

**PROPOSED SYLLABUS
FOR
M.A. COURSE
IN
GEOGRAPHY
(SEMESTER SYSTEM)
2009-2010**



**Department of Geography
Vidya-Bhavana
VISVA-BHARATI
SANTINIKETAN – 731235
WEST BENGAL
INDIA**

SEMESTER SYSTEM -TERMS & CONDITIONS

There shall be full-time M.A. Course in Geography of two years' duration. There shall be Semester System spreading over four Semesters, each of six months. There shall be 1200 marks in total and each Semester shall carry 300 marks.

BASIC STRUCTURE

There shall be 24 Papers (15 Theoretical, 8 Practical and 1 Dissertation (Area-Study) to cover the whole Syllabus and each Semester shall contain six Papers. Each Paper carries 50 marks.

The Students shall be evaluated by all the teachers regularly by conducting Mid-Semester Tests, the marks of which shall be a part of their examination system. The Mid-Semester Tests shall be held on the topic(s) of the theoretical papers during the Semester period. Paper XXIV of 50 marks shall require a Dissertation to be submitted by each by each student. The dissertation will be will be evaluated on the basis of (a) Written Report submitted Report and (b) Seminar presentation and Viva-voce (30+10 marks).

INTERNAL ASSESSMENT

Mid-semester tests shall be conducted during the Semester period on the topics of the papers covered. The marks obtained will be considered for the final award of marks. 10% marks of each theoretical paper (i.e. 5 marks) will be given as Internal Assessment Marks by the concerned teacher(s) during the concerned semester period. Similarly, 20% marks of each practical paper (i.e. 10 marks) will be given as Internal Assessment Marks by the concerned teacher(s) during the concerned semester period. Assessment will be based on written examination /seminar/viva-voce/class work.

DISSERTATION (AREA-STUDY)

A Dissertation (Master's Thesis) on any branch of Geography will be a comprehensive work based on conceptual aspects, field work and analysis of primary and secondary data in the laboratory. Dissertation should contain the objectives, sources of information, Web Resources, methods and approaches. Interrelations between different aspects of the study should be the focus of the dissertation. Text of the dissertation should not exceed 10,000 words and should ideally be divided into the following sections: Introduction, Statement of problem(s) and Objectives -Methodology, Information and Analysis, Results, Discussions, Conclusions, References/Bibliography and Appendices (if any). Maps, diagrams and sketches, excluding photographs, should not exceed 50 pages of A4 size paper typed on one and half space and 12 font size format. It is to be produced individually by the students and this must be stated clearly in a certificate from the supervisor(s) and Head of the Department of Geography.

PAPER SETTING AND EVALUATION:

THEORY PAPERS

Number of lectures to be delivered for each of the Units 1, 2, & 3 will be 16 (i.e. $16 \times 3 = 48$ lectures). Each of the Units 1, 2 & 3 carries 15 marks (i.e. $16 \times 3 = 45$ marks). 5 marks shall

be awarded on the basis of Internal Assessment. Two questions of 15 marks each from each unit are to be set and one question to be answered from each of the three Units. Each question is to have at least two parts. Paper Setting and Evaluation will have normally 50% External and 50% Internal Examiner System.

PRACTICAL PAPERS

Number of periods to be assigned for each of the Units 1, 2, 3 & 4 will be 20 each. Four compulsory questions are to be set one from each of the four Units ($4 \times 8 = 32$ marks). 8 marks are allotted for evaluation of Practical Laboratory Notebook: 4 marks + Viva-voce: 4 marks (total 8 marks). 10 Marks shall be awarded on the basis of Internal assessment

DIVISION OF MARKS STRUCTURE OF THE SYLLABUS

	Full Marks	Theoretical	Practical
Semester I	300	200	100
Semester II	300	200	100
Semester III	300	200	100
Semester IV	300	150	150
Total Marks	1200	750	450

SEMESTER-I

Papers		Subjects	Marks	Duration of Examination
I	Theoretical	Geomorphology	50	3 Hours
II	Theoretical	Climatology	50	3Hours
III	Theoretical	Industrial Geography	50	3 Hours
IV	Theoretical	Agricultural Geography	50	3 Hours
V	Practical	Quantitative Techniques in Physical Geography (Geomorphology & Climatology)	50	4 Hours
VI	Practical	Quantitative Techniques in Industrial & Agricultural Geography	50	4 Hours

SEMESTER-II

Papers		Subjects	Marks	Duration of Examination
VII	Theoretical	Population Geography	50	3 Hours
VIII	Theoretical	Settlement Geography	50	3 Hours
IX	Theoretical	Landscape and Human Ecology	50	3 Hours
X	Theoretical	Geographical Thought	50	3 Hours
XI	Practical	Cartographic Techniques (Population and Settlement)	50	4 Hours
XII	Practical	Applied Statistical Techniques in Geography	50	4 Hours

SEMESTER-III

Papers		Subjects	Marks	Duration of Examination
XIII	Theoretical	Social & Cultural Geography	50	3 Hours
XIV	Theoretical	Historical & Political Geography	50	3 Hours
XV	Theoretical	Regions & Regional Entity of INDIA & West Bengal	50	3 Hours
XVI	Theoretical	Remote sensing & Image Interpretation	50	3 Hours
XVII	Practical	Thematic Mapping and Graphics	50	4 Hours
XVIII	Practical	Remote sensing & Image Interpretation	50	4 Hours

SEMESTER-IV

Papers		Subjects	Marks	Duration of Examination
XIX	Theoretical	Regional Planning & Rural Development	50	3 Hours
XX	Theoretical	Geoinformatics	50	3 Hours
XXI	Theoretical	Special Paper(A,B,C, D,E)-Theory*	50	3 Hours
XXII	Practical	Special Paper(A,B,C, D,E)-Practical*	50	4 Hours
XXIII	Practical	Geoinformatics, Regional Planning & Rural development -Practical	50	4 Hours
XXIV	Dissertation	Area Study	50	Thesis writing

- A – Fluvial Geomorphology***
B – Terrain Evaluation*
C – Environmental Geography*
D – Urban Geography*
E - Hydrology*

SEMESTER-I

Papers		Subjects	Marks	Duration of Examination
I	Theoretical	Geomorphology	50	3 Hours
II	Theoretical	Climatology	50	3 Hours
III	Theoretical	Industrial Geography	50	3 Hours
IV	Theoretical	Agricultural Geography	50	3 Hours
V	Practical	Quantitative Techniques in Physical Geography (Geomorphology & Climatology)	50	4 Hours
VI	Practical	Quantitative Techniques in Industrial & Agricultural Geography	50	4 Hours

SEMESTER - I
PAPER – I
GEOMORPHOLOGY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 CONCEPTS, APPROACHES AND MODELS IN GEOMORPHOLOGY

- 1.1 Concepts of spatial and temporal scales and threshold value
- 1.2 Approaches to Geomorphology: Static, Dynamic, Environmental and Applied
- 1.3 Models of slope development by Davis. Penck. King and Wood
- 1.4 Peneplain Concepts. Types of Peneplain and Erosion Surfaces other than Peneplain

UNIT 2.0 GEOMORPHIC PROCESSES AND FORMS

- 2.1 Climatic Geomorphology: Contents and Models
- 2.2 Morphometric Mechanisms and Morphometric Equilibrium
- 2.3 Morphometric Regions
- 2.4 Fluvial Processes in Humid, Tropical and Semi-Arid Regions

UNIT 3.0 BASIN MORPHOMETRY AND REGIONAL GEOMORPHOLOGY

- 3.1 Fluvial Morphometry (Linear, Aerial and Relief Properties of Drainage Basin)
- 3.2 Basin Hydrological Phenomena: Stream Rises and Runoff Processes
- 3.3 Concept of Regional Geomorphology, Nature and Bases of Recognition of Geomorphic Units with examples at Meso and Micro-levels
- 3.4 Geomorphological Account of Ranchi Plateau, Kashmir Valley and Marusthali

SEMESTER - I
PAPER – II
CLIMATOLOGY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 DEFINITION AND ATMOSPHERIC CIRCULATION

- 1.1 Concept of Climatology: Nature and scope of study, relationship other branches of Geography, Methods of Climatic data investigation and techniques of forecasting
- 1.2 Lower atmospheric wind circulation: Trade Wind – origin, characteristics and influence on Tropical and Sub-tropical climates
- 1.3 Upper atmospheric wind circulation: Jet Stream – origin, characteristics and influence on Tropical and Sub-tropical climates
- 1.4 Ocean atmospheric wind circulation: El Nino - origin, characteristics and influence on Tropical and Sub-tropical climates

UNIT 2.0 ATMOSPHERIC MOISTURE

- 2.1 Rainfall: Theories of its origin, world pattern and recent changing trend
- 2.2 Monsoon Rain: Origin and characteristics with special reference to South East Asia and recent changing trend
- 2.3 Cyclonic rain: Tropical Cyclone, Norwester and Western Disturbances – origin, characteristics and changing trend
- 2.4 Acid rain: Causes, processes and consequences

UNIT 3.0 CLIMATIC CHANGE AND APPLIED CLIMATOLOGY

- 3.1 Climatic change: Natural causes, climatic change through geological time scale, indicators of past climate
- 3.2 Climatic modification: : Causes, trend and impacts on society and contemporary issues on Climatic change
- 3.3 Applied Climatology: Concept, influence of climate on agriculture, especially for water balance and irrigation needs of Indian agriculture; relationship between climate and settlement, architecture, human activity, culture and health
- 3.4 Bioclimatic and Agroclimatic regions: Identification and characteristics with special reference to India

SEMESTER - I
PAPER – III
INDUSTRIAL GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40Marks, For Internal Assessment 10 marks)

- UNIT 1.0 CONTENTS, TOOLS AND BASIC INPUTS**
- 1.1 Definition of manufacturing as an economic activity .Approaches to the study of Industrial Geography: Observation, Description, Explanation and Theory
 - 1.2 Tools for Areal and Systematic Approaches: Three Dimension Matrix, Equal Outlay Lines, Equal Product Curve, Expansion Path. Capital Intensively and Labour Intensively- their substitution character
 - 1.3 Geonomic parameters of Land, Labour, Capital and Organization as individual and collective determinants of industrial location.
 - 1.4 Types of industrial raw material- agro based and natural. Industries acting as source of raw material. Influence of nature and source of raw material on industrial location.
- UNIT 2.0 MARKET, PROFIT AND TRANSPORT AS DETERMINANTS**
- 2.1 Typology of Market - market as a determinant of industrial location
 - 2.2 Horizontal and vertical expansion possibilities of market - Target group and socio-economic behavioural factors of consumers
 - 2.3 Factors of Demand, Supply, Profit Pre-determination, Agglomeration and External Economies influencing industrial location
 - 2.4 Modes of transport – their advantages and disadvantages .Transport as an input and infrastructure. Relationship between transport and other industrial inputs. Transport Rate structure – Postage Stamp, Blanket, Mileage rates. Terminal cost, Line Haul cost, Break-of-Bulk Point, classification of commodities
- UNIT 3.0 BASICS OF INDUSTRIAL LOCATION THEORIES**
- 3.1 Industrial location theory of Alfred Weber. Importance of Critical Isodapane and labour locations
 - 3.2 Concept of Market demarcation, Uniform and variable transport cost of Tord Palander’s model
 - 3.3 Space equilibrium and hierarchical set of industrial locations proposed by August Lösch. Practicality of Zero Demand factor
 - 3.4 Space economy, distance input, restriction factor, Weight Triangle concepts of Walter Isard’s theory

SEMESTER - I
PAPER – IV
AGRICULTURAL GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 INTRODUCTION, CONCEPTS, METHODS AND SCOPE

- 1.1 Nature, scope and approaches of Agricultural Geography: Empirical and Non empirical, Regional and Systematic
- 1.2 Theories regarding origin and Dispersal of Agriculture
- 1.3 Methods/Techniques of delineation of agricultural regions: cropping pattern, crop combination region, crop diversification, concentration, specialization, cropping intensity, degree of commercialization, agricultural productivity and efficiency
- 1.4 Models in Agricultural Geography – Von Thunen. Relevance of agricultural geography in contemporary world

UNIT 2.0 DETERMINANTS OF AGRICULTURE AND FARMING SYSTEMS

- 2.1 Physical determinants of agriculture: topography, climate, soil etc. Land capability and land use: definition and system of classification
- 2.2 Socio-economic determinants of agriculture. Land Tenure system: Definition and Types. Land Reforms: Definition, Relevance, methods and progress with special reference to India
- 2.3 World Farming Systems: Traditional and Modern: Types and description
- 2.4 Ecological Implications of the World Farming Systems: Traditional vs. Modern

UNIT 3.0 CONTEMPORARY ISSUES AND MANAGEMENT OF AGRICULTURE

- 3.1 Management for crop production, integrated nutrient (fertilizer)management, integrated pest management and mechanization
- 3.2 Food deficit and food surplus regions of India
- 3.3 Problems of hunger, nutrition and food security in India
- 3.4 Management, Planning and Policy in Indian Agriculture

SEMESTER - I
PAPER – V
QUANTITATIVE TECHNIQUES IN PHYSICAL GEOGRAPHY
(GEOMORPHOLOGY & CLIMATOLOGY)
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 marks), Internal Assessment 10 marks)

UNIT 1.0 BASIN MORPHOMETRY

- 1.1 Delineation of Drainage Basins and Demarcation of waterdivides
- 1.2 Linear Properties of Drainage Basin Analysis
- 1.3 Aerial Properties of Drainage Basin Analysis
- 1.4 Relief Properties of Drainage Basin Analysis

UNIT 2.0 PHYSICAL MAPS AND DIAGRAMS

- 2.1 Morphometric Analysis of Relief
- 2.2 Terrain Morphology including Slope Analysis
- 2.3 Identification of Erosion Surfaces
- 2.4 Geomorphic Mapping

UNIT 3.0 COMPUTAIN AND MAPPING OF CLIMATOLOGICAL PARAMETERS

- 3.1 Isanomal
- 3.2 Equipluves
- 3.3 Equipluves
- 3.4 Deviational graphs & Relative Temperature curves

UNIT 4.0 APPLIED CLIMATOLOGICAL TECHNIQUES

- 4.1 Water Budget
- 4.2 Station Model with the help of Synoptic data
- 4.3 Mapping of Bioclimatic zones
- 4.4 Mapping of Agro-climatic zones based on Aridity and Moisture Index

Viva-voce & Laboratory Note Book: 4 + 4 = 8

SEMESTER - I
PAPER – VI
QUANTITATIVE TECHNIQUES
(AGRICULTURE & INDUSTRY)
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 marks), Internal Assessment 10 marks)

UNIT 1.0 METHODS IN IN AGRICULTURAL GEOGRAPHY

- 1.1 Crop combination
- 1.2 Intensification of crops
- 1.3 Agricultural Efficiency Regions
- 1.4 Diversification of crops

UNIT 2.0 QUANTITATIVE TECHNIQUES IN AGRICULTURAL GEOGRAPHY

- 2.1 Lorenz's Curve
- 2.2 Gini's Coefficient
- 2.3 Location Quotient Analysis
- 2.4 Dissimilarity Index

UNIT 3.0 QUANTITATIVE TECHNIQUES IN INDUSTRIAL GEOGRAPHY

- 3.1 Index of economic base
- 3.2 Co-efficeient of Localisation
- 3.3 Co-efficeient of Geographical Association
- 3.4 Levels of Industrial Development

UNIT 4.0 STATISTICAL APPLICATIONS IN INDUSTRIAL GEOGRAPHY

- 4.1 Time-Series Analysis
- 4.2 Index of specialisation
- 4.3 Accessibility & Connectivity-Shortest path analysis
- 4.4 Chi-Square Analysis

Viva-voce & Laboratory Note Book: 4 + 4 = 8

SEMESTER- II

Papers		Subjects	Marks	Duration of Examination
VII	Theoretical	Population Geography	50	3 Hours
VIII	Theoretical	Settlement Geography	50	3 Hours
IX	Theoretical	Landscape and Human Ecology	50	3 Hours
X	Theoretical	Geographical Thought	50	3 Hours
XI	Practical	Cartographic Techniques (Population and Settlement)	50	4 Hours
XII	Practical	Applied Statistical Techniques in Geography	50	4 Hours

SEMESTER – II
PAPER – VII
POPULATION GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 NATURE OF POPULATION GEOGRAPHY

- 1.1 Nature, scope and contents of Population Geography
- 1.2 Concept of population growth – population density and distribution, population explosion, optimum population
- 1.3 Database and sources with special reference to the Census of India, Sample Survey (NSS data)
- 1.4 Concept of population structure – Age-sex structure, occupational structure, dependency ratio

UNIT 2.0 POPULATION DYNAMICS

- 2.1 Population growth pattern in developed and developing countries
- 2.2 Fertility, Morbidity and Mortality
- 2.3 Theories of population – Malthusian, Marx, Neo-Malthusian and Sen's approach, Demographic transition
- 2.4 Population migration and migration theories

UNIT 3.0 POPULATION AND ENVIRONMENTAL ASPECTS

- 3.1 Population growth and contemporary social issues
- 3.2 Population policies in developed and developing countries
- 3.3 Population problems and environmental impacts
- 3.4 Population planning in developed and less developed countries

SEMESTER – II
PAPER – VIII
SETTLEMENT GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 DEFINITION AND SCOPE OF SETTLEMENT GEOGRAPHY

- 1.1 Definition, nature and scope of Settlement Geography
- 1.2 Principles of settlement formation. Contribution of C.A. Doxiadis
- 1.3 Approaches to the study of Settlement Geography. Its significance, merits and limitations
- 1.4 Classification of settlements – Rural and Urban

UNIT 2.0 DETERMINANTS AND SPATIAL PATTERN

- 2.1 Site, Situation and Ecological determinants of settlements
- 2.2 House types and their building materials in India
- 2.3 Pattern of Rural Settlement in India
- 2.4 Pattern of Urban Settlement in India

UNIT 3.0 EVOLUTION AND SPATIAL ORGANISATION

- 3.1 Emergence of Settlements: Greek, Roman, Medieval, Colonial and Post-colonial
- 3.2 Spatial organization of Settlements
- 3.3 Central Place Theory
- 3.4 Morphology of settlements: Rural morphology and Classical Theories of Urban Morphology

SEMESTER – II
PAPER – IX
LANDSCAPE AND HUMAN ECOLOGY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 CONCEPTS, APPROACHES AND THEORIES IN LANDSCAPE ECOLOGY

- 1.1 Concepts of Landscape Ecology and Contribution of different disciplines
- 1.2 Hierarchy theory and structure of the landscape and Percolation Theory
- 1.3 Scaling patterns and processes across landscapes
- 1.4 Methods in Landscape Ecology

UNIT 2.0 PROCESSES AND PRINCIPLES OF LANDSCAPE DYNAMICS

- 2.1 Physical & Chemical Properties of Soil And Soil fertility
- 2.2 Soil Degradation, methods of conservation and amelioration
- 2.3 Principles and methods of land use survey, macro and micro level
- 2.4 Land evaluation: Methods and techniques, methods of land capability classification (USDA, FAO, India)

UNIT 3.0 BASICS AND EMERGING DIMENSIONS OF HUMAN ECOLOGY

- 3.1 Concept and scope. Development of human ecology as a discipline: from general ecology to human ecology. Rural and urban human ecosystems
- 3.2 Methods of human ecology: Ecological foot-print analysis. Application of ecological principle in human ecology - open and closed systems, Dimensions in society
- 3.3 Human ecology and resource utilization, Human ecology and population, Human ecology and sustainability. Concept of human ecological regions
- 3.4 Globalization and contemporary ecological issues. Case study from India and abroad

SEMESTER – II
PAPER – X
GEOGRAPHICAL THOUGHT

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 NATURE AND EXPLANATION IN GEOGRAPHY

- 1.1 Nature of Geography: Issues and explanations
- 1.2 Place of Geography in the classification of sciences – Physical and Social Sciences
- 1.3 Paradigms and paradigm shifts in Geography
- 1.4 Explanations in Geography: Views and contributions

UNIT 2.0 DUALISM IN GEOGRAPHY

- 2.1 Concept of Dualism – Physical and Human
- 2.2 Determinism vs. Possibilism
- 2.3 Ideographic vs. Nomothetic
- 2.4 Regional vs. Systematic Geography

UNIT 3.0 CONTEMPORARY TRENDS IN GEOGRAPHY

- 3.1 Concept of Space in Geography
- 3.2 Welfare Geography and Public Policies
- 3.3 Quantitative Revolution – Empiricism and fundamental assumption of Positivism
- 3.4 Geography of post 1970's. Future of Geography

SEMESTER - II
PAPER – XI
CARTOGRAPHIC TECHNIQUES
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 marks), Internal Assessment 10 marks)

UNIT 1.0 SOURCES AND METHODS OF DATA COLLECTION

- 1.1 Sources and Methods of Data Collection: Quantitative and Qualitative; Reliability and accuracy of data
- 1.2 Preparation of Questionnaire Schedules
- 1.3 Tabulation and Mapping of Population Data
- 1.4 Tabulation and Mapping of Land use data

UNIT 2.0 MAPPING TECHNIQUES AND ANALYSIS

- 2.1 Analysis of Geological Maps, Topographical Maps, Ordnance Map, Mouza Maps
- 2.2 Centographic measures-Spatial mean and spatial standard deviations
- 2.3 Population Potential Surface
- 2.4 Socio-economic Disparity

UNIT 3.0 SETTLEMENT – IDENTIFICATION OF PATTERNS, DISTRIBUTION & MAPPING

- 3.1 Distribution, Density and Concentration from topographical maps
- 3.2 Scalogram
- 3.3 Chi-square and NNA
- 3.4 Ternary Diagram

UNIT 4.0 POPULATION – DISTRIBUTION, COMPOSITION, DYNAMICS & ANALYSIS

- 4.1 Growth rates
- 4.2 Z-score
- 4.3 Residual Mapping

4.4 Population Projection using $Y_c = a+bx$

Viva-voce & Laboratory Note Book: 4 + 4 = 8

SEMESTER - II
PAPER – XII
APPLIED STATISTICAL TECHNIQUES IN GEOGRAPHY
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 marks) Internal Assessment 10 marks)

UNIT 1.0 ELEMENTS OF STATISTICAL INFERENCE

- 1.1 Need of Statistics in Geography
- 1.2 Levels of measurements in Statistics, Parametric & non-parametric Tests
- 1.3 Central Tendencies, Dispersions and Higher Order Moments
- 1.4 Spatial Statistics- Central Tendencies and Dispersion

UNIT 2.0 SAMPLE AND SAMPLING

- 2.1 Basic Considerations
- 2.2 Sample Design and Units
- 2.3 Sampling Methods
- 2.4 Sample size and estimates from sample

UNIT 3.0 NON-PARAMETRIC STATISTICAL METHODS

- 3.1 One-sample Chi-Square Test
- 3.2 Chi-Square Test for two or more independent samples
- 3.3 The Phi Co-efficient
- 3.4 Spearman's Co-efficient of Rank Correlation

UNIT 4.0 PARAMETRIC METHODS

- 4.1 Analysis of Variance –One-way and Two-way(ANOVA-I & ANOVA-II)
- 4.2 Pearson's Product moment Coefficient of Correlation
- 4.3 Linear Regression
- 4.4 Factorial Analysis and Principal Component Analysis

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER-III

Papers		Subjects	Marks	Duration of Examination
XIII	Theoretical	Social & Cultural Geography	50	3 Hours
XIV	Theoretical	Historical & Political Geography	50	3 Hours
XV	Theoretical	Regions & Regional Entity of INDIA & West Bengal	50	3 Hours
XVI	Theoretical	Remote sensing & Image Interpretation	50	3 Hours
XVII	Practical	Thematic Mapping and Graphics	50	4 Hours
XVIII	Practical	Remote sensing & Image Interpretation	50	4 Hours

SEMESTER – III
PAPER – XIII
SOCIAL AND CULTURAL GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 BASES OF SOCIAL GEOGRAPHY

- 1.1 Social Geography – its relationship with Sociology and Anthropology
- 1.2 Social Space; Division of Labour
- 1.3 Social Transformation
- 1.4 Social well-being and Social Ecology

UNIT 2.0 COMPONENTS OF SOCIAL AND CULTURAL GEOGRAPHY

- 2.1 Concept of Culture, Development of Cultural Geography
- 2.2 Cultural areas and Cultural Regions
- 2.3 Ethnicity and Races: Habitat, Economy and Society of Tribes
- 2.4 Public Policies on social well-being

UNIT 3.0 CULTURAL ISSUES AND CONTEMPORARY SOCIETIES

- 3.1 Concepts of Tagore and Gandhi on social and cultural development
- 3.2 Folk culture and traditional practices – their revival
- 3.3 Impact of Globalisation on society; Ethnic identity
- 3.4 Human Rights – genesis and impacts

SEMESTER – III
PAPER – XIV
HISTORICAL AND POLITICAL GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 HISTORICAL GEOGRAPHY

- 1.1 Nature, scope and contents of Historical Geography
- 1.2 Importance of time-dimension in Geography
- 1.3 Historiography – Historical Geography and Geography; Historicism
- 1.4 Ancient (Janapad), Medieval (Agriculture and Trade), Colonial (Trade and Industry), Post-colonial Period

UNIT 2.0 POLITICAL GEOGRAPHY

- 2.1 Geo-political theories – Heartland and Rimland
- 2.2 Geographical perspective of State, Nation and Nation States
- 2.3 Frontiers and Boundaries, Core-Periphery Concepts
- 2.4 Strategic, Regional and Economic Alliances: Commonwealth, SAARC, EU:

UNIT 3.0 GEOPOLITICAL ISSUES

- 3.1 Geo-political setting and boundary conflicts
- 3.2 Regionalism, and Geographies of Socio-political movements
- 3.3 Electoral Geography – Voting behavior and patterns
- 3.4 Resource allocation and Policies – Government as an agent of Geographical change; Government decision-making

SEMESTER – III

PAPER – XV

REGIONS AND REGIONAL ENTITY OF INDIA AND WEST BENGAL

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 REGIONALISATION IN INDIA: BSES AND CHARACTERISTICS

- 1.1 Basis of regionalization in India
- 1.2 Physico-economic regions
- 1.3 Socio-cultural regions
- 1.4 Planning regions

UNIT 2.0 REGIONAL ENTITY

- 2.1 Chotanagpur Plateau: Potentialities, problems and prospects of industrial development
- 2.2 Lower Ganga Plain: Potentialities, problems and prospects of agricultural and industrial development
- 2.3 The Indian Islands: Tourist region and ecological protection
- 2.4 Dandakaranya: Ethnic identity, backwardness and prospects

UNIT 3.0 REGIONAL ENTITY OF WEST BENGAL

- 3.1 Sundarbans with special reference to Hydro-morphological characteristics
- 3.2 Physical background of Rarh Bengal with special reference to badlands on laterite duricrusts
- 3.3 Environmental dimensions and socio-cultural characteristics of North Bengal Plain
- 3.4 Darjeeling Himalaya as a Tourist Spot, development of Ecotourism and Ecological Protection

SEMESTER – III

PAPER – XVI

REMOTE SENSING AND IMAGE INTERPRETATION

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT	1.0	BASIC CONCEPTS OF REMOTE SENSING
	1.1	Definition and stages of Remote Sensing
	1.2	Basic Concepts in Remote Sensing – EMR Spectral Regions and their characteristics
	1.3	Thermal Laws of Radiation, Transmission, Spectral Signature
	1.4	Sensors, Platforms and Products
UNIT	2.0	BASICS IN AERIAL PHOTOGRAPHY
	2.1	Basic Information and Specification in Aerial Photography
	2.2	Types of Aerial Photographs and Scales of Aerial Photo and Satellite Imageries
	2.3	Geometry of Aerial Photographs – Projection, Tilt and Swing
	2.4	Relief Displacement and Parallax
UNIT	3.0	IMAGE INTERPRETATION AND APPLICATIONS
	3.1	Image Interpretation, Photo Elements, Techniques and Activities in Image Interpretation
	3.2	Digital Image Interpretation and Multi Band concept of Image Interpretation
	3.3	Use of Remote Sensing in Land Use/Land Cover/Space Use Analysis
	3.4	Application of Remote Sensing to Geomorphological Studies

SEMESTER - III
PAPER – XVII
THEMATIC MAPPING AND GRAPHICS
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 Marks) Internal Assessment 10 marks)

UNIT 1.0 THEMATIC MAPPING OF PHYSICAL ENVIRONMENT

- 1.1 Computation and Mapping of Morphometric Aspects
- 1.2 Preparation of Geomorphic Maps
- 1.3 Preparation of Environmental Maps: Flood, Drought and Pollution
- 1.4 Preparation of Resource Maps

UNIT 2.0 FIELD SURVEY AND REPORT WRITING

- 2.1 Physical aspects
- 2.2 Socio-cultural aspects
- 2.3 Socio-economic aspects
- 2.4 Problem Identification, analysis and strategy recommendations

UNIT 3.0 DIGITAL DATA PROCESSING

- 3.1 Data Entry, Editing, Sorting and Retrieval
- 3.2 Derivation of Correlation, Regression
- 3.3 Derivation of Mean, Rank, Standard Deviation
- 3.4 Interpolation and Extrapolation

UNIT 4.0 DATA REPRESENTATION

- 4.1 Line Graph, XY (Scatter), Logarithmic
- 4.2 Bar Graph, Compound bar, Stack Bar
- 4.3 Pie Chart, Doughnut, Bubble Diagram
- 4.4 Histogram

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER - III
PAPER – XVIII
REMOTE SENSING AND IMAGE INTERPRETATION
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 Marks), Internal Assessment 10 marks)

UNIT	1.0	INTRODUCTION
	1.1	Introduction of Remote Sensing Instruments
	1.2	Test of Stereovision
	1.3	Scale Determination of Air Photographs
	1.4	Scale Determination of Satellite Imageries
UNIT	2.0	GEOMETRY OF AIR PHOTOGRAPHS
	2.1	Construction of Fiducial Marks, Principal Point, Flight Line, and Match Line
	2.2	Construction of Overlaps
	2.3	Identification of Defined Objects Using Photo Elements
	2.4	Preparation of Overlays
UNIT	3.0	IMAGE INTERPRETATION
	3.1	Air Photo Interpretation for Landuse/Land Cover Mapping
	3.2	Air Photo Interpretation for Geomorphological Mapping
	3.3	Air Photo Interpretation for Space Use Mapping
	3.4	Air Photo Interpretation for Traffic Analysis
UNIT	4.0	APPLICATIONS OF REMOTE SENSING PRODUCTS
	4.1	Application to Geomorphic Units Recognition
	4.2	Application to Land Use/Land Cover Analysis
	4.3	Application to Water Resource Studies
	4.4	Application to Urban & Regional Planning
<i>Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks</i>		

SEMESTER-IV

Papers		Subjects	Marks	Duration of Examination
XIX	Theoretical	Regional Planning & Rural Development	50	3 Hours
XX	Theoretical	Geoinformatics	50	3 Hours
XXI	Theoretical	Special Paper(A,B,C,D,E)-Theory*	50	3 Hours
XXII	Practical	Special Paper(A,B,C,D,E)-Practical*	50	4 Hours
XXIII	Practical	Geoinformatics, Regional Planning & Rural developemnt -Practical	50	4 Hours
XXIV	Dissertation	Area Study	50	Thesis writing

- A – Fluvial Geomorphology***
- B – Terrain Evaluation***
- C – Environmental Geography***
- D – Urban Geography***
- E - Hydrology***

SEMESTER – IV
PAPER – XIX
REGIONAL PLANNING AND RURAL DEVELOPMENT

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 CONCEPTUAL DEFINITION

- 1.1 Concept of Region, Delineation of Regions
- 1.2 Planning – need and objectives. Planning and developmental issues
- 1.3 Regionalisation and delineation of regions, Delineation of Formal and Functional Regions
- 1.4 Concept of Regionalism, Planning region and Regional planning

UNIT 2.0 PLANNING – ITS TYPES AND FRAMEWORK

- 2.1 Social purposes of planning – Hill area development and Tribal area development
- 2.2 Planning Process – Disparities in India, Interstate planning
- 2.3 Physical Planning regions – Watershed region, Multipurpose River Valley region
- 2.4 International issues and planning - River water sharing, Ocean resource zonation (UNCLOS)

UNIT 3.0 PLANNING IN INDIA

- 3.1 Regional development in India: strategies, concentration, dispersal, problems and prospects
- 3.2 Planning in India – goals and achievements
- 3.3 Multi-level planning: decentralized planning
- 3.4 Panchayati Raj system in India

SEMESTER – IV
PAPER – XX
GEOINFORMATICS

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 SCOPE, CONTENTS AND PURPOSES OF GEOINFORMATICS

- 1.1 Definitions and Contents of Geoinformatics
- 1.2 History and Architecture of Computers
- 1.3 Data Formats and Database Management System
- 1.4 Data Communications and Applications

UNIT 2.0 GEOGRAPHIC INFORMATION SYSTEM (GIS)

- 2.1 Introduction and Equipment for GIS
- 2.2 GIS Data Model and Structure
- 2.3 GIS and Remote Sensing Integration
- 2.4 Applications

UNIT 3.0 GLOBAL POSITIONING SYSTEM AND GRAPHICS

- 3.1 Basics of GPS
- 3.2 Components of GPS
- 3.3 Use of GPS
- 3.4 Internet GPS and Geomarketing

SEMESTER – IV
PAPER – XXI
FLUVIAL GEOMORPHOLOGY
(SPECIAL PAPER)

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 HYDROLOGICAL CHARACTERISTICS OF RIVER BASIN

- 1.1 Fluvial Geomorphology: Nature, scope and present trend of study. Concept and components of Fluvial System.
- 1.2 Channel Flow: Types, factors, energy principle in open channel flow.
- 1.3 Sediment load: Processes of entrainment and transport, types of load
- 1.4 Fluvial Geomorphology: Nature, Scope and present trend of study. Concept and components of Fluvial System.

UNIT 2.0 MORPHOMETRICAL PROPERTIES OF RIVER BASIN

- 2.1 Properties
- 2.2 Models of channel initiation
- 2.3 Causes of concavity of channel
- 2.4 Morphometric methods for quantitative analysis of drainage basin- merits

UNIT 3.0 RIVER BASIN MANAGEMENT ISSUES

- 3.1 Watershed Management Programmes- importance, policies and techniques with special reference to India
- 3.2 Dams, embankments and irrigation canals – effect on changing hydromorphological character of the river basin with special reference to India
- 3.3 Flood management strategies - impact on the flood plain morphology with special reference to north and south Bengal
- 3.4 River bank erosion abatement strategies – effect on geo-hydrological character of the rivers with special reference to river Ganga and rivers of south Bengal

SEMESTER – IV

PAPER – XXI

(SPECIAL PAPER)

TERRAIN EVALUATION

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 SCOPE, CONTENTS AND PURPOSES

- 1.1 Concept and meaning of Terrain Evaluation
- 1.2 Definition of Terrain and Terrain Characteristics
- 1.3 Terrain Elements – Relief, Drainage, Geology, Tectonics, Soils
- 1.4 Scope and Purpose of Terrain Evaluation

UNIT 2.0 MORPHOMETRIC ANALYSIS OF TERRAIN AND TERRAIN CLASSIFICATION

- 2.1 Morphometric Techniques: Relief and Drainage Morphometry
- 2.2 Terrain Classification: CSIRO, Oxford MEXE Method, Pattern and Facets method
- 2.3 Terrain Data Collection and Processing
- 2.4 Use of Geoinformatics in Terrain Data collection and Terrain Resource Mapping

UNIT 3.0 TERRAIN EVALUATION APPLICATIONS

- 3.1 Terrain Evaluation for Civil Purpose: Site Selection and Route Location
- 3.2 Dam Site and Reservoir Construction, Bridge construction, Forestry and Mineral exploration
- 3.3 Terrain Evaluation of selected regions: Case Studies (Methods and Approaches)
- 3.4 A part of Garhwal Himalaya and a part of Rajmahal Highlands

SEMESTER – IV
PAPER – XXI
(SPECIAL PAPER)
ENVIRONMENTAL GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

- UNIT 1.0 CONTENTS OF ENVIRONMENTAL GEOGRAPHY**
- 1.1 Definition, concept, scope and contents of Environmental Geography
 - 1.2 Environmental consensus at the National and International levels
 - 1.3 Concept of Ecology; Ecosystem, Ecotone and Biomes
 - 1.4 Ecotourism and its global importance with examples
- UNIT 2.0 ENVIRONMENTAL DEGRADATION**
- 2.1 Concept, types and processes of environmental degradation
 - 2.2 Environmental degradation through agricultural development, deforestation and desertification
 - 2.3 Environmental Hazards – flood and drought
 - 2.4 Global environmental issues – Global warming and Biodiversity conservation
- UNIT 3.0 ENVIRONMENT AND DEVELOPMENT – RELATED ISSUES**
- 3.1 Environment and Development – Issues related
 - 3.2 UN Conferences on Environment and Development – Summits of 1972,1992 and 2002
 - 3.3 Environmental monitoring programme – Environment Impact Assessment (EIA)
 - 3.4 Environmental management (with special reference to India)

SEMESTER – IV

PAPER – XXI

(SPECIAL PAPER)

HYDROLOGY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

- UNIT 1.0 CONCEPT AND APPROACHES OF SURFACE HYDROLOGY**
- 1.1 Global hydrological cycle- significance in response to global storage and transportation of heat
 - 1.2 Estimation and measurement of hydrological parameters-softness and hardness, alkalinity, pH, salinity, temperature, turbidity, nutrients, trace elements and dissolved gases.
 - 1.3 Delineation, properties and significance of drainage basin as hydrological units.
 - 1.4 Runoff: Components and cycle, stream rises and subsurface flow.
- UNIT 2.0 PROPERTIES OF GROUND WATER HYDROLOGY**
- 2.1 Components, factors and significance of ground water hydrology
 - 2.2 Processes and laws controlling movement and storage of ground water
 - 2.3 Physical and chemical properties of ground water
 - 2.4 Surface and subsurface geophysical methods of exploration
- UNIT 3.0 MANAGEMENT OF SURFACE AND GROUND WATER**
- 3.1 Water management of tropical farmland: techniques and approaches, Artificial rain making
 - 3.2 Water management in tropics: Techniques and approaches, Rain water harvesting
 - 3.3 Principles of Integrated Basin Management with reference to micro watershed planning
 - 3.4 Present trend and problems of major wetlands of India and West Bengal

SEMESTER – IV

PAPER – XXI

(SPECIAL PAPER)

URBAN GEOGRAPHY

Full Marks: 50

Exam Duration: 3 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

- | | | |
|-------------|------------|---|
| UNIT | 1.0 | CONCEPT AND APPROACHES |
| | 1.1 | Urban Geography-Definition, scope and contents |
| | 1.2 | Approaches to the study of Urban Geography and its recent trends |
| | 1.3 | Origin and growth of Urban settlements – Ancient, Medieval, Renaissance, Modern and Post-modern |
| | 1.4 | Processes of Urbanisation |
| UNIT | 2.0 | URBAN SYSTEM |
| | 2.1 | Urbanism, Urban Ecology |
| | 2.2 | Urban Systems – Primate City .Metropolis. Megalopolis, Conurbation, Ecumenopolis |
| | 2.3 | Urban Space, Decision Making Processes |
| | 2.4 | Central Place Theory. Theories of Urban Morphology |
| UNIT | 3.0 | SPATIAL RELATIONS AND URBAN PLANNING |
| | 3.1 | City-region, Urban Field, Rural-Urban Continuum |
| | 3.2 | Core-Periphery Relations |
| | 3.3 | Urban Economic Base - Basic/non-basic, Formal and Informal sectors |
| | 3.4 | Urban Policies of India |

SEMESTER – IV
SPECIAL PAPER PRACTICAL
PAPER – XXII
FLUVIAL GEOMORPHOLOGY

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 Marks), Internal Assessment 10 marks)

UNIT 1.0 TECHNIQUES OF DRAINAGE BASIN ANALYSIS

- 1.1 Identification of drainage and channel patterns on topographical map/imageries and interpretation.
- 1.2 Morphometric methods of drainage basin analysis.
- 1.3 Verification of laws of drainage composition.
- 1.4 Computation of long profile of a channel with exponential curve.

UNIT 2.0 TECHNIQUES OF FLOOD ANALYSIS

- 2.1 Computation, preparation and interpretation of Annual and Storm hydrograph
- 2.2 Unit hydrograph
- 2.3 Flood frequency and flood probability graph
- 2.4 Recurrence interval and Rating Curve

UNIT 3.0 FIELD TECHNIQUES WITH INSTRUMENTS

- 3.1 Computation of the cross profiles of the river
- 3.2 Measurement of stream discharge and flow pattern
- 3.3 Analysis of shapes sizes of collected river sediments
- 3.4 Field mapping of river meander plan with the aid of GPS

UNIT 4.0 MAPPING TECHNIQUES OF DRAINAGE BASIN

- 4.1 Preparation of geomorphological map of the drainage basin
- 4.2 Preparation of River Flood Map on the basis of collected data
- 4.3 Preparation of Flood Risk Zone with the aid of GIS techniques
- 4.4 Preparation of River bank erosion map and vulnerable zone with the aid of GPS and GIS techniques

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER – IV
SPECIAL PAPER PRACTICAL
PAPER – XXII
TERRAIN EVALUATION

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks, For Internal Assessment 10 marks)

UNIT 1.0 TERRAIN ELEMENTS AND CHARACTERISTICS

- 1.1 Data Sources and Mapping Bases
- 1.2 Identification of Terrain Elements
- 1.3 Scale of Mapping Bases
- 1.4 Determination of Terrain Characteristics

UNIT 2.0 TERRAIN MORPHOLOGY

- 2.1 Valley Form Analysis
- 2.2 Slope Analysis
- 2.3 Morphometric Analysis of Terrain
- 2.4 Land system Mapping (CSIRO Method)

UNIT 3.0 USE OF REMOTE SENSING AND GIS

- 3.1 Air Photo/ SI interprétation for Terrain Elements Identification
- 3.2 Air Photo/SI for Land use/Land Cover Mapping
- 3.3 Use of Satellite Imagery in Geomorphology
- 3.4 Use of Satellite Imagery in water resource Studies

UNIT 4.0 TERRAIN CLASSIFICATION

- 4.1 Determination Morpho Units
- 4.2 Pattern and Facets Mapping
- 4.3 Identification of Geomorphic Units
- 4.4 Terrain Evaluation of Drainage Basin for Environmental Management

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER – IV
SPECIAL PAPER PRACTICAL
PAPER – XXII
ENVIRONMENTAL GEOGRAPHY

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 Marks), Internal Assessment 10 marks)

UNIT 1.0 ANALYSES AND MAPPING OF HYDROLOGICAL AND PEDOLOGICAL DATA

- 1.1 Analyses of Pedological data (on collected soil samples)
- 1.2 Preparation of maps with above results
- 1.3 Mapping of Spatial Environmental Systems from Hydrographic data for Pre-monsoon season
- 1.4 Mapping of Spatial Environmental Systems from Hydrographic data for Post-monsoon season

UNIT 2.0 MAPPING UPON PHYSIOGRAPHIC DATA

- 2.1 Mapping of features upon Relief aspects
- 2.2 Mapping of features upon Areal aspects
- 2.3 Mapping of socio-cultural aspects upon Demography
- 2.4 Mapping of socio-cultural aspects upon Population

UNIT 3.0 STATISTICAL ANALYSES AND MAPPING

- 3.1 Statistical analyses of physiographic data
- 3.2 Mapping based on statistical analyses of physiographic data
- 3.3 Statistical analyses of socio-cultural data
- 3.4 Mapping based on statistical analyses of socio-cultural data

UNIT 4.0 PROGRAMMING OF ENVIRONMENTAL INFORMATION SYSTEM

- 4.1 Preparation of maps on environmental information from District Census Handbook - Population distribution map
- 4.2 Preparation of maps on environmental information from District Census Handbook - Infrastructural systems
- 4.3 Environmental Impact Assessment based on selected area - EIA on Rural environment
- 4.4 Environmental Impact Assessment based on selected area - EIA on Urban environment

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER – IV
SPECIAL PAPER PRACTICAL
PAPER – XXII
HYDROLOGY

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 Marks), Internal Assessment 10 marks)

UNIT 1.0 CONSRUCTION – MAPS AND CHARTS

- 1.1 Computation and preparation of Isohyetal map
- 1.2 Computation and preparation of Rainfall hyetograph and Annual hydrograph
- 1.3 Computation and preparation of Storm hydrograph and Unit hydrograph
- 1.4 Computation of Run off Coefficient

UNIT 2.0 QUANTITATIVE TECHNIQUES

- 2.1 Calculation of evaporation rate on the basis of Priestley - Taylor method
- 2.2 Computation of soil moisture flux
- 2.3 Preparation of water budget graph (Recharge, discharge, surplus and deficit calculation)
- 2.4 Aridity Index

UNIT 3.0 MORPHOMETRIC ANALYSES

- 3.1 Morphometric analysis of the drainage basin
- 3.2 Analysis of stream network and laws of interrelationship
- 3.3 Basin morphometry – morpho-units
- 3.4 Sinuosity Index

UNIT 4.0 HYDROGRAPH ANALYSES

- 4.1 Computation of discharge from field data
- 4.2 Determination of storage outflow function of a reservoir
- 4.3 Determination of the probability of discharge
- 4.4 Preparation of Rating curve

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER – IV
SPECIAL PAPER PRACTICAL
PAPER – XXII
URBAN GEOGRAPHY

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks (Each Unit 8 Marks), Internal Assessment 10 marks)

UNIT 1.0 FUNCTIONAL IDENTIFICATION

- 1.1 Time Series Analysis
- 1.2 Urban Occupational Diversity & Specialisation
- 1.3 Functional Classification
- 1.4 Social Area Analysis

UNIT 2.0 NETWORK ANALYSIS

- 2.1 Network Analysis (Konig, Shembel, Alpha, Beta & Gamma indices)
- 2.2 Connectivity Mapping (Detour)
- 2.3 Shape Index
- 2.4 Dispersion Index

UNIT 3.0 QUANTITATIVE TECHNIQUES

- 3.1 Correlation & Residual Mapping
- 3.2 Index of Urbanisation
- 3.3 Rurban index
- 3.4 Population dispersal

UNIT 4.0 QUANTITATIVE TECHNIQUES – APPLICATIONS

- 4.1 Delineation of urban sphere of influence
- 4.2 Centrality Index
- 4.3 Rank Size Rule
- 4.4 Spacing Ratio

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

SEMESTER – IV
PAPER – XXIII
GEOINFORMATICS, REGIONAL PLANNING AND RURAL DEVELOPMENT
PRACTICAL

Full Marks: 50

Exam Duration: 4 Hours

(For Exam. 40 Marks For Internal Assessment 10 marks)

UNIT 1.0 VISUAL INTERPRETATION OF AERIAL PHOTOS

- 1.1 Concept and application of Remote Sensing, Comparative assessment of topographical maps, aerial photos and satellite images in representation geographical data
- 1.2 Geometry of aerial photographs; Principles of orthorectification and mosaicing
- 1.3 Determination of Aerial photographic scale
- 1.4 Preparation of LULC Maps from aerial photographs on the basis of feature identification keys

UNIT 2.0 VISUAL INTERPRETATION OF SATELLITE IMAGES

- 2.1 Concept of sensors, bands and resolution: Influence of these factors on satellite imaging
- 2.2 Principles of preparing standard FCCs with special reference to IRS series satellites
- 2.3 Referencing scheme and selection procedure of IRS images
- 2.4 Preparation of thematic overlays from satellite photoproducts on the basis of feature identification keys

UNIT 3.0 REGIONAL PLANNING

- 3.1 Gravity Model (Reilly's method)- Decadal change
- 3.2 Ternary Diagram-level of development country wise
- 3.3 Regionalization- Biparameter graphical representation
- 3.4 Regionalization- Multi parametric data integration

UNIT 4.0 RURAL DEVELOPMENT

- 4.1 Centrality Index
- 4.2 Rurban Index
- 4.3 Scalogram of rural settlements
- 4.4 Taxonomic analysis

Viva-voce & Laboratory Note Book: 4 + 4 = 8 marks

Internal Assessment= 10Marks

SEMESTER – IV
DISSERTATION (AREA STUDY)
PAPER – XXIV

Individual student will have to submit a Master's Thesis (Dissertation) of 50 Marks in total which will have 30 Marks for Dissertation, 10 Marks for Seminar presentation and Viva-voce and 10 Marks Internal Assessment (to be given by the concerned supervisor).

Dissertation (written) and Seminar presentation including viva-voce marks will be given by internal examiner (supervisor) and external examiner jointly.