 2005)
  - vi) Life Member (Senior) of the Computer Society of India (00138036 vide year 2006)
  - vii) Life Member of the International Association of Engineers (vide 62582 since year 2007).
  - viii) Senior Member of Association for Computing Machinery (9622185 since year 2007)
  - ix) Life Member of Advanced Computing and Communication Society (9622185 since year 2009)
  - x) Senior Member of IEEE Computer Society (90586806 since year 2009), Computational Intelligence Society (since 2012)
  - xi) Life Member (Senior) of International Association of Computer Science and Information Technology (80343506 vide year 2011).

- xii) Life Member of System Society of India (LM – 31964 vide year 2012).
- xiii) Life Member of the World Academy of Science Engineering and Technology (since 2012).
- xiv) Life Member of Indian Society of Remote Sensing (since 2012).
- xxvi) Reviewer of various Journals including –
  - ✓ IEEE Transactions on System, Man and Cybernetics
  - ✓ Pattern Recognition
  - ✓ Signal Processing
  - ✓ IEEE Communication Letters
  - ✓ Journal of Phytopathology
- xxvii) Member Expert nominated by the Ministry of Human Resource and Development, Government of India of the Selection Committee for award of Commonwealth Scholarship offered by the Government of United Kingdom, 2010.
- xxviii) Member of panel of Judges of the Young IT Professional Awards, Eastern Regional Contest, conducted by the Computer Society of India, Kolkata Chapter, held on 16.01.2010.
- xxix) Member of Technical Committee of the West Bengal Board of Joint Entrance Examination during 2009 to 2011.
- xxx) Member of Board of Undergraduate Studies in Computer Science of Kalyani University since 2011.
- xxxi) Member of Board of Studies in Computer Science, Information Technology and Computer Application of West Bengal University of Technology since 2011.
- xxxii) Member of the School Board of Triguna Sen School of Technology of Assam University, Silchar since 2011.
- xxxiii) Member Chairman nominated by the University Grants Commission, Govt. of India of the Review Committee of the Special assistance Programme in the Department of Computer Science and Automaton, Indian Institute of Science, Bangalore in November 2011.
- xxxiv) Member of Scientific Committee and Editorial Review Board on Engineering and Applied Sciences of World Academy of Science Engineering and Technology.
- xxxv) Member of Board of Studies in Computer Science and Engineering of Narula Institute of Technology, Kolkata since 2012.
- xxxvi) Member of panel of Judges of the Student Research Convention, conducted by the West Bengal University of Technology on 29.01.2013.
- xxxvii) Member of Board of Studies in Post Graduate Studies in Computer Science and Engineering of Tripura University since 2013.
- xxxviii) Advisor to the Central Mechanical Engineering Research Institute, Durgapur funded by the Council of Scientific and Industrial Research

- (CSIR), Govt. of India for their Research project on “Smart Home Energy Efficient Technology Environment” at Embedded System Laboratory since 2013.
- xxxix) Member of the Expert Inspection Team appointed by the West Bengal University of Technology in a visit on 13/03/2013.
- xl) Member of Expert Committee for Faculty Appraisal of the Asansol Engineering College held on 17.08.2013.
- xli) Session Chair in various Conferences/seminars/seminars –
- ✓ Technical Session in International Conference on Computational Intelligence and Communication Networks (CICN2012), Mathura, India, November 2012.
  - ✓ Technical session in Zonal Seminar on ICT in present Wireless Revolution on 31.08.2013
  - ✓ Technical Session in International Conference on Computational Intelligence: Modeling, Techniques and Applications (CIMTA 2012), Kalyani, India, September 2013.
- xlii) Member of Selection Board for Faculty recruitment in various Universities/Institutes encompassing
- ✓ National Institute of Technology, Arunachal Pradesh
  - ✓ Assam University, Silchar, Assam
  - ✓ Sambalpur University, Orissa
  - ✓ Visva Bharati University, Santiniketan, West Bengal
  - ✓ Burdwan University, Burdwan, West Bengal
  - ✓ Bengal Institute of Technology and Management, Santiniketan
  - ✓ Supreme Knowledge Foundation Group of Institutions, Mankundu
  - ✓ College of Engineering and Management, Kolaghat

**b) Professor Balaram Bhattacharyya**

- i) Life Member, Indian Association for the Cultivation of Science, Kolkata-700032
- ii) Member, Program Committee, International Conference ‘ITBAM’, DEXA in Spain since 2010
- iii) Member, Program Committee, International Conference ‘ACVIT 2009’ held in Aurangabad
- iv) Member, Editorial Board of the journal ‘Sajosps’
- v) External Member, BoS, Department of Computer Science, Benaras Hindu University, Varanasi, 2012
- vi) External member, PG Board of Studies in Comp Science, University of Burdwan, 2009

- vii) Examiner for project evaluation, Benaras Hindu University
- viii) Reviewer in journal 'Sajosps'
- ix) Reviewer for international conference ACVIT, 2007
- x) Reviewer, International Conference 'ITBAM', DEXA in Spain since 2010

**c) Prof. Alak Datta**

- i) Member, Indian Association for Research in Computing Science
- ii) Member, Board of Studies, PG course, Department of Computer Science, University of Burdwan

**d) Dr. Utpal Roy**

- i) IAPR( Indian UNIT for Pattern Recognition and Machine Intelligence): Life Member L090
- ii) Indian Science Congress Association, Calcutta, India Life Member L19270
- iii) Indian Statistical Institute, Kolkata, 203, B.T. Road, Kol-108; Life Member
- iv) Indian Association for Cultivation of Science, Jadavpur, Kolkata-700 032. Life Member
- v) Forum of Scientists, Engineers & Technologists, (FOSET) Life Member

**e) Smt. Kakali Datta**

- i) Member of Association for Computing Machinery (since year 2012)

**49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not yet

**50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**

Nurturing young minds toward developing logic sense and design concepts to contribute effectively in research and IT industry. Aims to contribute further in research in the years to come.

**51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**

**a) Strengths :**

- i) Imparting education in computer science and applications in diverse fields to students predominantly from rural areas with modest socio-economic background.
- ii) Job prospect of students in different Multi-National Companies and



different Academic Institutions.

- iii) Providing Computing Assistance in other fields of studies within the university.
- iv) Motivated and Committed Faculty members.
- v) Academic/Technical quest among the students.

**b) Weaknesses:**

- i) Severe scarcity of space for development. Three to four teachers along with their scholars in groups need to share a common room for sitting.
- ii) Grossly inadequate matching grant in research.
- iii) Infrastructure, especially limited options for Broadband Internet Connectivity.
- iv) No technical/supporting staff for the laboratories.
- v) Although the subject is essentially an Engineering stream, no technical journal like IEEE, ACM, SIAM, etc are made available to us.

**c) Opportunities:**

- i) Scope of In-house design of software for various applications (e.g., Pay-Roll and Pay-Slip of Visva-Bharati, Railway e-ticketing for unreserved category, Automation of university examination system).
- ii) Students are getting scope to continue their projects in other institutions.
- iii) Scope to continue further studies abroad.
- iv) Interdisciplinary studies and research.
- v) Scope of placement in industry.

**d) Challenges :**

- i) Quality inter-disciplinary research
- ii) Developing research laboratories
- iii) Motivating students for doctoral studies
- iv) In-house design and development of state of the art software systems
- v) Collaborative research with other external institutes and other faculties of the university

**52. Future plans of the department:**

- i) Introducing new course curriculum for M.Tech. (Computer Science) and integrated M.Phil./M.Tech. - Ph.D.
- ii) To enhance research activity with creation of research laboratory in Computational Molecular Biology, Quantum Cellular Automata, Embedded Technology, Wireless Network, Quantum Computing.
- iii) Establishment of Embedded and VLSI Laboratory under Industry and Institute partnership.

- iv) Augmentation of space in the department to cater to the present requirements and future plans.
- v) Developing the department as a nodal center for inter-disciplinary e-classroom.

## HISTORY OF RABINDRA-BHAVANA

It is indeed interesting that Rabindranath, despite his numerous foreign tours and several visits ranging from capitals of states to remotest corners of the country which earned for him the coveted title of the 'wayfarer poet', always nurtured a desire to shift to manifold abodes, dictated either by necessity or emanating from an urge for diversity. However, towards the end of his life the poet initiated construction of a mud hut with thatched roof in an almost deserted land by the side of 'Khoai' river. He fondly named it 'Rabi's Uttarayana'. Subsequently five houses viz. Konark, Udayana, Udichi, Shyamali and Punascha vibrating with his reminiscences during his stay in the last twenty years of his life add a new dimension to the ambience of entire Uttarayana Complex.

The construction of Bichitra - The first house on the left in Uttarayana Complex in 1961 i.e the birth centenary year of Rabindranath Tagore and subsequently named as Rabindra-Bhavana, is a land mark event in view of the fact that Rabindra-Bhavana since its inception is used as repository of Tagore collection and a core centre of Tagore - related research and understanding. Rabindra-Bhavana comprises several units viz museum, archives, library, audio visual, preservation and garden units. Added to these, Rabindra Charcha Prakalpa and Research and Lipika Manuscriptorium and Hall are two other important facades of Rabindra-Bhavana, adding glow to its luminous brilliance.

At present Rabindra-Bhavana is an integral part and principal constituent of Tagore Memorial Institute, as recommended by High Level Committee.

## Evaluative Report of the Rabindra-Bhavana

1. **Name of the Department :** Rabindra Bhavana
2. **Year of establishment :** 1961
3. **Is the Department part of a School/Faculty of the university?**  
It is a Research Centre, decked with reminiscences of Rabindranath Tagore, Tagore-centric museum, archives etc.
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :**  
M.Phil and Ph.D in Culture Studies introduced in the academic session 2013-14.  
Certificate Course in Manuscriptology introduced in 2013-14.
5. **Interdisciplinary programmes and departments involved :**  
Rabindra-Bhavana is closely connected with Comparative Literature Centre of Bhasha-Bhavana. The teachers of the Bhavana take classes in the aforesaid Centre. Prof. Tapati Mukhopadhyay and Prof. Udaya Narayana Singh are Adjunct Professors of Centre for Comparative Literature and Centre for Linguistics respectively. Classes are taken by Adhyaksha, Rabindra-Bhavana in Sanskrit Department too. The monthly seminar of the Bhavana 'Rabindra-Prabaha' is organized in conjunction with Sangit-Bhavana; several other programmes highlighting Tagore's creativity and literary facades are organised throughout the year with able participation from Sangit-Bhavana. The Bhavana is going to organize a seminar on 'Comparative Literature: aesthetics, trajectory and Tagore' in collaboration with Comparative Literature Centre of Bhasha-Bhavana.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.:**
  - a) Since the Bhavana has been earmarked in 2013- as a Resource Centre of National Manuscript Mission, it has started collaboration with Manuscript Resource Centre of Calcutta University. Certificate course in Manuscriptology has been introduced with able assistance from Manuscript Resource Centre of Calcutta University.
  - b) Rabindra-Bhavana has been selected as a partner institution under United Kingdom-India Education Research Initiative (UKIERI) with Edinburg Napier University of Scotland as collaborator. This is a prestigious project which heralds intercultural research collaboration breaking the barrier of geographical and other hegemony.

It is to be noted here that Rabindra-Bhavana, Visva-Bharati is the topper in the list of selected candidates in UKIERI list.

7. **Details of programmes discontinued, if any, with reasons:** Nil
8. **Examination System:**  
Tagore Studies Course, conducted by Rabindra-Bhavana is at present semester-oriented.
9. **Participation of the department in the courses offered by other departments :** The Apart from regular classes of Tagore Studies and Culture Studies, the teachers of the Department take classes in Sanskrit and in Comparative Literature.
10. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors/ Asst. Professors/ others) :**

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	01	01	01
Associate Professors	01	-	-
Asst. Professors	01	-	-
Others	-	-	-

11. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance :**

- a) **Name** : Prof. Tapati Mukhopadhyay  
**Qualification** : M.A., M.Phil & Ph.D  
**Designation** : Director, Culture & Cultural Relations and Adhyaksha, Rabindra-Bhavana  
**Specialization** : Dharmasastra, Literature and Tagore Studies  
**No. of Years of Experience** : 34  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 03 (One completed M.Phil, the other two under Ph.D supervision)
- b) **Name** : Prof. Udaya Narayana Singh  
**Qualification** : M.A. & Ph.D.  
**Designation** : Professor, Rabindra-Bhavana  
**Specialization** : Linguistics and Literature  
**No. of Years of Experience** : 35  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 35(14-Ph.D and 21- M.Phil)

- c) **Name** : Prof. Amrit Sen  
**Qualification** : M.A, M.Phil, Ph.D  
**Designation** : Presently attached to Rabindra-Bhavana  
**Specialization** : Eighteen Century English Literature & Tagore Studies  
**No. of Years of Experience** : 14  
**No. of Ph.D./M.Phil. students guided for the last 4 years** : 02(Ph.D)

**12. List of senior Visiting Fellows, adjunct faculty, emeritus professors:**

- a) Prof. Malavika Karlekar, noted critic and a Tagore's Specialist was a Visiting Fellow into 2013.  
b) Prof. Amitrasudan Bhattacharya, former Tagore Professor, Visva-Bharati is presently attached as Adjunct Professor to the Bhavana.  
c) Prof. Alpana Ray, former Professor of Bangla, Visva-Bharati is at present attached to this Bhavana as Professor on extension.  
d) Prof. Karunasindhu Das, former Vice-Chancellor, Rabindrabharati University is now at present looking after Lipika Manuscriptorium.

**13. Percentage of classes taken by temporary faculty — programme-wise :**

For newly introduced M.Phil & Ph.D Course in Culture Studies, apart from regular faculties, eminent retired professors are invited to take classes. In a span of three months duration, 10% classes have been taken by erudite Guest Professors. For Manuscriptology Certificate Course, the process has just started to induct guest faculty.

**14. Programme-wise Student Teacher Ratio: 6 : 1**

**15. Number of academic support staff (technical) and administrative staff sanctioned, filled and actual :**

	Sanctioned	Filled	Actual
Academic Support Staff (Technical)			
Administrative Staff			

**16. Research thrust areas as recognized by major funding agencies:**

Kalanukramik Rabindra Rachanavali Project funded by MoC, GOI.

This is a unique project where all works of Rabindranath will be collated accordingly to the date of their first publication. This particular project is slated to unravel the poet's psyche and creativity at different critical junctures of his life, intertwined with socio-political realities of contemporary perspective. The first volume is already in

Press and is going to be published shortly.

**17. Number of faculty with ongoing projects from a) national b) international agencies and c) Total grants received. Give the names of the project title and grants received project-wise:**

**Prof. Tapati Mukhopadhyay –**

- a) Prof. Tapati Mukhopadhyay-Coordinator, UKIERI Project, Project Titled- '*The Scotland-India Continuum of Ideas: The Relevance of Tagore and his Circle*', Funding Agency, UGC, British Council, sanctioned amount Rs. 12, 68,800.00.
- b) Prof. Tapati Mukhopadhyay-Coordinator, Incentivisation Project- funded by UGC, sanctioned amount Rs. 6,00,000.00.

**Prof. Amrit Sen – He is actively associated with both the projects.**

- a) UGC Minor Research Project titled *Reimagining the Homeland: Representation of India in the Travel narratives of Dean Mohomet and Abu Taleb* (2006-2008). Grants: Rs. 1 lakh.
- b) UGC Postdoctoral Research Project titled *The Self and the World in the Travel Writings of Rabindranath Tagore* (2009-2011); Grant: Rs. 2 lakh.
- c) Ongoing UGC Major Research Project on Rabindranath Tagore and Science (2013): Grant Received: Rs. 9.6 lakh.

**18. Inter-institutional collaborative projects and associated grants**

**a) National collaboration:**

- i) In a collaborative project with Centre For Development of Advanced Computing (C-DAC) , A Govt. of India organization, all books by Tagore and on Tagore have been digitized. All gramophone Discs and spools are now under digitization process.
- ii) In another collaborative project with Indian National Trust For Art and Cultural Heritage (INTACH), conservation of all manuscripts in Lipika Manuscriptorium are being taken up.

**b) International collaboration:**

UKIERI Project- a joint collaborative project with Edinburg Napier University, Scotland.

**19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, AICTE, etc.; total grants received:**

**Total grants received:** Total Rs. 18.6 lakhs out of which a partial amount has been received.

- a) National Project: Incentivisation Project, funded by UGC, Govt. of India, Total Grant Rs. 6,00,000/-.
- b) UGC Minor Research Project titled *Reimagining the Homeland: Representation of*

*India in the Travel narratives of Dean Mohomet and Abu Taleb* (2006-2008). Grants: Rs. 1 lakh.

- c) UGC Postdoctoral Research Project titled *The Self and the World in the Travel Writings of Rabindranath Tagore* (2009-2011); Grant: Rs. 2 lakh.  
d) Ongoing UGC Major Research Project on Rabindranath Tagore and Science (2013): Grant: Rs. 9.6 lakh.

**20. Research facility / centre with a) state recognition, b) national recognition, c) international recognition:**

Rabindra-Bhavana is an internationally acclaimed centre for Tagore-centric research. Decked with well-equipped library and archives. Rabindra-Bhavana is considered as the largest repertoire of Tagore related articles and artefacts.

**21. Special research laboratories sponsored by / created by industry or corporate bodies:** Not applicable

**22. Publications:**

**a) No. of papers published in peer reviewed journals:**

**i) National/International**

**Dr. Tapati Mukherjee –**

**(2012-2013)**

- Ø ‘Rabindranath in 21<sup>st</sup> century’ published in a book, sponsored by Gobinda Prasad Mahavidyalaya, Bankura, 2012.
- Ø *Forest Management in ancient India* in Rajkumar Sen ed *Forest Management and Sustainable Development*, Deep and Deep Publishers Pvt. Ltd., New Delhi, 2012.
- Ø *Gitanjali O Poetry: ekti nibir path* in Amitrasudan Bhattacharya ed. *Visva-Bharati Patrika*, Sravan-Asvin, 1419.
- Ø *Brahmodharma – anusrita upasanamantra O Thakur barir anubadaktreyi:* in Tapati Mukhopadhyay ed ‘Rabindrakiksha’ Vol. 52, Rabindra-Bhavana, Visva-Bharati, 2012.
- Ø ‘*Rabindranather Dakghar Satabarser Aloke*’ in Tapati Mukhopadhyay ed *Rabindrakiksha*, Vol. 53, Rabindra-Bhavana, Visva-Bharati, 2012.
- Ø ‘*Karunaghana namo he: Tathagata Pranalitey Rabindranath*’ in Mahuya Bhattacharya ed *ebong amra*, published by Debabrata Sen, 2012.

**Udaya Narayana Sing –**



- Ø [ESSAYS] 2010a. *Translation as Growth*. Pearson/Longman. [English]
- Ø [ESSAYS] 2010b. *Bhashar Sahitya: Sahityer Bhasha*. Kolkata: Anushtup. [Essays in Bengali]
- Ø [POETRY] 2011. *Esecho eso raat*. [A collection of Bengali rhymes]. Kolkata: Sahaj Path.
- Ø [FICTION] 2012. *Bhut-Chaturdashi* (A collection of Ghost-Stories in Bengali). Karigar, Kolkata

b) Monographs: 03

c) Chapters in Books: 80

d) Edited Books:

**Dr. Tapati Mukherjee –**

- Ø Edited **bilingual Edition of Gitanjali Song offerings by Rabindranath Tagore** jointly with Dr. Amrit Sen (A Rabindra-Bhavana Publication, year of publication-2012)
- Ø Edited ‘Educational Thoughts and Concepts of Rabindranath’ (year of publication-2012)
- Ø Edited *Smaraney Baraney Rabindranath* (2013, Rabindra-Bhavana Publication)
- Ø Edited “Rathindranath Tagore: the unsung hero” (2013, Rabindra-Bhavana Publication)
- Ø Rabindra-Biksha (A research Publication of Rabindra-Bhavana, Volumes 52 & 53 (2012), Visva-Bharati Quarterly, 2013)

**Prof. Udaya Narayana Sing –**

- Ø [ESSAYS] 2010b. [Ed. Jtly with Anjan Sen] *Upanyaser sahityatattva*. Kolkata: Sahitya Sansad. [Bengali]
- Ø [ESSAYS] 2011a. [Ed. & Comp. with Leslie Farrell & Ram Giri]. *English Language Education in South Asia: From Policy to Pedagogy*. Cambridge University Press. [English]
- Ø [LEXICON] 2011c. [Ed. & Comp. with Suchita Singh & Chandan Hazra]. *Longman-CIIL Basic English-English-Bengali Dictionary*. New Delhi: Pearson Education. [English & Bengali]
- Ø [LEXICON] 2011d. [Ed. & Comp. with B.R.Pal & S.K.Singh]. *Longman-CIIL Basic English-English-Hindi Dictionary*. New Delhi: Pearson Education. [English & Hindi]
- Ø [ESSAYS] 2011e. [Ed. with Navdeep Suri] *Rabindranath Tagore 1861-1941: A Commemorative Volume*. Ministry of External Affairs, Govt of

India. [English, Bengali, French, German, Russian, Spanish, and Portuguese editions]

- Ø [LEXICON] 2012a. [Ed. & Comp. with Pradhan Gurudatt & S.S.Yadurajan]. *Longman-CIIL Basic English-English-Kannada Dictionary*. New Delhi: Pearson Education. [English & Kannada]
- Ø [LEXICON] 2012b. [Ed. & Comp. with Basanta Panda & B.N.Patnaik]. *Longman-CIIL Basic English-English-Oriya Dictionary*. New Delhi: Pearson Education. [English & Oriya]
- Ø [LEXICON] 2012c. [Ed. & Comp. with V.S.Nair & Sadashivan]. *Longman-CIIL Basic English-English-Malayalam Dictionary*. New Delhi: Pearson Education. [English & Malayalam]
- Ø [LEXICON] 2012d [Ed. & Comp. with Sam Mohanlal, L.Ramamoorthy & Vimala]. *Longman-CIIL Basic English-English-Tamil Dictionary*. New Delhi: Pearson Education. [English & Tamil]
- Ø [ESSAYS] 2012e. *Kabitaar bhaaSaa*. (Jointly ed., with Anjan Sen) 148 pp. Calcutta: Bangiya Sahitya Samsad. [Bengali]

e) Books with ISBN with details of publishers:

c) Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.):

d) Citation Index — range / average: 03

e) SNIP:

f) SIR:

g) Impact Factor — range / average:

h) h-index:

### 23. Details of patents and income generated:

Income generated from entry fee to Rabindra-Bhavana Museum is Rs. 27, 67,935.00 (from 01.04.2013 to 31.01.2014) and Rs. 16,00,780.00 (from 09.08.2012 to 31.03.2013)

### 24. Areas of consultancy and income generated:

**Consultancy areas of Prof. Udaya Narayana Singh:**

Supervised as Director or Consultant several major research projects on Language Movement (funded by MSU & Centre for Social Studies), NLP (DoE), Digital Documentation (SASNET & SIDA, Sweden), Machine Translation (MC&IT), and

Linguistic Data Consortium in Indian Languages (LDC-IL) - MHRD. Besides the above, he was the Chief of the National Translation Mission (NTM) specially approved by the Prime Minister of India, and also the Chief Consultant of the Microsoft's Validation Project for Vista; Director, NSOU-CIIL Joint Project on Bangla Online, 2002-04 and Director, CIIL-SAG (Ministry of Defence) Spoken Corpora and Contemporary Corpora Projects in Hindi, Bangla and Manipuri, 2005-07. In addition, he had conceived of and executed the Bhasha Mandakini Project under which 560 films were made on Bangla, Tamil and Kannada language, literature, and culture. For the large projects designed and supervised, also look at:

- a) The *National Translation Mission* (or, *NTM*) at [www.ntm.org.in](http://www.ntm.org.in)
- b) The *National Testing Service* (or, *NTS*), and at [www.ciil.miles.net](http://www.ciil.miles.net) & [www.nts.net](http://www.nts.net)
- c) The *Linguistic Data Consortium for Indian Languages* (or, *LDC-IL*) at [www.ldcil.org](http://www.ldcil.org).
- d) Besides the *Centre of Excellence in Classical Tamil* (*CECT* as described in [www.ciil-classicaltamil.org](http://www.ciil-classicaltamil.org)), which has now flowered into a new institution – called the CICT at Chennai.

**Consultancy areas of Prof. Tapati Mukhopadhyay:**

Chairperson of a Committee constituted by UGC for monitoring construction of women hostels in a few colleges of Chhattisgarh.

**25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:**

Prof. Tapati Mukhopadhyay has been selected by Sahitya Akademi as one of the jury for adjudicating Bhasha Samman in the year 2013-14.

**26. Faculty serving in**

**a) National committees:**

Professor Tapati Mukhopadhyay –

- i) Vice-President, Comparative Literature Association of India.
- ii) Member, UGC Committee for scrutinising proposals from colleges in the North-East for organising seminars/conferences/symposia -2008-09, 2009-10, 2010-11.
- iii) Member of UGC Purchase Committee, Eastern Regional Office from 2009 to 2011.
- iv) Member of Executive Council of Netaji Subhas Open University as Chancellor's nominee in 2010 to 2012.

**b) International committees: Nil**

**c) Editorial Boards:**

Professor Tapati Mukhopadhyay –

- i) Project Co-ordinator of Kalanukramik Rabindra Rachanavali Prakalpa,

funded by Ministry of Culture, Govt. of India.

Prof. Udaya Narayana Singh –

- i) **General Editor of Longman-CIIL Series of eleven Bilingual Dictionaries.**
- ii) Co-Editor of International Journal of Inter-Cultural Relations; 2008-onwards.
- iii) Member of the Editorial Board of the Brill's series titled *Studies in South and Southwest Asian Languages*.
- iv) Guest edited a special number of *India Perspectives*, 24.1 devoted to Rabindranath Tagore (2010), MEA, New Delhi.
- v) Member of the Editorial Board of Collins English-Hindi Bilingual Dictionaries (2011).

**d) Any other (please specify):**

**27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs):**

- a) Orientation Programme on Tagore Studies for the entire Visva-Bharati community held on 10<sup>th</sup> and 17<sup>th</sup> February, 2013. This year also the same programme has been taken up.
- b) Manuscript Studies: A five day Workshop in collaboration with Manuscript Resource Centre, Calcutta University was held during 9-12 September, 2013.
- c) Workshop of Natyacharcha Kendra involving all theatre groups of Birbhum in December, 2013. Topic of discussion - Problems and trajectory of current theatre.
- d) Conducted Inter-Institutional Translation Workshop in collaboration with Translation Centre, Department of Comparative Literature, Jadavpur University on **Christianity in Tagore's works in February 2014.**

**28. Student projects:**

- a) **percentage of students who have done in-house projects including interdepartmental projects:** As the Academic course work has just started we hope that this will soon take off.
- b) **percentage of students doing projects in collaboration with other universities / industry / institute:** Nil

**29. Awards / recognitions received at the national and international level by**

a) **Faculty:**

**Prof. Tapati Mukhopadhyay –**

- i) UGC Research Award
- ii) Received the Mahopadhyay Award by Howrah Sanaskrita Samaj.

**Prof. Udaya Narayana Singh –**

Awarded Mithila Vibhuti Sanman 2007 and the Keeritinarayan Mishra Award (Chetana Samiti) for his play ‘No entry: Maa Pravisha’, 2009; by the Chief Minister of Bihar on 31<sup>st</sup> October, 2009 (premiered in Patna on 21<sup>st</sup> February, 2011).

**Prof. Amrit Sen –**

- i) UGC Research Award, 2012
- ii) 18<sup>th</sup> Century Studies Bursary at University of Oxford, 2011

**b) Doctoral / post doctoral fellows:** Nil

**c) Students:** Nil

**30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any:**

- i) Rabindra-Prabaha on “Rabindranather Sikha Chinta” organized by Rabindra-Bhavana, Udayana Griha, Uttarayan on 27-05-12
- ii) Rabindra-Prabaha on “After Tagore 150-How to go from here: Some personal reflections” by Rabindra-Bhavana, Udayana Griha, Uttarayan on 20-11-12
- iii) Rabindra-Prabaha “Tagore’s song in Hindi” organized by Rabindra-Bhavana, Udayana Griha, Uttarayan on 19-01-13
- iv) Smarane-Barane on “Rathindranath” organized by Rabindra-Bhavana, Sriniketan Fresco on 03-06-12
- v) Smarane-Barane on “Swarna Kumari Devi” organized by Rabindra-Bhavana, Udayana Griha, Uttarayan on 27-08-12
- vi) Smarane-Barane on “Saratadevi Choudhurani” organized by Rabindra-Bhavana, Udayana Griha, Uttarayan on 30<sup>th</sup> Sep, 2012
- vii) International event & cultural programme, Padma Boat Presentation, *Vichitra* Hall & Lipika Auditorium organized by Rabindra-Bhavana, Vichitra Reading Room on 12-09-2012
- viii) Visit by Hon’ble President of India, Release of bilingual version of Gitanjali by Hon’ble Governor, West Bengal and presentation of first copy to Hon’ble President of India, Rathindra Atithi Griha organized by Visva-Bharati & Rabindra-Bhavana on 18-12-2012
- ix) Seminar followed by dramatic performance by Patha-Bhavana and exhibition on Centenary Celebration of drama ‘Dak -ghar’, Lipika Auditorium organized by Rabindra-Bhavana on 03-12-2012
- x) National Seminar on Gitanjali to Song Offerings: A Tribute to Rabindranath Tagore, Lipika Auditorium organized by Rabindra-Bhavana on 03-02-2013

- xi) Presentation of Tagore memorabilia followed by a seminar on ‘Victoria Ocampo’ Lipika Auditorium organized by Rabindra-Bhavana on 17-02-2013
- xii) International Conference on “A Man of Letters: Rabindranath tagore And His Epistles”, Lipika Auditorium organized by Rabindra-Bhavana on 14<sup>th</sup> to 15<sup>th</sup> March, 2013
- xiii) National Conference on “Rathindranath the Unsung hero”, Lipika Auditorium organized by Rabindra-Bhavana on 24<sup>th</sup> March, 2013

**31. Code of ethics for research followed by the departments:**

As per the Guidelines of UGC & Visva-Bharati

**32. Student profile programme-wise:**

Name of the Programme (refer to question no. 4)	Applications Received	Selected		Pass percentage	
		Male	Female	Male	Female
Ph.D	06	03	03		
M.Phil	06	03	03		

**33. Diversity of students:**

Name of the Programme (refer to question No. 4)	% of Students From the Same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
B.Ed.– 2012-13	77 %	22 %	01 %	Nil
2013-14	77 %	21 %	02%	Nil
M.A.(Education) – 2012-13	10.25 %	87.17%	2.56%	Nil
2013-14	07.69 %	89.74%	2.56%	Nil
Ph.D. – 2013	16.66%	44.44%	38.88%	Nil

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise:**

Six students have cleared the NET and One SLET for M.Phil & Ph.D in Culture Studies.

**35. Student progression:**

Student progression	Percentage against enrolled
---------------------	-----------------------------

UG to PG	Since the Course has just started we are not in a position to assess it.
PG to M.Phil.	
PG to Ph.D.	
Ph.D. to Post-Doctoral	
Employed <ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	
Entrepreneurs	

**36. Diversity of staff:**

Percentage of faculty who are graduates	
of the same university	Nil
from other universities within the State	100%
from universities from other States	Nil
from universities outside the country	Nil

**37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:**

Awarded Degree	No. of Faculty
M.Phil.	Nil
Ph.D.	Nil
D.Sc. and D.Litt.	Nil

**38. Present details of departmental infrastructural facilities with regard to****a) Library:**

- i) Area in (Sq. Meters) quoted for the library: **508.365 Sq. Mt.**
- ii) Is there separate provision for Reading Room? : **Yes, 106.652 Sq. Mt.**

**b) Internet facilities for staff and students:** This facility has been provided to each section and office except in Garden and Generator section.**c) Total number of class rooms:** 02**d) Class rooms with ICT facility:** Not applicable**e) Students' laboratories:** Manuscriptorium that students can use and train**f) Research laboratories:** Not applicable**39. List of doctoral, post-doctoral students and Research Associates:**

- a) from the host institution/university: Ph.D – 01

- b) **from other institutions/ universities:** Ph.D – 05
40. **Number of post graduate students getting financial assistance from the university:** Not applicable
41. **Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology:**  
We have undertaken two new programmes in Culture Studies and Manuscriptology to cater to the new researches in archival and interdisciplinary studies.
42. **Does the department obtain feedback from**
- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback:**  
Since the faculty has framed the curricula in conjunction with eminent scholars on the subject we regularly monitor feedback about curricula and response of students with a view to make the programme more learner-friendly and relevant for contemporary perspective.
- b. **students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback:**  
As the courses have just started, regular feedback mechanism can hardly be made functional. However, the teachers are interacting with students regarding their response to the course curricula, teaching methods and others. These informations are given due weightage for overall structuring of course and putting emphasis on parts of curricula and others.
- c. **alumni and employers on the programmes offered and how does the department utilize the feedback:**  
Not applicable, since courses has not been completed.
43. **List the distinguished alumni of the department (maximum 10):**  
Not applicable
44. **Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:**  
As per Item nos. 27 & 30
45. **List the teaching methods adopted by the faculty for different programmes:**  
Classroom teaching, interactive teaching with ICT.
46. **How does the department ensure that programme objectives are constantly met and learning outcomes are monitored:**  
Through regular evaluation as per UGC norms and as per University Examination norms.



- 47. Highlight the participation of students and faculty in extension activities:**  
Faculty and students have participated in extension and social outreach programmes at Bharat Sevashram Sangha, Ghoshaldanga School. Blankets were distributed amongst tribal students and donation has been made from Vice-Chancellor's fund for construction of a building for socially disadvantaged tribal students.
- 48. Give details of "beyond syllabus scholarly activities" of the department:**  
a) Rabindra-Prabaha (i.e. lecture demonstration programme on Tagore and his family) are organized regularly and books have been published.  
b) Orientation programme on Tagore and his creativity
- 49. State whether the programme / department is accredited / graded by other agencies? If yes, give details:** Not applicable
- 50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied:**  
Since our mandate is Tagore Studies, we have tried to take Tagore studies to the world. We have also initiated new courses in Manuscriptology and Culture Studies with Tagore's ideas to meet the new educational challenges and interdisciplinary research. Our proposal of joint collaboration with Napier University has already been accepted.
- 51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:**
- a) Strengths :**
- i) Rabindra-Bhavana is the largest repertoire of Tagore related documents, artifacts and other memorabilia which are objects of global attraction.
  - ii) Presence of internationally acclaimed scholars and researchers and regular interaction with them.
  - iii) In view of world wide exposure, feedback on the performance is received internationally.
  - iv) Photo Archives and rare book section of the library where the books used by Tagore were preserved.
  - v) Collaboration with Overseas Institutions on propagation of Tagoreana.
- b) Weaknesses:**
- i) Dearth of space.
  - ii) Shortage of trained staff
  - iii) Computerisation of library not yet achieved.
  - iv) Paucity of research faculties
  - v) Exclusive website
- c) Opportunities:**

- i) Space has been allocated for construction of Gitanjali Hall.
- ii) The vacant posts have been advertised and it is expected that new faculty will join shortly.
- iii) Process of computerisation has started.
- iv) Recruitment process for new faculties started.
- v) C-DAC is preparing new website for Rabindra-Bhavana.

**d) Challenges:**

- i) To make Tagore's ideas globally accessible.
- ii) To make translations of Tagore in various languages available.
- iii) To design new courses on Tagore for international students.
- iv) To bring together various facades of Tagore's creativity under research.
- v) To create a richer and more accessible archive and library for specialised researchers.

**52. Future plans of the department:**

Rabindra-Bhavana is indeed considered as a crystal in the crown of Visva-Bharati. As such to provide Visva-Bharati international credence and repute of an 'International University' which epitomises the culmination of Tagore's dream '*yatra visvam bhavati ekaniram*, (where the world meets in one nest), Rabindra-Bhavana is indeed designed to take a pivotal role. We therefore nurture the following plans which we are hopeful to implement in future.

**Infrastructural:**

- a) With a grant of Rs. 70 lakhs received from MP Lad fund of Dr. Barun Mukherjee, construction of 'Gitanjali Hall' which will focus on Gitanjali, Song offerings and finally the conferment of the most coveted 'Nobel' award on Tagore will highlight Tagore's luminous brilliance.
- b) We propose to convert 'Dvijabiram', the residence of Tagore's eldest brother Dvijendranath, a man of astounding creativity befitting the culture of Tagore family, into a museum.

**Academic:**

- a) To collate and publish entire gamut of Tagore's works arranged according to their date of first publication i.e. Kalanukramik Rabindra Rachanavali Prakalpa.
- b) To translate Tagore works in all major Indian and foreign languages.
- c) To highlight other less-explored stalwarts of 19<sup>th</sup> century Bengal.
- d) To make Tagore accessible to the remotest corner of the country and to people belonging to different strata of the society through mobile exhibition and various programmes.
- e) To frame a user-friendly website

### Vidya Bhavana

Vidya Bhavana, the Institute of Humanities and Social Sciences, was conceived as an Institute of Higher Studies and Research and has always occupied a key position in Visva-Bharati. It started functioning under the name Uttarvibhaga as the department of advanced studies in 1921.

The eminent scholar and Adhyapaka Bidhusekhar Shastri testified that this nomenclature evolved out of a positive idea, learning (Patha) leads to education (Shiksha), mentioned in the pages of the '*Santiniketan Patrika*' of Magha 1332 BS and the date of the Institute's informal inaugural was also 8 Paush of 1325 BS (last week of December 1925).

Vidya Bhavana is now a major Institute of the University with seven major departments (Philosophy and Comparative Religion, History, Geography, Ancient Indian History Culture and Archaeology, Economics and Politics, Anthropology and Centre for Journalism and Mass Communication. The strengths, weakness, opportunities and challenges of the Bhavana are as follows:

#### Strengths

- Several departments under the Bhavana have been recognized by the Ministry of Human Resource Development (MHRD). The Department of History has been awarded DRS-SAP (phase III) and the Department of Economics and Politics has been awarded DRS-SAP (phase II) with thrust area of 'Agriculture, Environment and Rural Development' along with many projects sponsored by UGC, ICSSR, SANDEE.
- Expertise in development, economics, agricultural economics, macro economics and international trade in the Department of Economics and Politics. A. K. Dasgupta Centre with a chair in planning and development funded by the Planning Commission was established in 1996. Collaborative works with the Agro Economics Research Centre under the Ministry of Agriculture have been taken up. The honorary Director of AERC is a faculty member of the department.
- The Centre for Journalism and Mass Communication is one of the very few media learning institutions, which has its training publication (lab journal) - 'Visva-Bharati Chronicle.' This department also collaborates with Friedrich Ebert Stiftung (FES),

the renowned German foundation which supports various social and democratic activities in academic institutions in more than 110 countries across the world. The collaboration which got initiated in the year 2009 in the field of social communication has got widened in the two other wings of labour issues and gender since 2013. The department has successfully conducted 17 programmes with FES in various field till date. FES has identified the department as the only Journalism and Mass Communication Centre in Eastern India where they are conducting programmes concerning all their wings.

- Good teacher student ratio in the respective departments.
- Class seminars on topics related to the syllabi are conducted and duly evaluated thereby ensuring students' active participation in the teaching learning process. Activities such as class seminars generate a lot of academic enthusiasm among students and ensure active student teacher interaction.
- An emerging strength in both theoretical and empirical research, both at national and international level with significant number of faculty publishing in international and national journals in diversified areas.
- Strong research and teaching capabilities in agricultural, environmental and rural economics history of important research in land and land tenure, farm management surveys.
- A significant international community of students hailing from Bangladesh, Korea, Japan, Thailand, China. We also have a large number of students from states other than West Bengal. Many students are in important positions in academic and non-academic positions in India and abroad.
- Students of this Bhavana are associated with prestigious organisations after completion of their courses. Department of Economics and Centre for Journalism and Mass Communication are remarkably progressing in this regard.

#### **Weaknesses**

- Lack of expert technical staff in few departments, like Geography, Centre for Journalism and mass Communication. Qualified personnel are also urgently required for maintenance, storage, documentation and inventorisation of hard and soft data to ensure ease and proper utilization of the database available in the departments.
- Very few seminar halls with modern facilities and adequate reading room space in seminar libraries.

#### **Opportunities**

- Scope for extensive field work based research in few departments.
- Consistent healthy working environment and cooperation among the faculty

members.

- Syllabi catering to global standards are implemented and practiced
- Location of the university near tribal areas provides immense opportunities to the department of Anthropology to frequently interact with people of Santali, Munda, and Kora Tribes.
- Ample scope for employment generation, strong research avenues, opportunities in decision making in public and private life, participatory resource appraisal and digital challenges.
- The department of Geography can offer a self financed diploma course on Remote Sensing & GIS .Not only will the students benefit from it but it will also create local employment opportunities.
- Scope for Rural and Development Communication in the Centre for Journalism and Mass Communication. Also, Scope for convergence of New Media with the Traditional Communication System prevailing in the nearby rural area.
- The department of Philosophy as well as Economics and Politics intend to initiate exchange programmes with national and international institutions and co-ordinate with the action based research.

### **Challenges**

- To make the tutorial system more effective and improve the communication skills of the students, especially in English.
- Updating the syllabus/curriculum for keeping the trend of all the departments in terms of technological upgradation, infrastructure and logistic support.
- Expand interdisciplinary research activities.

### **Siksha Bhavana**

Siksha Bhavana (Institute of Science) was originally an under-graduate college for teaching Humanities subjects which during 1961-63 was expanded to include in its curriculum B.Sc. (Hons.) courses in Mathematics, Physics, Chemistry, Zoology and Botany. The M.Sc. programme in Mathematics was introduced in 1963 and the same from other subjects was started in 1968. Finally in 1972, due to recognition of the course of studies in the Humanities and Science subjects, all the Science Departments teaching undergraduate and postgraduate courses were brought under Siksha Bhavana which is now known as Institute of Science.

Siksha Bhavana (Institute of Science) now comprises eleven constituents: nine departments and two Centres. The nine departments are Chemistry, Physics, Mathematics, Zoology, Botany, Statistics, Computer and System Sciences, Biotechnology and Environment Sciences. The two Centres are Centre for Mathematics Education and Integrated Science Education and Research.

### Strengths

- The various departments under Siksha Bhavana have been recognized by the prestigious Department of Science and Technology (DST) and University Grants Commission (UGC). For instance, the Department of Mathematics is under the support of SAP-DRS (Phase III). Department of Botany is financially supported by UGC-DRS (Phase II) and DST-FIST (Phase II) programmes. Department of Chemistry has been awarded both UGC-SAP (Phase II) and DST-FIST (Phase II). Department of Environmental Studies has been awarded DST-FIST in 2014. Department of Zoology has been acclaimed as the Centre for Advanced Studies and UGC and DST-FIST (Phase II).
- The departments under the Bhavana are engaged in high quality research with national and international institutions of repute. For instance, the department of Environmental Studies (DES) is engaged in collaborative research with University of Leeds, University of Nottingham and University of Exeter, U.K. as well as with IIT, Chennai and IIT, Mumbai for generation of electricity by integrating concentrated Photovoltaic and Biogas produced by anaerobic digestion of biomass for the electricity to rural tribal community (DST funded). This department is also involved in research collaboration with other institutes like Central Institute of Mining and Fuel research (CIMFR), Dhanbad, Ravenshaw University, Cuttack, Institute of Agriculture and Department of Botany, Visva-Bharati.
- The Bhavana also undertakes several initiatives beneficial to the society and community. For instance, rainwater harvesting system for educational purpose is set up at Siksha-Satra school with funds from IESWM (Institute of Environmental Studies and Wetland Management, Government of West Bengal) under the constant supervision of the members of Environmental Studies department. Installation of PVC solar system in the Central Administrative building, Visva-Bharati is undertaken by the DES being funded from MNRE (Ministry of New and Renewable Energy, Government of India).

- Motivated and committed faculty members with national and international exposures and specialization on diverse areas; excellent teacher-student relationship
- The faculty members have been honoured with several prestigious international fellowships. For instance, in the department of Botany, one faculty has been awarded Alexander von Humboldt Fellowship to work in Max Planck Institute, Germany for terrestrial microbiology; two faculty members have been awarded UGC Raman Post Doctoral Fellowship to work in the USA. In the department of Integrated Science Education and Research Centre. Two faculty members have been awarded UGC Raman Post Doctoral Fellowship to work in the USA. In the department of Integrated Science Education and Research Centre, faculty members have been awarded BOYSCAST fellowship, JSPS fellowship, Japan and short term visiting fellowship at ICTP, Trieste, Italy.
- Updated syllabus with elective and special papers on contemporary topics
- Department of Computer and System Sciences impart education in computer science and applications in diverse fields to students predominantly from rural areas with modest socio-economic background.
- Organization of DST INSPIRE winter/summer camp, national and international seminars/ conferences/workshops at regular intervals which helps to develop knowledge for both students and faculties.
- With support of DBT the Centre for Biotechnology was able to establish good laboratory facilities for the benefit of the post graduate students as well as research scholars including also of the other Departments and Centres

### **Weaknesses**

- Maintenance of laboratory equipments is extremely time taking as it is located far from Kolkata.
- Experimental research work is difficult to pursue due to frequent power cut
- Infrastructure facility inadequate and needs to be strengthened further in order to provide justice to teaching and research. There is shortage of space for classrooms, individual rooms for faculties and research laboratories

- Lack of modern equipments like SEM/TEM, DNA Sequencer etc
- Due to lack of technical staff, laboratory facilities are not properly provided to the students.
- Inadequate research infrastructure.

### **Opportunities**

- Faculty members have huge opportunity to carry out interdisciplinary research work as the department comprises of teachers under one roof belonging to various fields of Science, viz. Biology, Chemistry, Mathematics, Physics, Environmental Science, etc.
- Department of Botany offers the opportunities of hand-on training and self-employment generation
- Department of Statistics has immense opportunities to undertake interdisciplinary research. Besides, the handy knowledge to common statistical packages can be imparted to the common technical people so that they can attain the utilization power of statistical tools.
- The department of Physics is endowed with the opportunities of Material preparation and characterization using XRD, TG-DTC facilities, theoretical modeling of nano-materials, Sky watch - using Astronomical Telescope

### **Challenges**

- To expose the students of the department of Statistics into industrial environment and administrative arena
- To develop state-of-the-art infrastructure for research
- Collaborative research with other external institutes and other faculties of the university.
- Research in frontier areas for the Department of Environmental Studies
- Research in interdisciplinary areas
- Design up-to-date curriculum for advanced studies
- Lack of adequate laboratory space and class-room space
- To make the tutorial system more effective and to improve the communicating skills of the students, so that they remain at par with students coming from other reputed institutions
- To motivate the doctoral students to opt for their postdoctoral studies as well as D. Sc. Programmes.
- Research in frontier areas of environment such as climate change, global



warming, disaster management etc. is a major challenge in the department of Environment Studies.

### **Bhasha Bhavana**

Bhasha-Bhavana, the Institute of Languages, Literatures and Cultures, was set up in order to promote scientific studies and research in various languages, literatures, cultures, their social and philosophical aspects as well as to promote interaction between various language departments in the university. It embraces ten major departments which offer regular courses in Indian languages such as Bengali, Sanskrit, Hindi, Odia, Marathi, Tamil, Assamese, Pali, Prakrit, Urdu and Santali, and foreign languages like English, Chinese, Tibetan, Arabic, Persian and Japanese as well as French, German, Italian and Russian. There are also some subsidiary units like Centre for Buddhist Studies, Centre for Comparative Literature, and Centre for Modern European Languages, Literatures and Culture Studies etc.

#### **Strengths**

- Department of English and Other Modern European Languages (DEOMEL) has been awarded DRS-SAP (Phase II)
- Digital catalogue of the departmental seminar library is available at DEOMEL.
- Besides, the departments under the Bhavana have well-stocked departmental libraries. Among these, some individual libraries, like those of Hindi, DEOMEL, Bengali and Odia, have extremely rich collections of books and manuscripts.
- Inter-disciplinary research work by the faculty members and scholars.
- Good interactive relations between students and teachers beyond class hours.
- International students in U.G., P.G., M.Phil and PhD and various language courses.
- A unique feature of the pedagogy of DEOMEL, which has faculty members specializing in French, German, Italian and Russian literature and culture, is the study of English literature in the European context.
- Compulsory components, at the undergraduate and postgraduate levels, include American studies, Tagore's works, Literary Criticism and Theory.
- Optional papers, at the undergraduate and postgraduate levels at DEOMEL, address a wide range of issues and reflect the research interests of its faculty. This includes the study of emerging fields like Canadian and Australian Studies, Diaspora Studies,

Ecocriticism, Gender and Queer Studies, etc.

- The course of study in DEOMEL has facilitated students to apply for study abroad and they have been recipients of prestigious fellowships like Felix, Nehru- Fulbright, Inlaks-Sivdasani and Commonwealth.
- The new Centre for Modern European Languages, Literatures and Culture Studies was created in 2014 to offer an interdisciplinary undergraduate course with honours in modern European languages, literatures and cultures with specialisation in French, German, Italian and Russian.
- The multidisciplinary approach to studies in DEOMEL has encouraged students to excel in professional fields like journalism and media, apart from pursuing vocations in academic institutions and at national and international levels. The department has also honed the performance skills of the students who have participated in multi-lingual cultural programmes at intra and inter university levels.
- Different departments of the Bhavana have a good number of enrolled foreign students in Certificate, Diploma, Advance Diploma, Foreign Casual Courses and a large number of PhD students.
- For quality improvement in class teaching, faculty members are facilitated to participate in national and international activities.
- To build teamwork, sportsmanship and leadership qualities, students are encouraged to participate in various extracurricular activities.
- The Memorandum of Understanding between the Department of Chinese and Yunnan University, China facilitates the visit of Chinese teachers to the Department at regular intervals and help in improving the overall Chinese language ability of the students and faculty members.
- Visva-Bharati is the only University offering undergraduate and postgraduate courses in Japanese Language the Eastern Region. The Department of Japanese receives active support from the Japanese Consulate, Kolkata, and also from Japan Foundation, New Delhi Office.
- Reputed academic journals published by various departments of the Bhavana include *Visva-Bharati Patrika* in Hindi (since 1941), *Visva-Bharati Dipika* in Odia (since 1980), *Bangla* from the Department of Bengali (since 2007), *Apperception* from DEOMEL (since 2001).

### Weaknesses

- Inadequate infrastructural facilities
- No language laboratory for Modern European Language classes; no digital and

audio-visually enabled classrooms

- No aid or facility, for instance the use of Braille, for students with special needs.
- Lack of reading room for the students within the respective departments.
- Non-availability of full time librarians in some of the departmental libraries, for instance, Department of Japanese.

### **Opportunities**

- Utilization of available resources in the manuscriptorium of Visva-Bharati and the archives of Rabindra-Bhavana
- The departments of foreign languages have immense opportunities for collaborating with foreign universities in various capacities.
- In the department of Japanese, the Indo–Japan relation is strengthening day-by-day, therefore the students will have better employment prospects. MEXT provides short term and long term scholarships to our students every year.
- One of the major strengths of the department of Indo-Tibetan Studies is the possession of the entire collection of scriptures related to Mahayana Buddhism in Tibetan language. These are to be made accessible to several universities and institutions, such as Central University of Tibetan Studies, Sarnath; Central Institute of Buddhist Studies, Leh; Namgyal Institute of Tibetology, Sikkim; Karmapa International Buddhist Institute, New Delhi, The Asiatic Society, Kolkata and so forth for conducting translation, restoration and dictionary projects including research, where students are being invited to join the projects. There are several other big projects, such as ACIP [Asian Classic Input Project], Tengyur Translation in the United States and others, which invite students to join them, thus providing qualified students with opportunities for employment.
- In the department of Odia, functional Odia language and literature will benefit the other language students

### **Challenges**

- Apart from the Seminar Library, Central Library and the Rabindra-Bhavana Library, no other well-equipped library is available in the vicinity; the faculty members and the student have to go to other cities regularly for library work.
- To develop soft-skill competence of students so that they can find jobs in private-public enterprises.
- Procuring further expertise in rare languages like Pali and Prakrit.

- One of the major challenges faced by the department of Japanese is to create a chair so that renowned Japanese academicians from leading universities and research institutes can be appointed on a long term basis (at least for a year or two).
- To enhance the present status of the library with more research oriented journals and periodicals to meet the future challenges in the research arena.
- To provide audio-visual facilities for the students of various levels.
- To devise methodology of teaching Indo-Tibetan Studies that includes Indo-Tibetan language, literature and culture in the global context.
- To restore lost texts in its original which are now available in Tibetan language with the assistance of well-versed Tibetan and Sanskrit scholars.

### **Kala Bhavana**

Kala Bhavana is a premier institute of visual art and design. Since its inception in 1919, it has played a significant role in developing new ideas in the education of modern art in India. Rabindranath Tagore, Nandalal Bose, Benodebihari Mukherjee and Ramkinkar Baij had contributed richly to its artistic heritage with their creative excellence. At present, Kala Bhavana comprises five departments: Design (Ceramic, Glass and Textile), Sculpture, Painting, Graphic Art and History of Art. The strengths, weakness, opportunities and challenges of the Bhavana are as follows:

#### **Strengths**

- A strong process based art curriculum leading towards awareness to individual creativity and also translating them to socially relevant art practice.
- Initiating collaborative and group activities through outdoor activities, workshops and seminars
- Practicing a critical approach to research and experimentation with traditional and contemporary idioms of art practice.
- Encouraging students to engage with new media based art activity and performance art to incorporate evolving modes of communication system in art practice.
- Practice based art practice with a strong focus on conceptual and post conceptual process of art to generate more active relation between art making and social engagement

#### **Weaknesses**

- Insufficient facility of new communication systems for teaching and research.
- Lack of adequate and proper studio facility commensurate with the enhanced

intake of students.

- Insufficient individual studio space for Masters Students.
- Requirement for a specialized mural studio that could accommodate new machineries for mural application in public space.
- Lack of infrastructure for archiving, documentation and research activity

### **Opportunities**

- Students enjoy a unique environment for engaged research with an orientation towards approach to individual creativity.
- Unique environment nurturing a community lifestyle of studio practice
- Providing a global approach to art practice where students from different region and country to participate and explore creativity
- Regular visits and opportunities to meet and interact with internationally reputed artists visiting Santiniketan regularly.
- Generative space for experimentation and knowledge building in diverse areas of creativity and scope for doing research and development.

### **Challenges**

- To create a balance between new technology and a process based organic art education.
- To generate an awareness of process and performativity in contemporary art practice.
- To ensure a regular inflow of visiting fellows familiar with international contemporary art practice.
- To evolve a contemporary pedagogic policy in keeping with the ever changing relationship of art, culture and society.
- To be at par with best universities providing art education.
- Encourage a holistic approach to arts among students so that it becomes a way of life not merely a profession
- To adopt its strong art historical programme, largely based on the Viennese School of Art History inherited through the interventions of Stella Kramrisch, to the changing values of theoretical studies.
- To achieve high intellectual standards with whatever infrastructure support it can marshal, especially since its location denies ready access to the resources of other cultural institutions and events which are largely urban centred.

### Sangit Bhavana

Sangit Bhavana, as an Institute of Music, Dance and Drama under Visva-Bharati, is absolutely unique in nature as much as in its regular involvement in organizing functions and festivals like 'Tree Planting Ceremony', 'Festival of Rains', 'Autumn Festival', 'Spring Festival', 'Ploughing Ceremony' as well as *Mandir* services (*Upasana*) etc as laid down in the statute of the university since the time of Rabindranath. At present Sangit Bhavana consists of two department viz. Hindusthani Classical Music and Rabindra Sangit Dance and Drama. The Bhavana has introduced a unique 'Çentre for Esraj' and a special research wing viz. *Rabindrasangit Gabeshana Kendra* (Research Centre for Tagore's Songs). The strengths, weaknesses, opportunities and challenges of the Bhavana are as follows:

#### Strengths

- A very rich and strong faculty in music, which had been initiated by Gurudeva Rabindranath Tagore
- The premier institution for 'Rabindra Sangit learning' in the world
- Rabindra-Sangit Gabeshana Kendra, Kalanukramik Rabindra-Sangit Prakalpa and Natya Charcha Kendra in collaboration with Rabindra Bhavana
- New curriculum for 'Rabindranritya' from UG to PhD level
- Only institution offering courses in Esraj starting from short-term courses to PhD
- Performance and production within the University, different places within the states, across the country and abroad generating funds for the University.
- Regular participation of students in the programmes organized by the SAARC countries and the Youth Festivals at the national level.
- A very rich Performing Art library with Digitization of Books
- Excellent Teacher-student ratio

#### Weaknesses

- Need for an Audio-visual studio
- Need for a digitized archive exclusively for the Bhavana
- Need for Documentation unit of Sangit-Bhavana

#### Opportunities

- Incorporation of other streams of dances like Bharatnatyam and Odissi in the department of Rabindra Sangit, Dance and Drama
- Incorporation of other streams of instruments like Flute, *Sarod* and Violin in the

department of Hindusthani Classical Music.

- Building a repertoire for Rabindrasangit , Dance and Drama productions
- Collaboration of performing arts departments/ schools at the national and international levels through already existing MoUs. For example- Sri Lanka, Satyajit Roy Film Institute, Kolkata
- Initiating interdisciplinary performance based research

### **Challenges**

- Preserving Tagore's vision of education in performing arts
- Devising methodology of teaching Rabindrasangit in the global context.
- Exploring avenues for propagation of Rabindrasangit, Dance and Drama presentations at national and international level
- Developing improved curriculum suitable to Semester system
- Generating funds from national and international organizations through dissemination of Tagore's ideas, concept, ethos and culture by way of presentation.

### **Palli Samgathana Vibhaga**

Palli Samgathana Vibhaga was originally established at Sriniketan by Rabindranath Tagore in 1922 with the primary objective to bring back life into villages making them self-reliant and self-respectful, acquainted with the cultural tradition of their own country and competent to make an efficient use of modern resources for the improvement of their physical, intellectual and economic conditions. Leonard K. Elmhirst was its first Director. This Institute has four departments, a library and a Music Unit. The Institute is a balance between academic activities (teaching and research) and extension activities. A substantive data bank of the villages under eight Gram Panchayats in Bolpur-Sriniketan and Illambazar Block has been built up over the years. The strengths, weaknesses, opportunities and challenges of the Bhavana are as follows:

### **Strengths**

- This institute is a part of the well-known Sriniketan Experiment of Tagore on Rural Development.
- Facilitates interdisciplinary research.

- Excellent placement of students.
- Fifty adopted villages being the greatest strength
- Entrepreneurship development
- Dissemination of technical training to unemployed rural youth
- Extension activities
- Revenue generation through extension activities in department of Silpa Sadana

### **Weaknesses**

- The UGC has discontinued NET programme for rural development offered by the department of Palli Charcha Kendra.
- Inadequate Industry-Institute partnership at Silpa Sadana.

### **Opportunities**

- Enactment of Corporate Social Responsibility laws is opening the scopes of research in rural development funded by the corporate bodies.
- Constitutional amendments for Panchayati Raj Institution also have created huge opportunities for rural development.
- Scope of transferring knowledge to the rural communities of the adjacent villages.
- Dissemination of research output to the planners and policy makers.
- Wider spaces for extension.
- Enormous opportunities of conducting field work in nearby rural and tribal villages
- University-community partnership and governmental departments-NGO partnerships also provide immense opportunities for department of Social Work and Rural Development in research.
- Scope of introducing M.B.A in Rural Management

### **Challenges**

- Funding for infrastructure and inadequate maintenance staff.
- Creating need based facilities for the students
- Cost control, effectiveness and viability.



- Acquiring appropriate academic expertise through inter-department and external collaborations n pose a major challenge.
- Acquiring appropriate readings and development of a proper seminar library is a major problem for the newly developed Women’s Studies Centre
- Attracting externally funded research projects

### **Palli Siksha Bhavana**

Palli-Siksha Bhavana (Institute of Agriculture) was established on September 1, 1963 as Palli-Siksha Sadana (College of Agriculture) and later renamed as Palli Siksha Bhavana (Institute of Agriculture) in the Visva-Bharati Act, as amended in 1984. Palli-Siksha Bhavana (Institute of Agriculture) imparts education in Agricultural Science subjects both at undergraduate and post-graduate levels. Apart from teaching and research, this Bhavana is also engaged in extension activities in the field of agriculture in the surrounding villages and elsewhere. Rural Awareness Work Experience (RAWE) and Experiential Learning (EL) are compulsory and a part of the academic curriculum for undergraduate students. Other academic support units are Agricultural Farm, Horticultural Farm, Dairy and Poultry Farm, Soil Testing Laboratory, Library and Rathindra Krishi Vigyan Kendra. The institute has its own placement cell. The strengths, weaknesses, opportunities and challenges of the Bhavana are as follows:

#### **Strengths**

- The heritage of the institute with ideals and vision of Nobel Laureate Rabindranath Tagore, his son Rathindranath Tagore, first Vice-chancellor of Visva-Bharati and the great philanthropist Leonard K Elmhirst providing constant source of inspiration
- At the entry level of UG programme of the Bhavana, creamy layer of students next to medical and engineering discipline opt for agriculture discipline and they also earn fame for the institute with their extra-ordinary performance in All India level ICAR-JRF Exams, JNU and BHU Entrance Test for PG programme, ICAR- NET, Banking Service, School Service and various other competitive examinations.
- Dedicated faculties of national and international reputation and mutual respect among present and former faculties who benevolently extend their advice and all sort of cooperation
- Perpetuation of constructive interaction with so many alumni of the institute serving national and international research institutes, universities and administration at different levels.

- The academic staffs have national and international expertise in developing course outlines.
- Scope for inclusion of multidisciplinary perspective in teaching and research.

#### **Weaknesses**

- Acute shortage of qualified administrative, supporting and technical staff at the departmental level and lack of students at PG level with impressive academic record and enthusiasm as most of our UG students are admitted to other Universities/Institutes through ICAR.
- Inadequate research infrastructure with no field and research assistants, lacking of modern laboratory facilities with adequate manpower and modern facilities at the Agricultural Farm, Dairy Farm and Horticultural Farm.

#### **Opportunities**

- Ample opportunity to cater to the need of agricultural education to the students of rural area of the locality as this district is still enlisted as one of the backward districts of the State of West Bengal.
- Provided with research infrastructural facilities, intake for PG and Ph. D. programme can still be increased and post-doctoral studies and also other short term vocational oriented certificate course can be started.
- Developing active collaborative research and extension work with Agriculture Dept. of Govt. of WB getting access to their research farms nearby and also with NGOs and Corporate sectors.
- There is scope of interdisciplinary teaching, research and extension work within the Visva-Bharati University with collaborative approaches particularly with the Departments of Botany, Biotechnology, Statistics, Computer Science and Environmental Sciences of Siksha Bhavana; Departments of Economics and Geography of Vidya Bhavana and Departments Social Work, Rural Extension Centre and Palli Charcha Kendra of Palli Sangathan Vibhaga.
- Farmer advisory service with a Kisan Call Centre can be established to cater the need of farmers in challenging scenarios of global free trade regime and rapid climate change.

#### **Challenges**

- Infrastructure (computers and printers, fund for purchasing books, journals and data/departmental Seminar library etc.) in the newly developed Women's Studies Centre
- Research priority needs to be oriented toward organic farming and integrated farming system in the context of increasing input cost, soil health problem and

sustenance of livelihood and on rain water management including rain water harvesting and irrigation research particularly micro-irrigation system.

- To orient the students' attitude toward self entrepreneurship instead of job orientation learning of agriculture.

### **Vinaya Bhavana**

Vinaya Bhavana called as Institute of Education started functioning as a craft oriented teacher training institution in 1948 before the recognition of Visva-Bharati as a central university. Keeping pace with the changing time and needs, this institution has always made an effort to strike a balance between the professional and liberal dimensions of education by way of integrating teacher education, extension education, work education and physical education. At present Vinaya Bhavana comprises of two departments – Education and Physical Education. The strengths, weaknesses, opportunities and challenges of the Bhavana are as follows:

#### **Strengths**

- Tagorean Educational Thought & Practice
- Unique Craft Based Work Education for Teacher Trainees
- Extension Activities - Community Work, Educational Programme & Research
- Spiritual & Cultural Value integration
- Eco-Consciousness
- Integration of Professional & Liberal Education.
- Research in sports science.
- National (Department of Education and Ramkrishna Mission) and international collaboration (Department of Physical Education and a Korean University).
- Outreach activities to Higher Secondary and primary streams.

#### **Weaknesses**

- Financial resource generation capacity
- Fostering integrated and interdisciplinary research

### Opportunities

- Educational Innovations
- Education for Community Work & Rural Development (REC)
- Developing Academic Staff College
- Activities relating RTE, literacy, capacity building programme for school teachers.
- Development of Academic and Sports excellence.

### Challenges

- Creation of centre of excellence in Physical Education and Sports.
- Creation of Centre of Excellence in Education.

### Rabindra Bhavana

Rabindra Bhavana is a repository of Tagore collection and a core centre for Tagore-centric research and understanding. Rabindra Bhavana comprises several units viz. museum, archives, library, audio-visual, preservation and garden units. At present Rabindra Bhavana is an integral part and the principal constituent of Tagore Memorial Institute as recommended by the High Level Committee appointed by the *Paridarshaka* of Visva Bharati. The strengths, weaknesses, opportunities and challenges of the Bhavana are as follows:

### Strengths

- Rabindra-Bhavana is the largest repertoire of Tagore related documents, artifacts and other memorabilia which are objects of global attraction.
- Presence of internationally acclaimed scholars and researchers and regular interaction with them.
- In view of world wide exposure, feedback on the performance is received internationally.
- Photo Archives and rare book section of the library where the books used by Tagore were preserved.
- Collaboration with Overseas Institutions on propagation of *Tagoreana*.

**Weaknesses**

- Dearth of space.
- Shortage of trained staff
- Computerisation of library not yet achieved.
- Paucity of research faculties
- Exclusive website

**Opportunities**

- Space has been allocated for construction of Gitanjali Hall.
- The vacant posts have been advertised and it is expected that new faculty will join shortly.
- Process of computerisation has started.
- Recruitment process for new faculties started.
- C-DAC is preparing new website for Rabindra-Bhavana.

**Challenges**

- To make Tagore's ideas globally accessible.
- To make translations of Tagore in various languages available.
- To design new courses on Tagore for international students.
- To bring together various facades of Tagore's creativity under research.
- To create a richer and more accessible archive and library for specialised researchers.

## Pearson Memorial Hospital Visva-Bharati Santiniketan

Santiniketan is a place where Rabindranath Tagore started his Ashram School in 1901. Later on, he established the Visva-Bharati University in 1921 for advanced study and research. As Santiniketan is situated in rural Bengal, far away from Kolkata, he felt the special need of health services for scholars, researchers, students coming from different parts of the country and abroad, and also for others living in and around Santiniketan. To meet this need the building of **Pearson Memorial Hospital** started in 1927 at Santiniketan. W. W. Pearson was a friend of India and died at a young age.

But, the growth of this hospital falls much short of expectation. As a consequence, the health of the scholars, researchers, students and others in the University could not be assured. This directly affects the education in the University. Moreover, this hospital fails to provide services to the people not associated with Visva-Bharati due to meagre fund allocation under UGC.

**At present, P. M. Hospital has following infrastructure, Doctors with position, staff strength and facilities:**

1. **Beds** : 35
2. **Services** :
  - a) OPD service;
  - b) Emergency Medical Service
  - c) Indoor Patient's Care
  - d) Operations. 1. General Surgery 2. Gynaecological Surgery
  - e) Pathological Laboratory for general investigations of blood & serum, stool & urine, sputum,
  - f) X-ray,
  - g) ECG
  - h) Dispensary for medicine disbursement
  - i) Ambulance Service
  - j) Participation in National Health Programmes
  - k) Sanitary Health service
3. **Doctors**
  - A. Chief Medical Officer (Admn.)-----One

B. Medical Superintendent-----One

**Specialist Medical Officers:** Four

1. Medicine,
2. Surgery,
3. Gynaecology
4. Anesthesiology

**General duty Medical officer: eight**

4. **Staff Nurses:** 12 with other supporting employees.
5. **In addition**, there is one more Dispensary with two more general duty Medical Officers situated at Sriniketan, the agriculture and rural reconstruction education centre of the university.

**Our strength:**

1. We have four regular specialist medical officer and provide Primary as well as secondary level of health care. Such facilities are not available in any university system.
2. We provide emergency medical service round the clock.
3. We provide ambulance service round the clock.
4. We have our own investigation facilities to reasonable extend.
5. We provide health service through our rural reconstruction programme.
6. Peaceful environment and strong support by our administration and employees for continuous improvement of the health services.

**Our weakness:**

1. We are situated in the rural Bengal where tertiary health care facilities are not available.
2. Any seriously ill patient suffering from *head injury, cerebral or cardiac stroke, pulmonary edema or respiratory failure*, etc. are to be transferred to Kolkata or Durgapur on emergency basis for treatment. Often there is irreparable damage to the health of the patient before the proper treatment is obtained from the tertiary level centre.
3. As the medical service is non-teaching and supportive system in the university, liberal fund allocation and **new post creation** for the hospital is uphill task.
4. As a consequence, health in the university cannot be fully assured to attract renowned teachers, scholars and others with health problem.

Among the all odds, to improve the health facilities in the university, administration has decided for up-gradation of hospital facilities under the XIth plan and accordingly, a new building of hospital is coming up. It is also decided to go for Private Public Partnership to improve the university health service to the tertiary health care.

**A Glimpse of services we rendered:**

**1. Patients' Attendance**

Year	OPD
2009-10	35236
2010-11	36670
2011-12	39953
2012-13	39537

**2. Indoor Admissions**

Year	No.
2009-10	1125
2010-11	1089
2011-12	965
2012-13	869

**3. Blood Laboratory (without Pathologist)**

Year	General Pathology	Biochemistry	Total
2009-10	9674	8942	18616
2010-11	9808	8965	18773
2011-12	11033	9627	20660
2012-13	11382	8824	20206



**4. X-Ray (Without Radiologist)**

Year	Number
2009-10	3423
2010-11	3228
2011-12	2849
2012-13	3047

**5. ECG**

Year	Number
2009-10	1536
2010-11	1665
2011-12	1832
2012-13	2144

**Visva-Bharati**  
**Granthana Vibhaga**  
( Publishing Department )

Visva-Bharati Granthana-Vibhaga, established in 1923 by Rabindranath Tagore, is a unique institution for many reasons. Eminent Tagore scholars involved in the editing of Tagore's works have collected materials from different corners of the globe to publish authoritative editions of Gurudeva's writings. Many of these scholars have devoted their whole life for this purpose and also enriched those editions with critical notes. The production of these books including illustration, cover design, layout etc is also quite uncommon and bears up the exclusive signature of Granthana-Vibhaga. The Bengali spelling followed here, has been developed over the years at the initiative of Prasantachandra Mahalanabis, Rajsekhar Basu, Pulin Bihari Sen, and others. Besides nearly 400 books by and on Tagore, there are almost an equal number of books on Philosophy, Religion, Science, Social Sciences, Rural Development, Lalit kala and Sangeet, written by the faculty members of Visva-Bharati as well as well as the scholars from other institutions in India and abroad. Besides Bengali, English and Hindi books, Granthana-Vibhaga is gradually extending itself to other languages also. The books of Gurudeva alone sell nearly Rs 2.50 crores every year from the Visva-Bharati Granthana-Vibhaga alone and the total sale grosses up to nearly Rs 6 crores on an average which is not a common phenomenon in the publication of literary books in the world.

## MODULAR SYLLABUS

### VISVA-BHARATI DEPARTMENT OF CHEMISTRY M. Sc. SEMESTER-WISE COURSE AND CREDIT STRUCTURE

M. Sc. First Year, Semester I (5T+1P), (Total Marks: 300)

<u>Couse No.</u>	<u>Subject</u>	<u>Marks</u>	<u>CP</u>	<u>No. of Lectures</u>
CH 701	Inorganic Chemistry (core)	50 (40 + 10)	4	50 L
CH 702	Inorganic Chemistry (core)	50 (40 + 10)	4	50 L
CH 703	Organic Chemistry (core)	50 (40 + 10)	4	50 L
CH 704	Organic Chemistry (core)	50 (40 + 10)	4	50 L
CH 705	Physical Chemistry (core)	50 (40 + 10)	4	50 L
CH 706	Physical <b>Practical (core)</b>	50 (40 + 10)	4	-

M. Sc. First Year, Semester II (4T +2P), (Total Marks: 300)

<u>Couse No.</u>	<u>Subject</u>	<u>Marks</u>	<u>CP</u>	<u>No. of Lectures</u>
CH 807	Inorganic Chemistry (core)	50 (40 + 10)	4	50 L
CH 808	Organic Chemistry (core)	50 (40 + 10)	4	50 L
CH 809	Physical Chemistry (core)	50 (40 + 10)	4	50 L
CH 810	Physical Chemistry (core)	50 (40 + 10)	4	50 L
CH 811	Inorganic <b>Practical (core)</b>	50 (40 + 10)	4	-
CH 812	Organic <b>Practical (core)</b>	50 (40 + 10)	4	-

M. Sc. Second Year, Semester III (2ET + 3OT +1OP) (Total Marks: 300)

<u>Couse No.</u>	<u>Subject</u>	<u>Marks</u>	<u>CP</u>	<u>No. of Lectures</u>
CH 913	Elective-1(Inorganic)	50 (40 + 10)	4	50 L
CH 914	Elective-2(Organic)	50 (40 + 10)	4	50 L
CH 915	Optional	50 (40 + 10)	4	50 L
CH 916	Optional	50 (40 + 10)	4	50 L
CH 917	Optional	50 (40 + 10)	4	50 L
CH 918	Optional <b>Practical</b>	50 (40 + 10)	4	-

M. Sc. Second Year, Semester IV (1ET + 3OT + 1 Project) (Total Marks: 300)

<u>Couse No.</u>	<u>Subject</u>	<u>Marks</u>	<u>CP</u>	<u>No. of Lectures</u>
CH 1019	Elective-3 (Physical)	50 (40 + 10)	4	50 L
CH 1020	Optional	50 (40 + 10)	4	50 L
CH 1021	Optional	50 (40 + 10)	4	50 L
CH 1022	Optional	50 (40 + 10)	4	50 L
CH 1023	<b>Project</b>	100 (80 + 20)	8	-

N.B. [T= Theory; P= Practical; ET= Elective theory; OT= Optional theory; OP= Optional Practical; CP=Credit point]

**M. Sc. Semester-I  
Theoretical**

**CH 701: Inorganic Chemistry (Core)  
Full Marks: 50 (40 + 10); Credit point: 4**

- Coordination Chemistry-bonding, stereochemistry and structure (13L)**  
Symmetry and Isomerism; Ligand field theory and molecular orbital theory; nephelauxetic series, structural distortion and lowering of symmetry, electronic, steric and Jahn-Teller effects on energy levels, conformation of chelate ring, structural equilibrium, magnetic properties
- Complexes in aqueous solutions (12L)**  
Metal ligand stability constant and its controlling factors, different tools of study (pH-potentiometric, polarographic, spectrophotometric, volumetric) and methods of measuring stability constants of complexes, Bjerrum half method, stability of mixed ligand complexes and calculations, determination of composition (Jobs, mole ratio and slope ratio methods), evaluation of thermodynamic parameters
- Molecular magnetism-I (13L)**  
Basic concepts of magnetism, magnetization and magnetic susceptibility, Types magnetic behavior (dia-, para-, ferro-, ferri- and antiferro-) and their temperature dependence, Curie and Curie-Weiss laws, temperature independent paramagnetism, Pascal's Constants and its utilities, Determination of  $\chi_M$  in solution, Usefulness of  $\mu_s$  and  $\mu_j$  equation respectively for transition and inner transition series, Van Vleck's equation and its applications, spin-orbit coupling,

zero-field splitting, quenching of orbital angular momentum, High-spin/Low-spin Equilibrium, types of exchange interactions

4. **Electronic spectra of transition metal complexes** (12L)

Russel-Saunders (R-S) terms-Inter electronic repulsion parameters (B), Splitting of R-S Terms in Different Geometries, Orgel and Tanabe Sugano diagram, Selection rules for spectral transitions, calculation of Dq, B and **parameters**, Different types of d-d bands and their assignment, Charge transfer bands

**M. Sc. Semester-I**

**Theoretical**

**CH 702: Inorganic Chemistry (Core)**

**Full Marks: 50 (40 + 10); Credit point: 4**

1. **Cage, Metal clusters and ring compounds** (13L)

Cage compounds- higher boron hydrides- structure and reactivity, equation of balance-styx numbers, Lipscomb topological diagrams, Wades rules, Jemmis' unifying electron counting rule, carboranes, metallocarborane, metalloborranes and heteroboranes, phosphorous cage compounds; Metal clusters- clusters in elemental states, cluster classification, skeletal electron counting, bonding in metal clusters, polyhedral skeleton electron pair theory (PSEPT), Zintl ions, Silicates-pyroxene, amphiboles, talc, clay, zeolite, ultramarine

2. **Polymer Chemistry-1** (12L)

Basics: Importance of polymers, Basic concepts of monomers, repeat units, degree of polymerization, linear, branched and network polymers, classification of polymers, polymerization-condensation, addition, radical chain-ionic and coordination, copolymerization; Polymer characterization- number, weight and viscosity average molecular weights, polydispersity index and molecular weight distribution, measurement of molecular weight by viscosity method; Structure and property- the glass transition temperature, relationship between  $T_g$  and  $T_m$ , factors controlling  $T_g$ ; Functional polymers-fire retarding polymers and electrically conducting polymers; Biomedical polymers- contact lens, dental polymers, artificial heart, kidney, skin and blood cells

3. **Organometallic Chemistry-1** (13L)

Alkyls and aryls of transition metals– types, routes of synthesis, stability and decomposition pathways, agostic interactions, organocopper in organic synthesis; Compounds of transition metal-carbon multiple bonds: alkylidenes, alkylidynes, low valent carbenes and carbynes-synthesis, nature of bonds, structural characteristics, nucleophilic and electrophilic reactions on the ligands, role in organic synthesis

**4. Electro-analytical method-1 (12L)**

Decomposition and discharge potential, current voltage diagram, linear sweep voltametry (LSV), reversible and irreversible systems, Cottrell equation (qualitative), excitation and switching potential, cyclic voltametry and its application; Coulometry and amperometry – analytical applications

**M. Sc. Semester-I**

**Theoretical**

**CH 703: Organic Chemistry (Core)**

**Full Marks: 50 (40 + 10); Credit point: 4**

**I. Static Stereochemistry (12 L)**

Molecular symmetry and chirality, Conformation of acyclic and cyclic systems (3 to 5 and 7 to 8 members ring), conformations of rings with multiple double bond, conformations of 3 to 6-membered heterocycles, stereoelectronic effects in heterocycles. Optically active compounds with no asymmetric carbon (allene, biphenyls, spirans etc.), Baldwin's rule, stereochemistry of fused ring and bridged ring compounds (with special reference to decalin and phenanthrene systems)

**2. Dynamic Stereochemistry (13 L)**

Conformation and reactivity, Curtin-Hammett principle and Wenstein-Eliel equations  
*Conformation, reactivity & mechanism:* Acyclic and cyclic system ( nucleophilic substitution reaction, formation and cleavage of epoxide ring, addition reactions to double bonds, Elimination reactions, pyrolytic syn-elimination, oxidation of cyclohexanols, neighbouring group participation reactions etc.), Stereoelectronic effects, Elementary idea about asymmetric synthesis

**3. Reactions Mechanism: Substitution reactions and Free-radical reactions (12 L)**

*Substitution reactions:* Aliphatic nucleophilic substitution —  $S_N1$ ,  $S_N2$ , mixed  $S_N1$  and  $S_N2$ , SET mechanisms; neighbouring group mechanism, neighbouring group participation by pi and sigma bonds, anchimeric assistance;  $S_{Ni}$  mechanism; nucleophilic substitution at an allylic, aliphatic trigonal and a vinylic carbon; reactivity effects of substrate structure, attacking nucleophile, leaving group and reaction medium; phase transfer catalysis and ultrasound; ambident nucleophile; regioselectivity, Aromatic nucleophilic substitution —  $S_{NAr}$ , benzyne and  $S_{RN}1$  mechanisms; reactivity effects of substrate structure, leaving group and attacking nucleophile, Aliphatic electrophilic substitution —  $S_E1$ ,  $S_E2$ , and  $S_E^i$  mechanisms; electrophilic

substitution accompanied by double bond shifts; effects of substrates, leaving group and solvent polarity on the reactivity, Aromatic electrophilic substitution — the arenium ion mechanism; orientation and reactivity; energy profile diagrams; the ortho/para ratio; orientation in other ring systems; *ipso* attack; *Free radical reactions*: Types of free radical reactions; free radical substitution mechanism; mechanism at an aromatic substrate; neighbouring group assistance; reactivity for aliphatic and aromatic substrates at a bridgehead; reactivity in the attacking radicals; effects of solvents on reactivity; allylic halogenation (NBS), oxidation of aldehydes to carboxylic acids; auto-oxidation; free radical rearrangements

#### 4. Reactions Mechanism: Elimination, Addition and Rearrangement reactions

(12L)

*Elimination reactions*: E1, E2 and E1cB mechanisms; product stereochemistry; effects of substrate structures, attacking base, leaving group and the medium on reactivity; mechanism and orientation in pyrolytic elimination; *Addition reactions*: Addition to carbon-carbon multiple bonds — mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals; region- and chemoselectivity; orientation and reactivity; Addition to carbon-hetero multiple bonds — mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds, acids, esters and nitriles; addition of Grignard reagents, organozinc and organolithium reagents to carbonyl and unsaturated carbonyl compounds; Mechanism of condensation reactions involving enolates- Aldol, Knoevenagel, Claisen, Perkin and Stobbe reactions; *Rearrangement reactions*: Formation and stability of carbonium ions, carbanion, carbenes, nitrenes, radicals and arynes. Rearrangement involving carbocation (Wagner-Meerwein, Pinacol-Pinacolone rearrangement), reaction involving acyl cation, PPA cyclization and Fries rearrangement, rearrangement of carbenes (Wolff & Arndst-Eistert synthesis), rearrangement of nitrenes (Hoffmann, Curtius, Schmidt, Lossen, Beckmann rearrangement); sigmatropic rearrangements

### M. Sc. Semester-I

#### Theoretical

#### CH 704: Organic Chemistry (Core)

Full Marks: 50 (40 + 10); Credit point: 4

#### I. Heterocyclic chemistry of 1,2- & 1,3-azoles

(15L)

*1,2- and 1,3-azoles*: Synthesis/ reactions/ applications, Comparison of azoles (1,2- / 1,3-) with other related mono-heterocycles.

#### 2. Green Chemistry

(10 L)

The need of green chemistry, Principles of green chemistry, Concept of atom economy Tools of green Chemistry – microwave, ultra sound, ionic liquids, supercritical H<sub>2</sub>O and CO<sub>2</sub> as solvents, etc. Green Chemistry in real world cases and planning green synthesis in chemical laboratory

#### 3. Some selective name reactions: Part-A

(12 L)

Shapiro reaction, Mitsunobu reaction, Hofmann-Löffler-Freytag reaction, Barton reaction, Ene reaction, Mannich reaction, Stork enamine reaction, Michael addition, Robinson annulation, Barton decarboxylation and deoxygenation reaction, Sharpless asymmetric epoxidation.

**4. Some selective name reactions: Part-B (13 L)**

Birch reduction, Aldol condensation, Wittig reaction, Prevost reaction, Simmons-Smith cyclopropanation, Nef reaction, Favorskii reaction, Baeyer-Villiger oxidation, Claisen rearrangement, Beckmann rearrangement etc

**M. Sc. Semester-I**

**Theoretical**

**CH 705: Physical Chemistry (core)**

**Full Marks: 50 (40 + 10); Credit point: 4**

**1. Introduction to Quantum Mechanics (10L)**

Wave-particle duality. Uncertainty principle. Postulates of Quantum Mechanics. Schrodinger wave equation and its solution. Wavefunction and its probabilistic interpretation. Orthogonality and normalization of wavefunctions.

**2. Operator Algebra (10L)**

Definition. Linear operators. Hermitian operators. Theorems. Eigenvalue equation. Commutation relation. Operators and observables.

**3. Free particle and Particle-in-Box (15L)**

Free Particle. Particle-in-Box and energy quantization. Selection Rules. Discussion on Bohr's correspondence principle. Checking the validity of Schrodinger wave equation based on correspondence principle and Heisenberg's Uncertainty principle. Tunneling

**4. Harmonic Oscillator (15L)**

Solution of Schrodinger equation of a Harmonic oscillator using the operator method as well as the technique for solution of differential equation. Selection rules for Harmonic oscillator. Checking the validity of Schrodinger wave equation based on correspondence principle Heisenberg's Uncertainty principle.



**M. Sc. Semester-I**  
**Practical (core)**  
**CH 706: Physical Chemistry**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. To determine the rate constant of hydrolysis of an ester/ ionic reaction in a micellar media.
2. To verify Ostwald dilution law and determine the  $K_a$  of a weak acid.
3. To determine the concentrations of a strong and a weak acid in a given mixture by potentiometry.
  4. To determine the formal potential of  $Fe^{III}/Fe^{II}$  couple by potentiometry.
4. To determine the rate constant and salt effect on the rate constant of decomposition of  $K_2S_2O_8$  by KI.
5. To determine the composition of a mixture of acetic acid, sodium acetate and ammonium acetate by conductometry.
6. To determine the rate constant and energy of activation of the alkaline hydrolysis of ethyl acetate by conductometry.
7. To determine the dissociation constant of Phenolphthalein indicator by spectrophotometry.
8. To study the kinetics of alkaline hydrolysis of crystal violet by spectrophotometry

**M. Sc. Semester-II**  
**Theoretical**  
**CH 807: Inorganic Chemistry (Core)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. **Inorganic reaction mechanism-I** (13L)  
Energy profile of a reaction, application of different reaction parameters in understanding reaction mechanism-linear free energy relationship,, effect of leaving group, non-leaving group, entering group, steric hindrance and acceleration; solvent exchange reaction-importance in suggesting reaction mechanism, derivation of some important rate laws, kinetically indistinguishable schemes, techniques of fast kinetics, classification of ligand substitution reaction mechanism-associative, dissociative, interchange, etc., Eigen mechanism, proton ambiguity, internal conjugate base formation

**2. Bioinorganic Chemistry-I****(12L)**

Metal ions in biology, myoglobin, hemoglobin, heamocyanin, hemeerythrin, cytochromes, rubredoxin, ferredoxins; biological fixation of nitrogen, chlorophyll and photosynthesis; PS-I, PS-II, bioenergetics and ATP cycle, glucose storage,  $\text{Na}^+/\text{K}^+$  ion pump, ionophores

**3. Structure and properties of solids****(13L)**

Structure of mixed oxides-spinel, inverse spinel, ilmenite, perovskite, OSSE; crystal defects-intrinsic and extrinsic, thermodynamics of crystal defects, Schottky and Frenkel defects; color centers, dislocations, Burger vectors and Burger circuits, non-stoichiometric compounds; electronic properties of solids-conductors, semiconductors, insulators, superconductors; ferroelectricity, antiferroelectricity, piezoelectricity, pyroelectricity, cooperative magnetism, Quantum theory of paramagnetism, photoconductivity.

**4. Solid state reactions and thermo-analytical methods****(12L)**

General principle and classification of solid state reactions, Experimental procedures to study the reactions-TGA, DTA, DSC; Thermogram, thermal stability, thermal degradation, laws governing nucleation and growth of nuclei, single crystal phase transformation, thermo-chemiluminescence, thermometric titrations, solid state reaction kinetics.

**M. Sc. Semester-II****Theoretical****CH 808: Organic Chemistry (Core)****Full Marks: 50 (40 + 10); Credit point: 4****I. Natural Products with special reference to Biosynthesis****(13 L)**

*Natural Products: Biosynthesis of* a) Non-nitrogenous secondary metabolites from Shikinic acid, flavonoids and related polyphenolics, b) mono- and di-terpenoids from Mevalonic acid c) tri-terpenoids from geranyl pyrophosphate.

**2. Structure and Functions of Proteins & Lipids****(12 L)**

*Structure and functions of proteins:* Chemical and enzymatic hydrolysis of proteins to peptides, amino acid sequencing. Secondary structure of proteins, Ramachandran Diagram, forces responsible for holding of secondary structures,  $\alpha$ -helix,  $\beta$ -sheets. Tertiary structure of protein-folding, quaternary structure, Biosynthesis of peptide chain, *Lipids:* Fatty acids, structure and function of triacylglycerols, glycerophospholipids. Properties of lipid bilayers, Biological membranes, Fluidmosaic model of membrane structure.

**3. Structure and Functions of Nucleic acids and Enzymes (13 L)**

*Nucleic acids:* Purine and pyrimidine bases of nucleic acids, base pairing via H-bonding. Structure of ribonucleic acids (RNA) and deoxyribonucleic acids (DNA), double helix model of DNA and forces responsible for holding it; *Enzymes:* Chemical and biological catalysis, Properties of enzymes like catalytic power, specificity and regulation, Concept and identification of active site by the use of inhibitors, affinity labeling and enzyme modification by site-directed mutagenesis; *Mechanism of Enzyme Action:* Transition state theory. Examples of some typical enzyme mechanisms for chymotrypsin, ribonuclease

**4. Co-enzyme chemistry (12 L)**

Cofactors as derived from vitamins, coenzymes, prosthetic groups, apoenzymes, Structure and biological functions for pyridoxal phosphate,  $\text{NAD}^+$ ,  $\text{NADP}^+$ , FMN, FAD. Mechanisms of reactions catalyzed by the above cofactors

**M. Sc. Semester-II****Theoretical****CH 809: Physical Chemistry (core)**

**Full Marks: 50 (40 + 10); Credit point: 4**

**1. Group Theory-I (10L)**

Introduction to symmetry. Symmetry elements and Symmetry operations. Definition of a Group. Point symmetry groups. Group multiplication tables. Theorems of groups. Conjugate elements and class. Symmetry Operators and their Matrix Representation. Function space. Reducible and irreducible representations. Equivalent representations. Characters of representations.

**2. Group Theory-II (14L)**

Great Orthogonality Theorem - statement and interpretation. Proof of its corollaries. Character table and its construction. Number of times an irreducible representation occurs in a reducible one. The reduction of reducible representations. Notation of irreducible representations. Representations and quantum mechanics. The invariance of Hamiltonian operator under symmetry transformations. Direct product representation. Molecular vibrations. Symmetry species of the vibrational mode. Selection rules for Infra-red and Raman spectra. Crystal field splitting.

**3. Quantum Mechanics of Rotational Motion (12L)**

Angular momentum operators and their commutation relations. Operator algebra and Ladder operators for Rotational motion. Solution of Schrodinger equation using the operator method as well as the technique for solution of differential equation. Quantum Mechanics of rigid rotor and its application.

**4. Hydrogen Atom****(14L)**

Separation of translational and internal motion of a two-body problem. Determination of radial part of the wavefunction. Relation among principal, azimuthal and magnetic quantum number. Nodal properties of angular part as well as the radial part of the Hydrogen atom wavefunction. Shape of the orbitals, Space quantization. Selection rules for Hydrogen atom.

**M. Sc. Semester-II****Theoretical****CH 810: Physical Chemistry (core)****Full Marks: 50 (40 + 10); Credit point: 4****1. Ion-ion interaction****(12L)**

Ion association, symmetric and asymmetric ion-pair formation, Bjerrum theory, The fraction of ion-pair, Triple ion formation, Determination of ion-association constant, Activity coefficient of electrolytes, Extended Debye-Huckel theory, Pitzer equation for activity coefficient, Experimental determination of mean ionic activity coefficient.

**2. Ion-Solvent interaction****(15L)**

Solvation of ions, Solvation number, Frank-Wien model of ionic solvation, Born model, Thermodynamics of ionic solvation, Enthalpy and free energy of solvation of ions, Experimental determination of solvation of ion.

**3. Interface and Colloidal Stability****(12L)**

Colloidal aggregates, nanoparticles, stability of colloids and nanoparticles in solution. Surface charge of colloidal particles, Electrical double layer and theories of electrical double layer. Helmholtz-Perrin model, Gouy-Chapman model, Stern model. Zeta-potential, Determination of zeta potential. Streaming potential, sedimentation potential. DLVO theory, Optical properties of colloids and nanoparticle.

**4. Biophysical****Chemistry****(14L)**

Hydrophobic hydration, micelle formation, hydrophobic interaction, stabilization and denaturation of protein. Water structure alteration theory of

denaturation of protein, protein–lipid interaction, Transport of ions and small molecules through membranes. Ion channels.

**M. Sc. Semester-II**  
**Practical (Core)**  
**CH 811: Inorganic Chemistry**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. Analysis of some ores and alloys
2. Preparation of some complex salts and their characterization
3. Determination of composition and formation constant of a few selected systems by pH and spectrophotometric method
4. Magnetic susceptibility measurements

**M. Sc. Semester-II**  
**Practical (Core)**  
**CH 812: Organic Chemistry**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. Separation of components from a mixture of organic compounds followed by their characterization.

**M. Sc. Semester-III**  
**Theoretical**  
**CH 913: Elective-1 (Inorganic)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. Nuclear properties and structure (13L)  
 Nuclear stability–different factors, nuclear models–Fermi gas model, Liquid drop model, nuclear shell model, nuclear magic number and its derivation from nuclear potential well, nuclear spin, nuclear configuration and parity, nuclear isomerization and non-optical transitions, nuclear temperature and entropy; models of disintegration–radiation emission (fluorescence) and electron emission (Auger effect), Theory of radioactivity decay–golden rule and selection rule, radioactive equilibrium.
2. Nuclear reactions (12L)

General features, types of nuclear reactions, conservation laws, Q-value and cross-section of nuclear reaction, mechanism of nuclear reactions, resonance and non-resonance reaction, nuclear fission-discovery, characteristics, fission yields, reproduction factor, four factor formula, critical size, atom bomb; nuclear reactors, breeder reactor, natural fission reactor; calculation of fission probability from Bohr-Wheeler's theory; nuclear fusion- characteristics, hydrogen bomb, stellar energy, controlled fusion reaction.

3. Inorganic photochemistry-1 (13L)

Basics of photochemistry- absorption, excitation, photochemical laws, quantum yield, lifetime of excited states, Flash photolysis, stopped flow techniques. Energy dissipation by radiative and non-radiative process, absorption spectra, Franck-Condon principles, photochemical stages- primary and secondary process; Properties of excited states- structure, dipole moment, acid-base strength, reactivity; Photochemical kinetics- calculation of rates of radiative process; Bimolecular deactivation- quenching; Excited states of metal complexes- comparison with organic compounds, electronically excited states of metal complexes, charge transfer excitation.

4. Supramolecular Chemistry-I (12L)

Basic concepts and principles, molecular recognition and host-guest interactions, anion coordination and recognition of anionic substrates, organometallic receptors and their host-guest complexes, spherical recognition, podand, podate, cryptand, cryptate, coronand, coronate, molecular devices and supramolecular assemblies, supramolecular orbital, supramolecular arrays: ribbon. Ladder, rack, braded, grid; harnessing non-covalent forces to design functional materials

**M. Sc. Semester-III**

**Theoretical**

**CH 914: Elective-2 (Organic)**

**Full Marks: 50 (40 + 10); Credit point: 4**

1. NMR (13L) Part A

*Nuclear Magnetic Resonance (NMR) Spectroscopy* : General introduction and definition; chemical shift; spin-spin interaction; shielding mechanism; mechanism of measurement; chemical shift values and correlation for protons bonded to carbon (aliphatic, olefinic, aldehydic and aromatic) and other nuclei (alcohol, phenols, enols, carboxylic acids, amines, amides & mercapto); chemical exchange; effect of deuteration; complex spin-spin interaction between two, three, four and five nuclei (first order spectra), virtual coupling, stereochemistry; hindered

rotation; Karplus curve-variation of coupling constant with dihedral angles; simplification of complex spectra— nuclear magnetic double resonance, contact of shift reagent, solvent effect; Fourier transform technique; nuclear Overhauser effect (NOE); resonance of other nuclei— F, P;

## 2. NMR Part B

(13L)

Carbon-13 NMR Spectroscopy — general considerations; chemical shift values (aliphatic, olefinic, alkyne, aromatic, heteroaromatic and carbonyl carbon); coupling constant; Two Dimensional NMR Spectroscopy— COSY, NOESY, DEPT, NEPT, APT and NADEQUATE techniques.

## 3. Mass Spectroscopy

(13L)

*Mass Spectroscopy:* Introduction; ion production — EI, CI, FD and FAB; factors affecting fragmentation; ion analysis; ion abundance; Mass spectral fragmentation of organic compounds; common functional groups; molecular ion peak; metastable peak; McLafferty rearrangement; nitrogen rule; high resolution mass spectrometry; examples of mass spectral fragmentation of organic compounds with respect to their structure determination.

## 4. Identification of organic compounds by Spectroscopic techniques

(12L)

Applications of spectroscopic techniques (UV, FT-R, NMR and Mass) in a combined manner to solve structural problems of unknown organic compounds.

### M. Sc. Semester-III

#### Theoretical

#### CH 915: Optional (Inorganic)

Full Marks: 50 (40 + 10); Credit point: 4

### 1. Metal ion promoted reactions

(13L)

Important reactions-oxidative addition, reductive elimination, oxidative coupling, insertion, electrophilic and nucleophilic attack on the ligand; catalytic cycle, Tolman catalytic loop; Homogeneous/heterogeneous catalysis: hydrogenation by Wilkinson's catalyst, water gas shift reaction, Fischer-Tropsch synthesis, isomerization, alkene polymerization, Wacker-Smith synthesis, hydroformylation, hydrosilation, hydrophosphylation, hydroamination, hydrocyanation and hydroboration reactions, Monsanto acetic acid synthesis, Heck reaction, oxopalladation reactions, Mobil process, synthesis of methanol.

### 2. Physical characterization of inorganic compounds by spectral analysis-I

(12L)

Electron spin resonance spectroscopy (ESR)- Basic principle and spectral display, standard material for ESR spectroscopy (dpph), details understanding on hyperfine coupling constant, significance of g-tensors, application to detect

free radicals ( $\text{H}$ ,  $\text{CH}_3$ ,  $\text{C}_6\text{H}_5$ ,  $\text{NH}_2$ ,  $\text{CD}_3$ ,  $\text{PH}_4$ ,  $\text{F}_2^-$ ,  $[\text{BH}_3]$ , etc) and various transition metal complexes having one unpaired electron, charge transfer spectra and its application

### 3. Organometallic Chemistry-II (13L)

Transition metal pi complex-transition metal complex with alkenes, alkynes, allyl, diene, dienyl, arene and trienyl complexes: preparations, properties, nature of bonding and structural features, important reactions relating to nucleophilic and electrophilic attack on the ligands and to organic synthesis; transmetalation and cyclisation reactions, fluxional organometallic compounds.

### 4. Nuclear detection techniques and spectroscopy (12L)

Mossbauer spectroscopy: Mossbauer effect, nuclear recoil, Doppler effect, instrumentation, chemical shift-examples, quadrupole effect, effect of magnetic field, effect of simultaneous electric and magnetic fields, typical spectra of iron and tin compounds, application of Mossbauer spectroscopy-nature of metal ligand bond, coordination number, structure, oxidation state; NQR.

## M. Sc. Semester-III

### Theoretical

#### CH 915: Optional (Organic)

Full Marks: 50 (40 + 10); Credit point: 4

### 1. Supramolecular Chemistry: Basic concept (12 L)

Definitions of supramolecular chemistry, Host-guest chemistry, Chelate and macrocyclic effects, Preorganisation, Thermodynamic and kinetic selectivity, supramolecular interactions (i.e. cation- $\pi$ ,  $\pi$ - $\pi$  etc.), Cation, Anion and Neutral molecule binding: Crown ethers, podands/ lariats ethers, spherands, cryptands, complexation of organic cations calixarenes cation host to anion host shape selectivity guanidinium receptors coordination interactions, *cavitands*: cyclodextrins and molecular tweezers. Molecular switches.

### 2. Supramolecular Chemistry: Applications (13 L)

*Catenanes, rotaxanes and molecular knots*: Self assembly and templates strict self assembly and self assembly with covalent modification, electrostatic and H-bonding effects in templating catenanes/ catenands/ catenates rotaxanes/ pseudo-rotaxanes metal templates for catenanes (Sauvage) stacking in catenane and rotaxane formation (Stoddart) helicates and molecular knots *Molecular devices*: History and future of nanoscale machines, Relation to host-guest chemistry (definition of supramolecular device), Supramolecular photochemistry, Photo- and electro-chemical sensors, Dendrimers, Molecular device components, Machines based on catenanes/ rotaxanes, Chemically assembled electronic nanocomputing.



**3. Advanced Heterocyclic chemistry: Part-A (12 L)**

Nomenclature of heterocycles - replacement and systematic nomenclature (Hantzsch-Widman system) for monocyclic, fused and bridged heterocycles; aromatic heterocycles— tautomerism in heterocyclic systems, reactivity of aromatic heterocycles; non-aromatic heterocycles — conformation of six membered heterocycles with reference to molecular geometry, barrier to ring inversion, pyramidal inversion and 1,3-diaxial interaction, anomeric and related effects, hydrogen bonding and intermolecular nucleophilic-electrophilic interactions; meso-ionic systems — general classification, chemistry of some important meso-ionic heterocycles of type A and B and their applications.

**4. Advanced Heterocyclic chemistry: Part-B (13 L)**

Heterocyclic synthesis - principles of heterocyclic synthesis involving cyclization reactions and cycloaddition reactions; synthesis and reactivity of 3-, 4-, 5- 6- & 7-membered heterocycles with one, two or more heteroatoms (aziridines, oxiranes, thiranes, azetidines, oxetanes, thietanes, diazines, triazines, thiazines, azepines, oxepines); benzo-fused five and six-membered heterocycles — synthesis and reactions including medicinal applications of benzopyrroles, benzofurans, benzothiophenes, quinolizinium and benzopyrylium salts, coumarins and chromones; heterocycles in pharmaceutical industry.

**M. Sc. Semester-III****Theoretical****CH 915: optional (Physical)****Full Marks: 50 (40 + 10); Credit point: 4****1. Revisiting Classical Mechanics (13L)**

Motion of a classical particle: definition of velocity, acceleration and mass. Central problem of mechanics. Newton's prescription for classical mechanics. Laws of motion: law of inertia, law of causality, law of reciprocity. Superposition principle of force. Introduction to the idea of law of force for motion. Application of Newton's prescription to translation, rotation and vibrational motion. Time reversible symmetry. Work-energy theorem and definition of kinetic energy. Conservative and non-conservative force. Definition of potential energy. Conservation of total mechanical energy for conservative system and its implication in the context of first law of thermodynamics. Generalized coordinate systems. Lagrangian equation of motion and definition of generalized momentum. Hamiltonian equation of motion. Definition of phase space.

**2. Wave Motion (12L)**

Wave equation. Sinusoidal waves, boundary condition, reflection and transmission, polarization. Electromagnetic waves in vacuum. Wave equation for

electric and magnetic fields. Monochromatic plane waves. Transport of energy and momentum in electromagnetic waves. Interference of waves. Young's double-slit experiment, determination of wave length.

**3. Early age of Quantum Mechanics (13L)**

Definition of ideal blackbody and blackbody radiation, Characteristics of the radiation, calculation of number of modes, necessity of new fundamental constant and quantization of energy of electromagnetic oscillator. Temperature dependence of heat capacity of solids. Einstein's theory of heat capacity of solids. Photoelectric effect and Einstein's theory. Compton effect and its theory. Model of atom. Franck-Hertz experiment. deBroglie hypothesis. Double-slit experiment, superposition principle and instruction to formulate Quantum Mechanics.

**4. Revisiting the basic principles of Quantum Mechanics (12L)**

Understanding Schrodinger's idea of wavefunction and the postulates of quantum mechanics. Interpretation of wavefunction and its consequences. Definition of current in quantum mechanics. Dirac representation of state. Schrodinger and Heisenberg pictures of quantum mechanics. Heisenberg's uncertainty principle. Generic features of quantum mechanics such as tunneling and selection rule. Quantum-classical correspondence.

**M. Sc. Semester-III**

**Theoretical**

**CH 916: Optional (Inorganic)**

**Full Marks: 50 (40 + 10); Credit point: 4**

**1. Bioinorganic Chemistry-II (12L)**

Metal-protein interaction-storage, transfer and activity; study of metalloprotein and metalloenzyme-catalase, peroxidase, ceruloplasmin, cytochrome c oxidase, carbonic anhydrase, carboxypeptidase, metallothionein, xanthine oxidase, sulphite oxidase, nitrate reductase, superoxide dismutase, chemistry of respiration; Vitamin B<sub>12</sub> and B<sub>12</sub> co-enzyme; metal deficiency and diseases, Toxic effects of metals, detoxification of metal ions

**2. Inorganic reaction mechanism-II (13L)**

Ligand substitution reaction of octahedral complexes-different types, isomerization and racemization; Substitution reactions of square planar

complexes-different theories of trans and cis effects, nucleophilicity scale, kinetics of chelate formation; Substitution reaction of tetrahedral complexes, studies of fast reactions, kinetic and activation parameters-tools to propose plausible mechanism; Stereochemical changes: racemisation in octahedral complexes types of ligand rearrangements, isomerization in 4, 5 and 6 coordinates complexes; reactions of coordinated ligands; template reactions.

### 3. Molecular magnetism-II

(13L)

Magnetic orbital and exchange pathways in polynuclear systems, Quantitative approach to exchange interactions, Blaney-Bower's equation, orthogonality and Accidental orthogonality phenomenon, deliberate synthetic approaches to ferromagnetically coupled systems, magnetization versus field studies, calculation of ground state and spin manifold, canting/hidden canting and weak ferromagnetism, spin frustration, polynuclear transition metal complexes: magneto-structural correlations, magnetism without metals and magnetic materials.

### 4. Supramolecular Chemistry-II

(12L)

Receptors and receptor-substrate complexes, coreceptor molecules and multiple recognition, supramolecular reactivity and catalysis, supramolecular electronic, ionic and photonic devices, catenanes and rotaxanes, systematic approach towards supramolecular architecture, self assembly and self processes.

## M. Sc. Semester-III

### Theoretical

#### CH 916: Optional (Organic)

Full Marks: 50 (40 + 10); Credit point: 4

### 1. Protection and Deprotection

(12 L)

The role of Protective groups in organic synthesis, Principle of protection and deprotection, Different procedure for protection and deprotection of hydroxyl (including 1,2- and 1,3-dihydroxy), phenols, amines, carbonyls and carboxylic groups.

### 2. Organic Synthesis I

(13 L)

The disconnection approach, Basic principles, Guidelines for disconnection with special emphasis on chemoselective, regioselective, stereoselective and stereospecific reactions, Functional group inter conversion, synthon and reagent, synthetic equivalent, illogical electrophile and illogical nucleophile, Umpolung synthesis.

### 3. Organic Synthesis II

(12L)

Designing synthesis of some target molecules with proper retrosynthetic analysis : Eg Menthol, Taxol, Penicillin V, Reserpine, Progesterone, Estrone, Periplanone B, L-Hexoses etc..

**4. Special techniques in Organic Synthesis (13 L)**

The background of organic synthesis, Reactions with solid-supported reagents and catalyst, solid phase synthesis, Phase transfer reactions, Sonochemistry, Microwave in organic synthesis, Ionic liquid in organic synthesis, Electroorganic synthesis, Concept of organocatalyst.

**M. Sc. Semester-III****Theoretical****CH 916: Optional (Physical)****Full Marks: 50 (40 + 10); Credit point: 4****1. Approximate Methods and their Applications (12L)**

Variation theorem, Linear variation method, Applicability of variation method to excited states. Time-independent perturbation theory for nondegenerate states, Perturbation of a two-level system, Many level systems, Degenerate perturbation theory and their applications, Eckert's Theorem. Hydrogen and Helium atoms. Hellman-Feynman and Virial Theorems. Time-dependent perturbation theory, Rabi Oscillation, Many level system; the variation of constants, the effect of slowly switched constant perturbation, The effect of oscillating perturbation, Transition rates to continuum, Radiation-matter interaction. Fermi Golden rule, Einstein transition probabilities, lifetime and energy uncertainty.

**2. Spin and Many Electron Wavefunctions (13L)**

Introduction to spin. Operator algebra for spin. Construction of matrix representation of spin operators, Eigenvalues and eigenfunctions of spin operators. Non-relativistic wavefunction for Hydrogen atom. Many-electron wavefunctions- examples with 2 and 3 electron systems, Slater determinants. Projection Operators. Parity Operator and Pauli Principle, The Pauli exclusion principle. Introduction of core, Coulomb, and exchange integrals with their properties- example of He atom.

**3. Theory of Many-electron Systems and their Applications (13L)**

The Born-Oppenheimer approximation, Hartree self consistent field method, Koopman's theorem, Hartree-Fock method for many-electron systems. Coulomb operators, Exchange operators, Coulomb and Fermi hole, Restricted and unrestricted Hartree-Fock calculations, The Roothan equation. Correlation energy, Basis sets for electronic structure calculations. Spin-orbit interaction, The Condon-Slater rules.

**4. Density- Functional and Semiempirical Methods in Quantum Chemistry (12L)**

Introduction to density functional, Hohenberg-Kohn variation theorem, Kohn-Sham equations, Exchange-correlation energy, Local density approximation, Generalized gradient approximation. Semiempirical MO treatments of Planar Conjugated Molecules, The Free-electron MO method, The Huckel and Extended Huckel MO method, The Pariser-Parr-Pople method, General semiempirical MO methods.

**M. Sc. Semester-III****Theoretical****CH 917: Optional (Inorganic)****Full Marks: 50 (40 + 10); Credit point: 4****1. Errors and Evaluation (12L)**

Precision - standard deviation, relative standard deviation; Accuracy - absolute error, relative error; Types of error in experimental data - systematic (determinants), random (indeterminate) and gross; Source of errors and the effects upon the analytical results; Methods of reporting analytical data, Statistical evaluation of data.

**1. Inorganic photochemistry-II (13L)**

Ligand field photochemistry - photostitution, photooxidation and photoreduction, ground state and excited state, energy content of the excited state, development of redox potentials of the excited states; Redox reactions by excited metal complexes - energy transfer, exciplex formation, conditions of the excited states to be useful redox reactants, excited electron transfer, photochemical reactions of Cr, Fe and Ru complexes, role of spin-orbit coupling in the lifetime of the complexes, Application of redox process for catalytic purposes, transformation of low energy reactants into high energy products, chemical energy into light; Sensitization and metal complex sensitizers; inorganic photochemistry in biological process and their model studies, solar-energy conservation and storage.

**3. Electro-analytical methods-II (12L)**

Fundamentals, electrode-solution interface layer, electrolytic process, three electrode system; supporting electrolyte, DME; Ilkovic equation, Ilkovic-Heyrofsky equation, test of reversibility, current-voltage diagram, DC and AC Polarography, stripping voltametry

**4. Physical characterization of inorganic compounds by spectral analysis-II (13L)**

Application NMR spectroscopy-fundamentals, the contact and pseudo contact shifts, factors affecting nuclear relaxation, application of H-1, C-13, P-31 and F-19 NMR towards the structural elucidation of metal-organic complexes, an overview of metal nucleides with emphasis on Pt-195 and Sn-119 NMR

### M. Sc. Semester-III

#### Theoretical

#### CH 917: Optional (Organic)

Full Marks: 50 (40 + 10); Credit point: 4

#### 1. Oxidation reactions in Organic Synthesis

(12 L)

*Fundamental Concepts of Redox reactions in Organic Chemistry, Oxidation of alcohols:* By Chromium and Manganese Reagents, Silver carbonate, oxidation via alkoxysulphonium salts and other methods, *Oxidation of Carbon-Carbon double bonds:* Dihydroxylation, epoxidation, Sharpless Epoxidation, Diastereoselective epoxidation of homoallylic alcohols, Ozonolysis, Photosensitized oxidation of alkenes, Pd-catalyzed oxidation of alkenes, *Oxidation of Carbonyl Compounds:* Baeyer-Villiger oxidation of ketones and related reactions, Conversion to  $\alpha$ ,  $\beta$ -unsaturated ketones, other methods, Use of Ruthenium tetroxide and Thallium (III) nitrate as oxidizing agents for organic substrate, other oxidizing agents.

#### 2. Reduction reactions in Organic Synthesis

(13 L)

*Catalytic Hydrogenation:* Concept of hydrogenation and hydrogenolysis, Heterogeneous and Homogeneous Catalytic Hydrogenation (the Catalyst used, selectivity of the reduction, reduction of functional groups, stereochemistry and mechanism), Transfer Hydrogenation.

*Reduction by Dissolving Metals:* Reduction with Metal and acid (reduction of carbonyl compounds), reduction with metal in liq. Ammonia, Reductive fission of alcohols and halides;

*Reduction by Hydride Transfer reagents:* Aluminium alkoxides, lithium aluminium hydride and sodium borohydride and their modified reagents (selectivity of the reduction, reduction of functional groups, stereochemistry and mechanism). Reductions with Boranes and dialkylboranes.

Wolff-Kishner reduction, Desulphurisation of thio-acetals, Reduction of organic compounds by di-imide, low-valent Titanium reagents, trialkyltin hydrides, trialkylsilanes and other reagents.

#### 3. Organometallic Chemistry: Part-A

(12 L)

Preparation, Properties and Reactions of Organomagnesium, Organolithium and Organozinc reagents in synthesis. The role of Boron, Silicon, Sulphur and Phosphorus in organic synthesis.

#### 4. Organometallic Chemistry: Part-B

(13 L)

Principle, preparation, properties and application of some transition metals in organic synthesis with special ref. to Copper, Palladium, Cobalt, Titanium and Nickel.

**M. Sc. Semester-III**  
**Theoretical**  
**CH 917: Optional (Physical)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

- 1. Connection between Thermodynamics and Statistical Mechanics (12L)**  
 Definition of Microstates and Macrostates. Boltzmann's definition of entropy. Formula for calculation of thermodynamic properties in terms of number of microstates. Determination of number of microstates for classical ideal gas. Connection among the properties of ideal gas, Gibbs paradox, Sackur-Tetrode equation.
- 2. Ensemble Method and its Application (13L)**  
 Definition of ensemble. A priori probability. Gibbs postulate in Statistical mechanics. Ergodic hypothesis. Prescription for studying of thermodynamic systems based on ensemble method. Preparation of equilibrium ensemble corresponding to given thermodynamic system (isolated, closed and open). Determination of distribution function. Partition function. Calculation of thermodynamic properties in terms of partition function. Theory of Fluctuations. Calculation of fluctuation in energy, number of particles, density, entropy, volume, temperature etc.
- 3. Boltzmann, Fermi-Dirac and Bose-Einstein Statistics (13L)**  
 Canonical partition function for non-interacting distinguishable and non-identical particles. Boltzmann Statistics. Grand canonical partition function for non-interacting identical particles. Fermi-Dirac and Bose-Einstein statistics and their limiting behavior. Ideal monoatomic gas. The translational partition function. The electric and nuclear partition function. Thermodynamic function. Ideal diatomic gases. The rigid rotor-Harmonic oscillator approximation. The vibrational partition function. The rotational partition function of a heteronuclear molecule. The symmetry requirement of the total wave function of a homonuclear diatomic molecule. The rotational partition function of a homonuclear diatomic molecule. Thermodynamic function.
- 4. Classical and Quantum Statistics (12L)**  
 The classical partition function. Phase space and the Liouville equation. Equipartition of energy. Ideal polyatomic gas. The vibrational and the rotational partition functions. Thermodynamic function. Hindered rotation. A weakly degenerate ideal Fermi-Dirac Gas. A strongly degenerate ideal Fermi-Dirac gas. A weakly degenerate ideal Bose-Einstein gas. A strongly degenerate ideal Bose-

Einstein gas. An ideal gas of photons. The density matrix. The classical limit from the Quantum mechanical expression for  $Q$ .

**M. Sc. Semester-III  
Practical**

**CH 918: Optional (Inorganic)**

**Full Marks: 50 (40 + 10); Credit point: 4**

1. Separation by chromatographic techniques.
2. Colorimetric estimation of some metal ions.
3. Measurement of some water quality parameters.
4. Green synthesis of some inorganic compounds.

**M. Sc. Semester-III  
Practical**

**CH 918: Optional (Organic)**

**Full Marks: 50 (40 + 10); Credit point: 4**

1. Preparation of organic compounds by conventional and green chemical methods followed by purification and characterization by spectroscopic technique.
2. Quantitative Estimation of:  
(a) Sugars (Glucose, Cane sugar) (b) Phenol (c) Aniline (d) Nitrogen by Kjeldahl method  
(e) Saponification and Iodine value.

**M. Sc. Semester-III  
Practical**

**CH 918: Optional (Physical)**

**Full Marks: 50 (40 + 10); Credit point: 4**

1. To determine the effect of change of (i) temperature and (ii) concentration on the rate constant of hydrolysis of an ester.
2. To study the conductance behavior of strong and weak electrolytes.
3. To determine the cmc of SDS in Water and Water-Ethanol (1:1) mixture using conductometry.
4. To determine the hydrolysis constant of aniline hydrochloride by conductometry.
5. To study the titration of  $H_3PO_4$  by NaOH using potentiometry.
6. To determine the concentration of different halides in a mixture by potentiometry.
7. To study the iodination of aniline at different pH.
8. To determine the rate constant of oxidation of iodide ions by hydrogen peroxide studying the kinetics as a clock reaction.



9. To determine the order and rate constant of the reaction between  $\text{HBrO}_3$  and HI.

**M. Sc. Semester-IV**

**Theoretical**

**CH 1019: Elective-3(Physical)**

**Full Marks: 50 (40 + 10); Credit point: 4**

**Solid State Chemistry**

**(16L)**

Crystalline and amorphous structures. Lattice vector and reciprocal lattice vector. Defects in the solid state. Band theory of solids. Band theory – Quantum mechanical aspect. Brillouin zone. Free electron gas theory of metal. Fermi energy. Electrical and thermal conductivity of metals. Semiconductor Hall effect and Hall coefficient.

**Electric and Magnetic properties of Matter**

**(8L)**

Molecular response parameters – Polarizability. Dispersion forces. Bulk electrical properties – Permittivity and Susceptibility. Refractive index. Dielectric relaxation. Optical activity and Circular birefringence. Conduction in dielectrics. Magnetic susceptibility. Paramagnetism and Diamagnetism. Vector potential and current density. Shielding constants. The g-value. Spin-spin coupling and Hyperfine Interactions.

**Physical Chemistry of Polymers**

**(18L)**

Polymerization reaction, kinetics of free radical and condensation polymer. Graft polymerization. Morphology and crystallinity of polymer by TGA and SEM analysis. Molecular weight determination of polymer by light scattering method and GPC method.

Criteria for polymer solubility. Thermodynamics of polymer solutions. Good and bad solvents. Theta temperature. Flory-Huggins model, dilute polymer solution. Excluded volume.

**4. Photoexcited Processes**

**(8L)**

Excitation of molecules – Singlet and Triplet states. Radiative and Non-radiative relaxations. Franck-Condon principle. Absorption, emission and excitation spectra - mirror symmetry. Quenching of Fluorescence. Excited state processes – proton transfer, electron transfer and energy transfer. Marcus Theory. Solvent effect in spectroscopy. Solvation dynamics. Non-linear optical processes.

Stimulated emission of radiation. Principles of Laser action. Applications of Lasers.

**M. Sc. Semester-IV**  
**Theoretical**  
**CH 1020: Optional (Inorganic)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. **Environmental chemistry** (12L)  
Biochemical effects of As, Pb, Cd, Hg, Cr, and their chemical speciation, monitoring and remedial measures; eutrophication, wastewater treatment, control of air pollution: different methods, role of plants, various source of soil pollution; noise pollution, Agricultural and industrial pollution, Green solution to various environmental hazards.
2. **Lanthanides, actinides and super-heavy elements** (13L)  
Coordination chemistry, magnetic and spectral properties, comparison of general properties of lanthanides and actinides, comparison with d-block elements, Organo lanthanides and actinides, separation of lanthanides and actinides, analytical application of lanthanides and actinides-lanthanides as shift reagents and high temperature super conductors, manmade elements-theoretical background, production, separation and predicted properties.
3. **Nanomaterials** (12L)  
Nanoparticles: zero dimensional nanostructure, homogeneous and heterogeneous nucleation, metallic nanoparticles- synthesis and applications; Nanowires and nanorods: one dimensional nanostructures, spontaneous growth, VLS, electro spinning, lithography; Thin film: two-dimensional nanostructure-preparation techniques; Langmuir-Blodgett (LB) film - growth techniques, photolithography properties and applications.
4. **Physical characterization of inorganic compounds by spectral analysis-III** (13L)  
Basic concept of Raman Spectroscopy, application of vibration spectroscopy-symmetry and shapes of  $AB_2$ ,  $AB_3$ ,  $AB_4$ ,  $AB_5$  and  $AB_6$ , mode of bonding of ambident ligands, ethylenediamine and diketo complexes, Resonance Raman spectroscopy, surface enhanced Raman spectroscopy (SERS).

**M. Sc. Semester-IV**  
**Theoretical**  
**CH 1020: Optional (Organic)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

**1. Organic**  
**(13L)**

**Photochemistry**

Basic Principles, Jablonski diagram, Excited state ( $S_1$  and  $T_1$ ) of some organic molecules, *Cis-trans* mechanism, Photo chemical reactions of carbonyl compounds, olefins and conjugated carbonyl compounds, Photo induced functionalisation of organic molecules involving Norrish type I, Norrish type II, Paterno Buchi Reaction, di- $\pi$ -methane rearrangement, Barton reaction, Photo reduction of ketones, Substitution in aromatic system.

**2. Radical Reaction in Organic Chemistry**  
**(12L)**

Definition, Generation of free radicals, detection, shapes and stability, stable free radicals. Example of addition, substitution, oxidation, cyclization and rearrangement involving radical reaction mechanism.

**3. Pericyclic reaction Part A**  
**(13L)**

Introduction, phase and symmetry of orbitals, types of pericyclic reactions; *Cycloaddition reactions*: Definition, FMO approach, Co-relation diagram, Dewar's FMO approach for cycloaddition (2+2 and 4+2) reactions, Woodward-Hoffmann selection rules, Regioselectivity, secondary orbital interaction, Lewis acid catalysis, Site selectivity, Periselectivity. Regioselectivity in 1,3-Dipolar cycloadditions, *Electrocyclic reactions*: Definition, FMO approach, Dewar's FMO approach for electrocyclic reactions, electroreversion, stereochemical effects, Woodward-Hoffmann rules,

**4. Pericyclic reaction Part B**  
**(12L)**

*Chelotropic reactions*: Definition, FMO approach for chelotropic reactions, Woodward-Hoffmann rules, Stereochemical outcome, *Sigmatropic rearrangement*: Definition, types of sigmatropic reactions, Hydrogen shifts and carbon shifts ( $[1, j]$  and  $[i, j]$ ), FMO approach, Dewar's aromatic transition state approach, selection rules, Claisen and Cope rearrangements, *Ene reaction*: Definition, FMO approach for ene reactions, Effects of Lewis acids.

**M. Sc. Semester-IV**  
**Theoretical**  
**CH 1020: Optional (Physical)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

**1. Modeling of artificial photo synthesis** **(13L)**

Photo Natural solar energy conversion process (reaction of photo synthesis), photolysis of water, modeling and mimicking of photo synthesis process

**2. Details of artificial photo synthesis (12L)**

Photo physical and photo chemical process of semiconductor based material and dye sensitized photo galvanic cells in solar energy conversion. Theoretical aspects of this conversion process

**3. Molecular Reaction dynamics (MRD)-I (13L)**

Motivation, important vocabularies of MRD, Energy partitioning, A simple model of energy partitioning, Molecular collisions and free path phenomena, collision cross-section and the intermolecular potential

**4. Molecular Reaction dynamics (MRD)-II (12L)**

Dynamics of elastic molecular collisions, the reaction cross-section, the reaction probability, elastic scattering as a probe of the interaction potential, intermolecular potential from experiment and theory, angular distribution in direct reactive collisions.

**M. Sc. Semester-IV****Theoretical****CH 1021: optional (Inorganic)****Full Marks: 50 (40 + 10); Credit point: 4****1. Polymer Chemistry-II****(12L)**

Inorganic polymers- coordination polymers, polyphosphazenes, silicones, inorganic rubber, sulfur-nitrogen polymers, polyatomic ions of Sn, Pb, S, Se and Te, homopoly and heteropoly acids and salts; Organometallic Polymers- different types; Polymerization: Metal ion initiated polymerization and coordination polymerization, olefin metathesis and metathesis polymerization, ring opening polymerization (ROP), Ziegler-Natta catalysts and green catalysts; Polymer metal complexes and their role in analytical chemistry

**2. Redox reactions and its mechanism****(13L)**

Classification, kinetics and mechanism, outer-sphere electron transfer reactions-controlling factors, self-exchange rate, electron tunneling hypothesis, hetero-nuclear redox reaction and simplified Marcus theory; Marcus cross relationship and its application, solvated electron; Inner-sphere electron transfer reaction-characteristics and controlling factors, ligand transfer, role of bridging ligand, chemical mechanism of electron transfer, complementary and non-complementary redox reactions.

**3. Physical characterization of inorganic compounds by spectral analysis-IV (13L)**

Electron paramagnetic resonance- Zero field splitting factor and its importance in naphthyl radical and various metal centers having more than one odd/even number unpaired electrons, spin polarization for atoms and transition metal ions, spin orbit coupling, EPR activity and application to metal-ligand complex with paramagnetic metal ions and paramagnetic ligands, Isotropic and anisotropic EPR spectra of metal complexes, Electronic spectra for chemical analysis (ESCA) - basic principle and applications

**4. Advanced Inorganic materials (12L)**

Synthesis and characterization, Magnetoresistance, Colossal magnetoresistive materials (CMR), Double exchange, Superexchange, Goodenough-Kanamori-Anderson rules (GKA), Phase separation: homogeneous, inhomogeneous, structural and electronic, Charge ordering (CO), orbital ordering (OO), effect of ionic radius on the physical properties of these functional materials, Chemical pressure, Size disorder, Thermoelectric oxides.

**M. Sc. Semester-IV**

**Theoretical**

**CH 1021: Optional (Organic)**

**Full Marks: 50 (40 + 10); Credit point: 4**

**1. Concept on M.O. and V.B. theory (12 L)**

Introduction to Huckel molecular orbital (MO) method as a mean to explain modern theoretical methods. Advanced techniques in FMO and FMO theory. Molecular mechanics, semi empirical methods and Ab Initio methods. Pictorial Representation of MOs for molecules, Qualitative Application of MO Theory to reactivity, Valence bond configuration mixing diagrams. Relationship between VB configuration mixing and resonance theory. Reaction profiles. Potential energy diagrams.

**2. Structural effects on reactivity (13 L)**

Linear free energy relationships (LFER). The Hammett equation, substituent constants, theories of substituent effects. Interpretation of  $\rho$ -values. Reaction constant. Deviations from Hammett equation. Dual - parameter correlations, inductive substituent constant. The Taft equation.

**3. Natural Products: Structure and Stereochemistry (12 L)**

*Natural Products: Structure and stereochemistry* of Alkaloids (Atropine/ Quinine); Terpenoids (Abietic acid/ Carotene); Steroids (Cholesterol)

**4. Natural Products: Bio-synthesis**

(13 L)

*Natural Products: Biosynthesis* of A tropine, Quinine, Abietic acid, Carotene, Cholesterol.**M. Sc. Semester-IV****Theoretical****CH 1021: Optional (Physical)****Full Marks: 50 (40 + 10); Credit point: 4****1. Electrode kinetics**

(12L)

Butler-Volmer equation and its application. Tafel equation from Volmer equation. Equilibrium exchange current density and its determination. Current potential reaction for reversible electrode. Diode rectification. Electrokinetics of Corrosion reaction. Pourbaix diagrams. Corrosion current and corrosion potential. Evans diagrams.

**2. Theory of semiconductor – electrolyte interface**

(12L)

The structure of the semiconductor–electrolyte interface. Analogies between semiconductors and electrolytic solutions. The Garrett-Bartain space charge. Differential capacity. Mott-Schottky equation. Flat band potential. Application of semiconductor electrode in photoelectric device.

**3. Non-equilibrium Statistical Mechanics**

(13L)

Brownian motion: Einstein's theory. Irregular movement of particles suspended in a liquid and its relation to diffusion. Diffusion and mobility. Determination of Avogadro number. Experimental confirmation. Theoretical observation on Brownian motion and the existence of a random force. Langevin description of Brownian motion: general expression for mean square displacement (i) short time limit and (ii) long time limit. Relation between random and viscous force: the fluctuation-dissipation theorem. Brownian motion in velocity space: Fokker-Planck equation. Calculation of  $M_1(v)$ , calculation of  $M_2(v)$ . Brownian motion in phase space (motion in a force field): Kramers' equation. Kramers' equation as a generalization of Liouville equation and connection to equilibrium statistical mechanics, Kramers theory of activated process (i) calculation of  $j$  and (ii) calculation of  $n_b$ . A simple connection to transition state theory. Overdamped motion: Smoluchowski equation and diffusion over a barrier. The master equation: applications in (i) unidirectional random walk, and (ii) quantized harmonic oscillator interacting with a radiation field.

**4. Irreversible Thermodynamics****(13L)**

Thermodynamic criteria for Non-equilibrium states. Entropy production and Entropy balance equations. Generalized flux and forces. Stationary states. Phenomenological equations. Microscopic reversibility and Onsager equation. Applications in physico-chemical and biological phenomena. Coupled reactions.

**M. Sc. Semester-IV****Theoretical****CH 1022: Optional (Inorganic)****Full Marks: 50 (40 + 10); Credit point: 4****2. Radio tracers and hot atom chemistry****(10L)**

Szillard-Chalmers reaction and retention of activity, primary and secondary retention, synthesis of labeled compounds, isotopes dilution, DIDA, IIDA and stoichiometric methods of analysis, application and numerical problems, Nuclear activation analysis, secondary particle activation analysis, charged particle activation analysis, problems and application

**3. Radiation chemistry****(14L)**

Ionizing radiation and its physical and chemical effect in target, water radiolysis, Definition of different units in radiation chemistry, calculation of radiation dose, biological effects, lethal dose, permissible level of radiation dose, primary radiological products of water and their characterization, dosimetric concepts and quantities, different types of chemical dosimeter, thermoluminescence and lyoluminescence, different unusual reactions by lyoluminescence

**4. Atomic spectroscopy****(10L)**

Basis principle, instrumentation and applications of Atomic Absorption Spectroscopy (AAS), Atomic Emission Spectroscopy (AES), Flame Emission Spectroscopy (FES), Inductively Coupled Plasma Mass Spectroscopy (ICPMS) and Fluorimetry

**4. Separation techniques****(16L)**

Solvent extraction: principle, distribution ratio and partition coefficient, successive extraction and separation; different methods of extraction systems; Craig extraction and counter current distribution; problems; Chromatography: general principle; classification, mathematical relations of capacity, selectivity factor, distribution constant and retention time; chromatogram, evaluation in

column chromatography: band broadening and column efficiency; Van Deemter equation; column resolution, numerical problems, GC, LC, TLC, PC, SEC

**M. Sc. Semester-IV**  
**Theoretical**  
**CH 1022: Optional (Organic)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. **Drug design and Antineoplastic agent** (12 L)  
*Drug Design:* Concept of Pharmacodynamics, Drug targets: Enzymes, Receptors, nucleic acids. Concept on Pharmacokinetics: Drug Absorption, Distribution, Metabolism and Excretion. Concept on lead compound and lead modification, Pharmacophore. Concept of prodrug and soft drug. Structure activity relationship (SAR), factors affecting bioactivity; *Antineoplastic agents:* Synthesis and mode of action of mechlorethamine, cyclophosphamide, melphalan, and 6-mercaptopurine.
2. **Cardiovascular, Antiinfective and Antibiotics** (13 L)  
*Cardiovascular drugs:* Introduction to cardiovascular diseases, Synthesis and mode of action of amyl nitrate, sorbitrate, diltiazem, quinidine, verapamil, methyl dopa; *Local antiinfective drugs and antibiotics:* Synthesis and mode of action of sulphonamides, nalidixic acid, norfloxacin, aminosalicylic acid, ethinamide, fluconazole, chloroquin and primaquin; *Antibiotics:* Cell wall biosynthesis, inhibitors,  $\beta$ -lactam rings, Synthesis of penicillin.
3. **Asymmetric Synthesis: Part-A** (12 L)  
 Introduction, kinetic and thermodynamic principles to asymmetric synthesis, diastereoselective & enantioselective synthesis; *Methods of asymmetric synthesis:* Resolution, use of chiral pool, chiral auxiliaries, use of stoichiometric chiral reagents, asymmetric catalysis.
4. **Asymmetric Synthesis: Part-B** (13 L)  
 Asymmetric hydrogenation with special reference to Ru-BNAP catalysts, asymmetric reduction of prochiral ketones with Baker's Yeast & CBS-catalyst, asymmetric epoxidation with special reference to Sharpless and Jacobsen epoxidation, asymmetric diethylzinc addition to carbonyl compounds, asymmetric aldol reactions, asymmetric Michael reaction; Few important industrial applications of asymmetric synthesis

**M. Sc. Semester-IV**  
**Theoretical**  
**CH 1022: Optional (Physical)**  
**Full Marks: 50 (40 + 10); Credit point: 4**

1. **Excitation of Molecules and Motion in Excited State** (10L)  
 Theory of Electromagnetic Radiation. Interaction between Matter and Electromagnetic Radiation – Semiclassical treatment using Time-dependent



perturbation Theory. Fermi golden rule, Transition probabilities and rates, Spectral shapes. Decoupling of the nuclear and electronic motions in a molecule: Born-Oppenheimer approximation.

**2. Rotational, Vibrational and Raman Spectroscopy (15L)**

Rigid & Non-rigid Rotors. Vibrational spectroscopy – Harmonic and Anharmonic Oscillators. Normal coordinates. Effects of Anharmonicity. Vibration-rotation transitions. Raman and Rayleigh scattering – Classical and Quantum Mechanical treatments. Polarization of scattered light. Rotational and Vibrational Raman spectroscopy. Resonance Raman effect. Selection rules of rotational, vibrational and Raman spectroscopy. Instrumentation of microwave, IR and Raman spectroscopy.

**3. Electronic Spectroscopy (15L)**

Atomic structure: vector model, spin-orbit coupling, atomic states and term symbols. Many-electron atoms – Hund's rules. Selection rules for atomic electronic transitions. Diatomic molecules – Hund's coupling cases. Rotational and vibrational structures of diatomic electronic transitions. Franck-Condon principle. Dissociation, Photodissociation and Predissociation. Polyatomic molecules – orbitals and electronic states. Chromophores. Vibronic transitions. Spin-orbit coupling and singlet-triplet transitions. Selection rules for molecular electronic transitions. Photoelectron spectroscopy. Rotational structure of some polyatomic electronic transitions. Instrumentation of UV-visible absorption and emission spectroscopy.

**4. Spin Spectroscopy – NMR and ESR (10L)**

Nuclear magnetic moment and response in an external magnetic field. Classical and Quantum Mechanical perspectives of nuclear magnetic resonance (NMR). Bloch equations. Spin-spin and spin-lattice relaxation and spectral shapes. Free induction decay and FT-NMR technique. Chemical shift and nuclear shielding. Spin magnetic moment of electrons and electron spin resonance signal (ESR). The g-factor and hyperfine splitting – interaction between nuclear spin and electron spin. Applications and instrumentation of NMR and ESR. Multi-dimensional NMR spectroscopy. Nuclear quadrupole resonance.

**M. Sc. Semester-IV**  
**Project**  
**CH 1023: Optional (Project)**  
**Full Marks: 100 (80 + 20); Credit point: 8**

Topic selection in consultation with the teacher, literature search from different reference books and using internet search, typed written-up with proper tables, structures, figures and literature to be submitted, seminar lecture on this topic to be delivered in presence of external expert and sectional teachers

Remedial Coaching

Number of Beneficiaries

Remedial Coaching

2007-08									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	36	19		25	80	160	36		
Vidya					0	0	0		
Bharsa					0	0	0		
Siksha	42	20		22	84	131	51		
PSB	0	0	0	0	0	0	0		
PSV	17	8		2	27	16	14		
<b>Total</b>	<b>95</b>	<b>47</b>	<b>0</b>	<b>49</b>	<b>191</b>	<b>327</b>	<b>101</b>		

2007-08									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	0	0	0	0	0	0	0		
Vidya					0	0	0		
Bharsa					0	0	0		
Siksha	72	24		36	132	156	80		
PSB	0	0	0	0	0	0	0		
PSV	5	0	0	1	6	6	6		
<b>Total</b>	<b>77</b>	<b>24</b>	<b>0</b>	<b>37</b>	<b>138</b>	<b>156</b>	<b>86</b>		

NET Coaching

2008-09									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	48	26	42	32	148	133	25		
Vidya					0	0	0		
Bharsa					0	0	0		
Siksha	41	23		23	87	200	50		
PSB	0	0	0	0	0	0	0		
PSV	5	0	0	2	7	32	5		
<b>Total</b>	<b>94</b>	<b>49</b>	<b>42</b>	<b>57</b>	<b>242</b>	<b>365</b>	<b>80</b>		

2008-09									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	0	0	0	0	0	0	0		
Vidya					0	0	0		
Bharsa					0	0	0		
Siksha	68	24		34	126	160	80		
PSB	0	0	0	0	0	0	0		
PSV	2	0	0	1	3	14	1		
<b>Total</b>	<b>70</b>	<b>24</b>	<b>0</b>	<b>35</b>	<b>129</b>	<b>174</b>	<b>81</b>		

2009-10									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	62	22	39	31	154	130	29		
Vidya					0	0	0		
Bharsa					0	0	0		
Siksha	52	22		21	95	266	53		
PSB	0	0	0	0	0	0	0		
PSV	21	11	0	0	32	48	12		
<b>Total</b>	<b>135</b>	<b>55</b>	<b>39</b>	<b>52</b>	<b>281</b>	<b>444</b>	<b>94</b>		

2009-10									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	0	0	0	0	0	0	0		
Vidya					0	0	0		
Bharsa					0	0	0		
Siksha	84	16		40	140	156	110		
PSB	0	0	0	0	0	0	0		
PSV	9	5	0	0	14	16	7		
<b>Total</b>	<b>93</b>	<b>21</b>	<b>0</b>	<b>40</b>	<b>154</b>	<b>172</b>	<b>117</b>		

2010-11									
Bharuwa	SC	ST	OBC	Minority	Total	No of Class taken	No of Teachers engaged		
Bharuwa	0	0	0	0	0	0	0		
Vidya					0	0	0		



**VISVA-BHARATI  
SANTINIKETAN  
NEW PH.D. ORDINANCE**

**ARTICLES:**

1. Preamble.
2. Language of Instruction and writing Theses.
3. Eligibility for registration in the Ph.D. Programmes.
4. Procedure for registration in the Ph.D. Programmes.
5. Supervisors.
6. Course Work and submission of Progress Reports.
7. Procedure for Evaluation/Examination of Course Work.
8. Preparation, Submission and Evaluation of Theses followed by Viva-Voce Examinations and awarding of the Degree of Ph.D.
9. Depository with UGC.
10. Categories of Students and requirements regarding attendance.
11. Plagiarism.
12. Powers and functions of the Research Board
13. Decisions regarding situations which are not covered under any other Provisions of this Ordinance.

**1. PREAMBLE:**

- 1.1. Ph.D. programmes shall be conducted for awarding the Degrees of Doctor of Philosophy (Ph.D.) in any Discipline of Humanities /Science / Fine Arts / Agriculture / Social Sciences / Education / Music etc. in which provisions for postgraduate studies and / or research programmes are available in the University.
- 1.2. The Degree of Doctor of Philosophy (Ph.D.) shall be awarded to a student on the basis of an original research work incorporated in a thesis, recommended by a board of examiners and successfully defended in a viva-voce examination.
- 1.3. The thesis shall demonstrate that the student is capable of doing scholarly work. The results of research embodied in the thesis shall be a contribution to the existing knowledge either by a discovery of new facts or theories or discovery of some new relations between facts already known or critical survey of facts leading to some new interpretations or development of new techniques.

**2. LANGUAGE OF INSTRUCTION AND WRITING THESES:**

English shall ordinarily be the medium of instruction as well as the language for writing the theses in Ph.D. programmes except in the following cases:

In the departments engaged in the study and research of creative and/or performing arts or Cultural Studies & Comparative Literature, either English or Bengali or Hindi may be considered as the medium of instruction as well as the language for writing a thesis, if recommended by the concerned Patha-Samiti (Board of Studies). In the language departments, the medium of instruction as well as the language for writing a thesis shall be the concerned language of the department. In the departments where classical languages such as Sanskrit, Pali, Prakrit, Arabic, etc. are taught, permission may be granted for writing a thesis in English or in a non-classical language in which the University has expertise for evaluation. Such permission shall be granted by the Research Board on the recommendation of the concerned Patha-Samiti (Board of Studies).

### 3. ELIGIBILITY FOR REGISTRATION IN THE PH.D. PROGRAMMES :

3.1. An applicant for registration in a Ph.D. programme must have obtained a Master's Degree ( two years duration) with a minimum of 55% marks or B+ grade in the concerned or an allied subject preceded by a Bachelor's Degree or an equivalent Degree from a recognized University / Institute. Due relaxation shall be given to the applicants belonging to the reserved categories as per the rules of the Government of India.

3.2 In addition to the above, an applicant must also fulfil any one of the following conditions:

- i) Qualified in any of the following examinations: NET (conducted by UGC/CSIR), SLET, GATE, or equivalent National Level Examinations conducted by ICAR/ICMR/NBHM etc.
- ii) Holder of UGC Teacher Fellowship.
- iii) Have obtained an M. Phil. degree of Visva-Bharati or any other university recognized by the UGC that also follows the UGC (Minimum Standards and Procedure for awards of M.Phil/Ph.D. Degree), Regulation 2009.
- iv) Have cleared the VBRET  
(The validity of the VBRET, once cleared, will be for two years from the date of publication of result)

3.3 The VBRET will be held in the month of Middle of April every year. Advertisement for VBRET in a particular year will be made centrally from the Academic & Research Section. All Bhavanas/ Vibhagas offering Ph.D. Programme must send the text of advertisement within 31<sup>st</sup> January each year. Eligibility for appearing in the VBRET shall be as per the clause no.3.1 above.

### 4. PROCEDURE FOR REGISTRATION IN THE PH.D. PROGRAMMES

4.1 Students shall be admitted to the Ph.D. programmes from the applicants who fulfill the eligibility criteria as per the clause no.3, once in an academic year (normally within middle of August) following the procedure, stated hereinafter.

**Internal Complaints Committee (ICC) for Prevention of Sexual Harassment against Women at Workplace (PSHWW), Visva-Bharati.**

**A brief history- What is it all about?**

In pursuance with the guidelines and subsequent instructions issued by the Govt. of India, Ministry of Human Resource Development and the University Grants Commission, New Delhi, Visva-Bharati had constituted a committee in the name of “Standing Committee for Prevention of Sexual Harassment of Women at Workplace” in June 2000, which was renamed as Internal Complaints Committee for Prevention of Sexual Harassment against Women at Workplace in 2013.

**Activities of the Committee:**

The committee immediately initiates action once any written complaint is received from the complainant by the Chairperson/Convenor or by any member of the committee or referred to the committee by any appropriate authority of the university. During investigations the members of the committee hear from both the parties- the complainant(s) and against whom the complaint is made, in person, separately and obtains their written depositions on spot. The committee at its liberty can hold meetings on different occasions on a single issue considering its seriousness of the charges as well as to make sure of the fact of the incident(s). Then finally the committee submits its report to the university administration with its findings and recommendations thereupon. As per the law the committee completes its investigation and submits report within ninety days from the date of receipt of the complaint .It may kindly be noted that during **last 14 years** of its activities, the committee has successfully settled about **40 such cases** to redress the grievances of the complainant or vice-versa. At the same time, the committee keeps a strict vigil on the charges of any complaint made with a bad intension or a false complaint is being made to defame the person or the chair concerned with. It may be pertinent and meaningful to mention that, although the committee is constituted or reconstituted by administration from time to time, the Standing Committees and the present ICC committee works independently with its utmost sincerity and it is free from any biasness or prejudices. Record says that no intervention whatsoever, by the



Administration or any local authorities or any political parties hampered the functioning of this committee.

Now in compliances with the “Vishakha Guidelines” and subsequent enactment of the new rules by the Hon’ble Supreme Court of India on “Prevention of Sexual Harassment against Women at Workplace-2013”- the nomenclature of the Committee has been renamed as the “Inter Complaints Committee” for Prevention of Sexual Harassment of Women at Workplace (PSHWW), Visva-Bharati.

**Members:**

The present committee comprising of the following members:

**Dr. Mausumi Bhattacharyya, Associate Professor, VB -Chairperson**

**Prof. Rajasree Basu, Rabindra Bharati University, Kolkata- External Member**

**Prof. Shukla Deb Kanango, Santi Trust ( NGO Member), Santiniketan- External Member**

**Smt. Ivey Acharjee, District Protection Officer, Birbhum, Suri, WB- External Member**

**Smt. Ameena Kabir, Lawyer, Calcutta High Court, Kolkata- External Member**

**Prof. Shibani Choudhuri, Department of Environment Studies, VB- Member**

**Prof. Amit Hazra, Adhyaksha, Palli Samgathana Vibhaga, VB- Member**

**Dr. Larisha M. Lyndem, Associate Professor, Department of Zoology, VB- Member**

**Dr. Avijit Banerjee, Associate Professor, Department of Chinese Language & Culture, VB-Member**

**Dr. Meghali Goswami, Associate Professor, Kala Bhavana, VB- Member**

**Dr. Ipsa Bandhopadhyaya, Assistant Lecturer, Patha-Bhavana, VB, Member**

**Dr. Tanusree Paul, Assistant Professor, Centre for Women’s Studies, VB- Member**

**Smt. Shyamala Roy, Confidential Secretary to the Vice-Chancellor, VB- Member**

**Sri Rupratan Patnaik, Section Officer (Examinations), VB- Convenor**

The present committee has framed a policy for the University on Prevention of Sexual Harassment of Women at Workplace (PSHWW) which has duly been approved by the Karma-Samiti (Executive Council) of the University and

uploaded in the university official website. The matter has duly been communicated to the MHRD Ministry & to the UGC.

**( POLICY)**

In the wake of the changing scenario of the present society's socio-economic state to protect the women against any kind of sexual harassment and to protect our female students of any age group and the employees as a whole and at the same time the instructions issued by the UGC & MHRD from time to time to be followed and implemented in any academic institutions like us which has a prestigious heritage of dignity and uniqueness, the committee apart from its regular activities has already started a few awareness campaigning workshops in the name of –“Gender Issues and Us” at different levels. Within a short spell of about two months the committee had conducted three such workshops.

The first one was at the highest level being attended by the Registrar, Provosts, Directors, the Principals of all institutes of the university including the school sections, the Controller of Examinations, the Proctor, the Chief Medical Officer, the Librarian etc. and some other senior administrative officers of the university.

**( Report of the meeting 27/06/2014)**

The second one was held at the Central Library of the University being attended by the staff members of library cadre and the principals of the Bhavanas. The workshop was chaired by the Vice-Chancellor.

**(Report of Library)**

The third one was held at Kala Bhavana( Institute of Fine Arts) being attended by the students (both female & male) of the institute from UG to PG up to researchers level. The workshop was chaired by the Registrar. The committee apart from its regular campaigning on this sensitive issue and its serious consequences invited open feedback from the participants and other stakeholders on regular basis and encouraged the students to go through the policy.

**(Report of Kala Bhavana)**

#### 4. Declaration by the Head of the Institution

I certify that the data included in this Self-Study Report (SSR) are true to the best of my knowledge.


This SSR is prepared by the institution after internal discussions, and no part thereof has been outsourced.

I am aware that the Peer team will validate the information provided in this SSR during the peer team visit.



Signature of the Head of the institution

with seal:



विद्यापीठ प्रमुख, संतनिकेतन  
विद्यापीठ  
SANTINIKETAN

Place: *Santiniketan*  
Date: *03.09.2014*