VIDYASAGAR UNIVERSITY

GEOGRAPHY
(Honours & General)

Under Graduate Syllabus

(3 Tier Examination Pattern)
w.e.f. 2014-2015
REVISED

Vidyasagar University

Midnapore 721 102
West Bengal

Honours Papers
Full Marks – 100
For each theory papers 10% of the total marks for internal assessment and 90% for university written examination

Section – 1: Course Structure

Part	Paper	Subject	Full Marks	Exam Time
I	Theoretical I	Geotectonics, Geomorphology, Hydrology and Oceanography	100	4 hrs.
	Theoretical II	Economic, Social, Cultural and Political Geography	100	4 hrs.
II	Theoretical III	Climatology, Soil Geography & Bio-Geography	100	4 hrs.
	Theoretical IV	Geographical Thought and Geography of India	100	4 hrs.
	Practical V	**Applied & Analytical Geographical Techniques** (Scale, Geological Map, Map Projection Survey, Rocks and Mineral Identification)	100	6 hrs.
III	Theoretical VI	Remote Sensing and GIS, Population Geography Settlement and Regional Planning	100	4 hrs.
	Practical VII	**Cartographic Techniques in Geography** [Topographical Map, Analysis of Climatic Data and Maps, Laboratory Works (Barometer, Soil texture and	100	6 hrs.

		pH) and Survey Schedule, Cartograms.		
	Practical VIII	**Modern Geographical Techniques, Field Report and Remote Sensing and GIS** (Statistical Techniques, Field Report and Remote Sensing and GPS)	100	6 hrs.

GEOGRAPHY

PART – I (Honours) PAPERS
Paper- 1
Geotectonics, Geomorphology & Hydrology
Full Marks – 100
(University Exam – 90 & Internal Assessment – 10)

Number of lectures to be delivered for each Unit: 20
Examination Time: 4 hours.

Pattern of Setting Questions:

Long answer type question: -
Each question of 10 marks to be attempted out of two questions, to be set from each unit with an 'OR' in-between (5X10 = 50).(EACH WITHIN 500 WORDS)

Semi-long answer type question:
Each question of 4 marks to be attempted out of two questions, to be set from each unit with an 'OR' in-between. (5X4 = 20)(EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered each within 50 words out of 15 questions uniformly (almost) set throughout the paper (10x2 = 20).

[Questions in Honours Papers will be set in English only]

1.0 GEOTECTONICS – I

1.1 Origin of the earth with particular reference to modern nebula hypothesis; Geological timescale and geological history of the Earth.

1.2 Types of minerals and classification of rocks; Characteristics of rocks.

1.3 Structure of Earth: Thermal and physical state of the Earth's interior with special reference to seismology.

1.4 Theories of Isostasy: Models of Pratt & Airy and their applicability.

2.0 GEOTECTONICS – II

2.1 Plate tectonics as a unified theory of global tectonics and resultant landforms; Continental drift and seafloor spreading: Evidences and mechanisms.

2.2 Surface expression of earth movement: Different types of folds and faults.

2.3 Geosynclines: Types; Origin of fold mountains in the light of plate tectonics.

2.4 Earthquakes with particular reference to Tsunami: Mechanism, effects and management.

3.0 GEOMORPHOLOGY – I

3.1 Basic Concepts, Approaches to geomorphology: Historical and System; Relevance of Process Studies; Spatial and Temporal Scales.

3.2 Weathering: Types and resultant landforms; Mass movement: Causes, mechanism and types (Schumm and Chorley).

3.3 Cyclic and non-cyclic concepts of landscape evolution (Davis, Penck and Hack); Interruption in Fluvial Cycles: Causes and Landforms.

3.4 Landform evolution in Uniclinal, Folded and Faulted structures.

4.0 GEOMORPHOLOGY – II

4.1 Fluvial processes and landforms.

4.2 Coastal processes and landforms.

4.3 Aeolian processes and landforms.

4.4 Glacial and Periglacial processes and landforms.

5.0 GLOBAL HYDROLOGY AND OCEANOGRAPHY

5.1 Hydrosphere: Components and distribution; Hydrological cycle in global and basin scale. River basin as a hydrological unit.

5.2 Aspects of runoff, infiltration, evaporation and transpiration; Runoff cycle; Subsurface water: Types, flow and aquifers.

5.3 Tides: Causes and Types.

5.4 Ocean sediments: Classification and significance.

Paper – V (Honours)
(Practical)
APPLIED & ANALYTICAL GEOGRAPHICAL TECHNIQUES
Full Marks – 100

Number of periods to be assigned for each of the Units: 20
Examination Time: 6 hours.

Instructions for Practical Work

- Practical works are to be completed in the class room
- Practical Works are to be done in pencil and are to be hand written and signed by respective class teachers (No need of final sheets).
- Practical Note books will be like those used in other laboratory based science subjects; Binding of note book is not required.

Pattern of Setting Questions: Units 1.0 – 5.0; (two compulsory questions are to be set from each Unit; Each question is to have at least two parts.)
Unit 6: Evaluation of Practical Notebook: 5 marks. Viva-voice: 5 Marks

1.0 SCALE 15 MARKS

1.1 Concept of scale: Definition and Types.
1.2 Magnitude of Reduction and enlargement of map and calculation of corresponding scale.
1.3 Drawing of Graphical scales: linear, comparative (unit), diagonal, and vernier (linear and angular) scales.
1.4 Calculation of area from map (Graphical Methods).

2.0 ANALYSIS OF GEOLOGICAL MAPS MARKS-20

2.1 Construction of geological section of horizontal, uniclinal and folded structures.

2.2 Succession of rock groups.

2.3 Topography and drainage in relation to underlying structures.

2.4 Geological history.

3.0 MAP PROJECTION 20 MARKS

3.1 Concept and classification of map projections.

3.2 Principle, properties, construction (Graphical / Trigonometric), use and limitations of the following projections

3.2.1 Cylindrical Equal-Area and Mercator's projection.

3.2.2 Gnomonic, Stereographic and Equal Area projections (polar cases)

3.2.3 Simple Conic (One standard parallel), Bonne's and Sinusoidal projection.

4.0 SURVEYING & MAPPING 25 MARKS

4.1 Concept of Surveying. Traverse Survey by Prismatic Compass (Plotting by Parallel Meridian and Included Angle); Calculation and representation of area.

4.2 Construction of profiles by Dumpy Level. Preparation of contour map of a small area by Prismatic Compass and levelling instruments on triangle.

4.3 Determination of height [with accessible and inaccessible bases (Same Vertical Plane)] by Theodolite.

5.0 Rocks and Minerals Identification Marks 10

Identification of common minerals and rocks with their characteristics (Megascopic):

Quartz, Feldspar (Plagioclase and Orthoclase), Mica (Biotite and Muscovite), Haematite, Magnetite, Chalcopyrite, Galena, Calcite, Gypsum, Bauxite and Talc.

Granite, Basalt, Dolerite, Pegmatite, Conglomerate, Sandstone, Shale, Limestone, Gneiss, Schist, Phyllite, Quartzite, Marble.

6.0 LABORATORY NOTEBOOK & VIVA-VOCE 10 MARKS

PART – II (Honours) PAPERS

Paper – III (Honours)
Climatology, Soil Geography & Biogeography
Full Marks - 100
(University Exam – 90 & Internal Assessment – 10)

Number of lectures to be delivered for each Unit: 20
Examination Time: 4 hours.

Long answer type question: -
Each question of 10 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between (5X10 = 50). (EACH WITHIN 500 WORDS)

Semi-long answer type question:
Each question of 4 marks to be attempted out of two question to be set from each unit with an 'OR' in-between. (5X4 = 20) EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered each within 50 words out of 15 questions uniformly (almost) set throughout the Paper (10x2 = 20).

Questions in Honours Papers will be set in English

1.0 CLIMATOLOGY-I

1.1 Composition and layering of the atmosphere.

1.2 Factors controlling insolation, terrestrial heat balance, horizontal and vertical distribution of temperature, temperature inversion.

1.3 Planetary wind system: Tricellular model, upper air circulation- Jet stream; Genesis of monsoon.

1.4 Origin and classification of air mass. Origin and characteristics of tropical and temperate cyclones.

2.0 CLIMATOLOGY-II

2.1 Forms and processes of condensation; Mechanism of precipitation.

2.2 Processes and significance of Ozone depletion and green house warming; Southern Oscillation and their significance: El Nino and La Nina.

2.3 Weather forecasting: Basic elements and significance in hazard management.

2.4 Classification of World climate: Schemes of Koppen and Thornthwaite

3.0 SOIL GEOGRAPHY

3.1 Soil: Definition, soil forming factors and development of soil profiles. Mechanism of formation of podzol, laterite, chernozem and saline-alkaline soils

3.2 Properties of soil and their significance in sustaining soil fertility and productivity; Physical properties: Texture, structure, soil porosity, soil water, soil air, soil colour. Chemical properties: pH, Organic Matter, Total Soluble Salt (TSS), Cation Exchange Capacity (CEC)) and Base Exchange Capacity (BEC).

3.3 Principles of taxonomic soil classification and land capability classification after USDA.

3.4 Soil erosion and land degradation: Types and factors, their impacts on soil fertility and their management.

4.0 BIO GEOGRAPHY- I

4.1 Biogeography: Concept, importance and relevance. Definition of ecology. Ecosystem: Definition, principles and subdivisions.

4.2 Micro-ecosystem: Ponds and Meadows

4.3 Ecosystem mechanism: Homeostasis and productivity. Biosphere and energy: Energy sources, food chain and food web and energy flow in ecosystem. Ecological Pyramids.

4.4 Role of soil moisture, organic matter and mineral composition in supplying nutrients and augmenting primary productivity. Bio-Geo-Chemical Cycles: gaseous (Nitrogen, Carbon) and sedimentary (Phosphorous).

5.0 BIO GEOGRAPHY- II

5.1 Spatial dimensions in Ecology: Definition of Ecotope, Ecotone, Habitat, Biotope and Landscape. Floristic and Zoo geographical realms; Factors of plant ecology: Light, temperature, moisture, wind, soil and topography. Impact of climate and soil on distribution of plants and animals.

5.2 Classification and characteristics of terrestrial biomes with special reference to tropical rain forests (Selva), temperate grass land (Prairie) and tropical grass land (Savanna).

5.3 Ecosystem disturbance, speciation and extinction; Migration of animals due to habitat destruction in South Bengal with special reference to elephants.

5.4 Succession of plants; Concept of interaction (Symbiotic, Parasitic, Competition and Predation) among organisms in ecosystem; Conservation of biodiversity and its significance.

PAPER- II (Honours)
Economic, Social, Cultural and Political Geography
Full Marks – 100
(University Exam – 90 & Internal Assessment – 10)

Number of lectures to be delivered for each Unit: 20
Examination Time: 4 hours.

Long answer type question:
Each question of 10 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between (5X10 = 50). EACH WITHIN 500 WORDS)

Semi-long answer type question:
Each question of 4 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between. (5X4 = 20) EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered each within 50 words out of 15 questions uniformly (almost) set throughout the paper. (10x2 = 20)

Questions in Honours Papers will be set in English

1.0 ECONOMIC GEOGRAPHY – I

1.1 Resource: Concept and classification; Economic and environmental approaches of resource utilization. Perspective of resource management in developed and developing countries; Sustainable development. Interrelation between three global issues- population, development and environment.

1.2 Different sources of energy resources, their relative importance; Problems of resource depletion; Global scenario: forest, water, fossil fuels.

1.3 Environment and agriculture systems: Intensive subsistence agriculture (Rice) and plantation agriculture (Tea), Commercial grain farming (Wheat), Horticulture and mixed farming.

1.4 Agro-climatic regions of India.

2.0 ECONOMIC GEOGRAPHY- II

2.1 Models of agricultural land use and industrial location: Vonthunen, Weber and Losch.

2.2 Processes of development of industrial regions; Case study of Asansol-Durgapur, Haldia and Bombay-Pune industrial region.

2.3 Globalization: Definition and its characteristics. Growing importance of service sector. Role of transport, Information and Communication Technology (ICT) with special reference to India.

2.4 International trade with reference to GATT, WTO and Economic Blocs.

3.0 CONCEPTS IN SOCIAL AND CULTURAL GEOGRAPHY

3.1 Nature and content of social geography. Evolution of social geography and its significance.

3.2 Concept of social space; Social patterns: Social pattern specially in cities; Intra-urban mobility. Social processes, social well-being, social justice and gender issues.

3.3 Social groups, social behaviours and contemporary social-environmental issues (Poverty, pogrom and crime) with special reference to India.

3.4 Concept of culture and its components. Innovation, diffusion and convergence of culture, cultural pluralism and acculturation.

4.0 ETHNICITY, CULTURE AND ECONOMY

4.1 Family as basic unit of society; Role of ethnicity and economy in the evolution of social and cultural area.

4.2 Major ethnic groups; Santhals, Lodha and Jarawas of India.

4.3 Major languages: their characteristics and spatial distribution in the world. Linguistics zones of India; Major religion groups: Their characteristics and distribution in India.

4.4 Concept of cultural landscape; Agricultural society and culture, Urban-industrial society and culture.

5.0 POLITICAL GEOGRAPHY

5.1 Nature and content of Political Geography.

5.2 Politics of space; Boundary and frontier; State, nation and nation-state.

5.3 Geostrategic views: Heart-land concept of Mackinder, Rimland concept of Spykman.

5.4 Geopolitical concept of Haushofer – its present relevance. Politics of water and energy resources.

Paper-VII (Honours)
(Practical)
CARTOGRAPHIC TECHNIQUES IN GEOGRAPHY
Full marks - 100

Number of periods to be assigned for each of the Units: 20
Examination Time: 6 hours.

Instructions for Practical Work

- Practical works are to be completed in the class room
- Practical Works are to be done in pencil and are to be hand written and signed by respective class teachers (No need of final sheets).
- Practical Note books will be like those used in other laboratory based science subjects; Binding of note book is not required.

Pattern of setting Questions: Units 1.0 -4.0:(two compulsory questions are to be set from each unit; each question may have at least two parts.) Unit 5: Evaluation of Practical Notebook: 5 marks. Viva-voce: 5 marks.

1.0 INTERPRETATION OF TOPOGRAPHICAL MAPS: PLATEAU AND PLAIN REGIONS MARKS: 20

1.1 Characteristics of topographical maps (numbering system and scale),
1.2 Construction of profiles: superimposed, projected and composite.
1.3 Drawing of representative profiles, broad physiographic divisions and general interpretation.

2.0 MORPHOMETRIC ANALYSIS Marks 20

2.1 Interpretation of relief [Amplitude of relief, Average slope (Wentworth's method) and Ruggedness Index], drainage (Drainage Density, Stream Ordering and Bifurcation Ratio after Strahler) and vegetation characteristics. **(for morphometric technique basic spatial unit would be 1sq. km)**

2.2 Interpretation of settlement (types and patterns), transportation systems (density measurement), Shortest Path Analysis (Shimbel Index).

2.3 Relationship between physical and cultural elements.

3.0 Cartograms [Graphical Construction and Computer Use (MS Excel)] MARKS 15

3.1 Linear Diagrams: (Simple, Comparative and Composite). Age-Sex Pyramid (Graphical Methods only)

3.2 Proportional Diagram: Square and Pie Diagrams.

4.0 ANALYSIS OF CLIMATIC DATA & MAPS MARKS-20

4.1 Rainfall Dispersion Diagram.

4.2 Climograph, Hythergraph and Ergograph

4.3 Interpretation of weather map (Pre-Monsoon, Monsoon and Winter) (Pressure, Wind, Cloud and Rainfall, Identification of Season).

4.4 Weather Instruments: Reading of Barometer, Hygrometer.

5.0 LABORATORY WORK & PREPARATION OF SURVEY SCHEDULE MARKS-15

5.1 Analysis of Soil Texture (Sieve),

5.2 Determination of soil pH by soil kit.

5.3 Preparation of Survey Schedule and collection of Primary Data (20 Household Units)

6.0 LABORATORY NOTEBOOK AND VIVA- VOCE MARKS-10

PART – III (Honours) PAPERS

Paper-IV: (Honours)
Geographical Thought &Geography of India
Full Marks: 100.
(University Exam – 90 & Internal Assessment – 10)

Number of lectures to be delivered for each Unit: 20
Examination Time: 4 hours.

Long answer type question:
Each question of 10 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between (5X10 = 50). EACH WITHIN 500 WORDS)

Semi-long answer type question:
Each question of 4 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between. (5X4 = 20) EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered each within 50 words out of 15 questions uniformly (almost) set throughout the paper (10x2 = 20).

Questions in Honours Papers will be set in English

1.0 GEOGRAPHICAL THOUGHT- I

1.1 Definition, scope and content of geography, Concept of space, location, areal differentiation and spatial interaction.

1.2 Development of geography in the ancient and mediaeval periods.

1.3 Development of geography in the 19th century with particular reference to the contributions of Humboldt and Ritter.

1.4 Development of Geography in the 20th century with special reference to quantitative revolution. Contributions of Indian geographers.

2.0 GEOGRAPHICAL THOUGHT-II

2.1 Concepts of determinism, possibilism and neo-determinism.

2.2 Approaches to geographical studies: Systematic, regional and ecological.

2.3 Approaches to geographical studies: Positivism, humanistic and radical approaches. Behavioural geography and feminism.

2.4 Emergence and significance of applied geography.

3.0 INDIA: PHYSICAL GEOGRAPHY

3.1 Relief and structure with special reference to Himalayan and the Peninsular India.

3.2 Drainage system: Evolution and characteristics of peninsular and extra-peninsular rivers.

3.3 Climatic Classification (Koppen) and characteristics. Seasonality, unevenness and unreliability of rainfall.

3.4 Classification(USDA) and characteristics of soil and natural vegetation; Causes and consequences of deforestation.

4.0 INDIA: ECONOMIC GEOGRAPHY

4.1 Agricultural policy and development since Independence. Green revolution and food security.

4.2 Industrial policy and development since Independence. Locational factors and growth of non-synthetic fibre industries with special reference to jute.

4.3 Development of tourism industry in India, tourist centres and flows of tourists.

4.4 Population growth since independence and role of human resources in economic development. Population distribution and economic development.

5.0 INDIA: REGIONAL GEOGRAPHY WITH SPECIAL REFERENCE TO WEST BENGAL

5.1 Darjeeling as a physiographic region.

5.2 Paschimanchal of West Bengal.

5.3 Sundarban and Coastal Plain of Medinipur.

5.4 Marusthali as a climatic region.

Paper – VI (Honours)
Population Geography Settlement Geography
Regional planning and Remote Sensing & GIS
Full Marks – 100
(University Exam – 90 & Internal Assessment – 10)

Number of lectures to be delivered for each Unit: 20
Examination Time: 4 hours.

Long answer type question:
Each question of 10 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between (5X10 = 50). EACH WITHIN 500 WORDS)

Semi-long answer type question:
Each question of 4 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between. (5X4 = 20) EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered each within 50 words out of 15 questions uniformly (almost) set throughout the paper (10x2 =20).

Questions in Honours Papers will be set in English

1.0 POPULATION GEOGRAPHY -I

1.1 Definition, scope and content of population geography; Basic sources of population data. Difference between population geography and demography.

1.2 Measures of population density. Population growth: Concept, type, changing trend. Spatial variation in developed and developing countries.

1.3 Population composition in India: Sex ratio and its determinants, rural-urban and caste composition.

1.4 Age composition and its determinants, different structures of Age-Sex Pyramid found in developing and developed countries and their significance.

2.0 POPULATION GEOGRAPHY -II

2.1 Critical analysis of overpopulation, optimum population and under population; Demographic Transition Model.

2.2 Migration: Types, pattern, streams and consequences on place of destination and origin.

2.3 Fertility and Mortality: Concept, determinants, different measures and interregional variation in India.

2.4 Concept of HDI and GDI. Population policy in India and China, Population – Resource relationships. Population-Resource regions (Ackerman model).

3.0 INTRODUCTION TO SETTLEMENT GEOGRAPHY

3.1 Settlement: General definition, evolution of settlement, site and situation. Concept of settlement systems.

3.2 Rural settlement: Type and pattern, factors affecting settlement pattern.

3.3 Urban settlement: Definition, size-class distribution and census category.

3.4 Urban Morphology: Concentric Zone, Sector Model, Multiple Nuclei Theory. Urban function and functional classification of urban centres (C.D. Harris, Nelson).

4.0 REGION, REGIONAL PLANNING AND DEVELOPMENT

4.1 Concept of region and regionalisation in geography; Types of region: Formal, functional and planning region and methods of their

delineation; Hierarchy of regions: Macro, meso and micro regions with suitable examples.

4.2 Regional Planning: Concept, principle, types and role in regional development. Schemes of regionalization in India: V. Nath (1964), P. Sengupta (1968) and Chandrasekhara (1972).

4.3 Planning: Types and hierarchy. Objectives of physical, economic and environmental planning.

4.4 Concept and purpose of rural and urban planning centralised and decentralised planning with special reference to Panchayati Raj.

5.0 REMOTE SENSING AND GIS

5.1 Remote Sensing: Definition, stages and its importance in geographical studies.

5.2 Sources of energy, EMR spectrum (short wave to long wave bands), energy interaction with the atmosphere (scattering, atmospheric window). Energy interactions with the earth surface features (spectral signature).

5.3 Satellite, sensor and its function; satellite platforms (ground, air and space); Geostationary and Sun synchronous satellites, Concept of resolution (spatial, spectral, radiometric and temporal resolution).

5.4 Geographic Information System (GIS): Definition, scope, concept of map layers in GIS, Data features of GIS: Points, lines and polygon (area). Data structures in GIS, Data Base Management System (DBMS).

Paper-VIII (Practical)
Modern techniques in Geography and Remote Sensing
& Geographic Information System
Full marks: 100
Number of periods to be assigned for each of the Units: 20
Examination Time: 6 hours,

Instructions for Practical Work

- Practical works are to be completed in the class room
- Practical Works are to be done in pencil and are to be hand written and signed by respective class teachers (No need of final sheets).
- Practical Note books will be like those used in other laboratory based science subjects; Binding of note book is not required.

Pattern of setting Questions: Units 1 and 2 : (two compulsory Questions are to be set from each Unit; each Question is to have at least two parts).
Unit 3 and 4 : (one compulsory questions has to be attempted).
Unit -5: Evaluation of Field Report: 10, Viva-voce: 10.
Unit-6: Evaluation of Practical Notebook: 5 marks. Viva-voce: 5marks.

1.0 DATA COLLECTION AND REPRESENTATION MARKS: 20

1.1 Data: Classification, collection, tabulation. Concept of Sampling.

1.2 Frequency distribution: Graphical representation (histogram, frequency polygon, curve and ogives).

1.3 Measures of central tendencies: Mean, median and mode; Skewness. Characteristics of Normal Distribution; Partition Value (Quartile, Dacile and Percentile).

1.4 Measures of dispersion and variability: Range, quartile deviation, mean deviation and standard deviation, co- efficient of variation.

2.0 DATA ANALYSIS AND INTERPRETATION MARK-25

2.1 Simple correlation and regression (bivariate data). Scatter diagram and fitting of straight line by least square method, product moment correlation coefficient, Rank correlation coefficient.

2.2 Measures of Inequality: Location quotient, Lorenz curve (Spatial Data), Gini coefficient,.

2.3 Time Series Analysis (Moving Average and Regression).

2.4 Rank-size rule, Crop combination (Weaver), Nearest neighbour analysis.

3. Satellite image interpretation & GPS Tracking (Laboratory Work): Marks-20

3.1 Reference scheme of IRS satellite data: L3 and L4 images. Procedure of indenting procedure.

3.2 Visual interpretation of satellite images.

3.3 Change detection from satellite images and maps using visual techniques.

3.4 Principles of Global Positioning System (GPS), Reading at Survey Points and Graphical Plotting.

4.0 FIELD REPORT [WRITTEN REPORT (15) + VIVA VOCE ON FIELD REPORT (10)]; TOTAL MARKS-25

4.1 One mouza (Rural /Urban) is to be selected and the followings are to be done:

a) Plot-to-plot landuse survey (Depending on Objectives).

b) Collection of socio-economic and physical data.

c) Classification and tabulation of data.
d) Preparation of map on cadastral plan (Depending on Objectives).
e) Preparation of maps and diagrams showing physiography, drainage, soil, forest, settlement, irrigation, cropping pattern, demographic characteristics etc.
f) Correlation and analysis of data, maps, and diagram.

4.2 A report is to be prepared under the following sections:

a) Introduction: Objective, extent and space relations, sources of information, methodology etc.
b) Physical components: Lithology, drainage, surface condition, slope, climate, soil vegetation, etc.
c) Population: Number, sex ratio, literacy, occupational structure, ethnic and religious composition, language, mobility, media exposure, per capita income etc.
d) Settlement: Number of houses, building materials, number and size of rooms, amenities etc.
e) Agriculture: Soil properties, irrigational facilities, general landuse, cropping intensity, crop-combination, use of fertiliser, production and marketing etc.
f) Other economic activities: Fishing, horticulture, brick-making industries.
g) Problems, prospects, suggestions and conclusion.
h) Bibliography.

4.3 Field report is to be hand-written (Bengali/ English).
4.4 Text of the report should not exceed 5,000 words.
4.5 Maps and diagrams excluding photo-plates should not exceed 20 A4-size pages (Diagrams may be drawn in MS-Excel).

5.0 Preparation of Laboratory Note Book +Viva Voce Marks-10

Instruction for Field Report
Certificate of work participation (Field Work)
BA/BSc (H), Part-III, 3 Tier Examinations
Subject- Geography, Paper-VIII
Vidyasagar University

Roll……
No……..
Name of the college
.....……..

Field report on

"……
……
……"

Methods of data collection	Day	Date	Work done by the student
Pre-field work			
During field work	Day-1		
	Day-2		
	Day-3		
	Day-4		
	Day-5		
	Day-6		
	Day-7		

Post- field work	

Signature of the student
Signature of the supervisor

(With date & stamp)

Instruction for Evaluating Field Report

BA/BSc (H), Part-III, 3 Tier Examinations
Subject- Geography, Paper-VIII
Vidyasagar University
(Evaluating Written Report- Marks 15)

No.	Main criteria	Details	Marks
A	DATA COLLECTION	a) Land use survey at cadastral level or (Largest possible scale)	
		b) Collection of primary data using instrument	2
		c) Collection of primary data with structured questionnaires/Schedule (Familiarity with local language of the study area is required)	2
		d) Collection of secondary data from reliable sources	1
B	DATA PREPARATION	e) Treatment of Data in tune with basic objectives	2
C	Analysis and Interpretation of results and Representation through Maps and Diagrams	f)Preparation of map at Cadastral Level i. Rough(step to be shown) ii. Final	3
		g) Maps and Diagrams to show physical, economic and social features (Relevance to be justified)	2
		h) Analysis of results and Interpretation	2
D		i) Data/ Map sources; References; Bibliography; Neatness; Handwriting; Involvement of student	1

Sl. No.	**Viva-voce on Field Report (Marks 10)**	**Marks**
1	Selection of the study area (Why?)	1
2	Objectives (What?)	1
3	Method of Data collection (primary) physical survey (How?)	2
	Questionnaires/Schedule (How?)	2
4	Data Analysis (How/Method?)	2
5	Interpretation (Findings and comment)	2

Note:

1. Base map or image used; Reliability of the source to be documented.
2. Structured fields books with properly entered reading are to be supplemented for each of the instruments used. Substantial knowledge of the students in handing the instruments will be judged during viva.
3. Proper understanding of each of the questions included in the questionnaire in connection to the study goals will be judged during viva.
4. Filled in questionnaires are to be supplemented by individual students separately.
5. Evaluation of the report is to be made collectively by board of examiners at each center before the starting viva voce (Except SL No-(i))
6. A detail sheet for awarding marks in the regard is to be supplied to each center and to be returned to head examiner duly signed by examiners.
7. One copy of field report is to be submitted to centre during examination and to be forwarded to head examiner along with answer scripts and marks.
8. Certification of work participation should be done by the guide / supervisor in prescribed format.

Evaluation of field Report of B.A./ B.Sc. (H) under Vidyasagar University																
	Evaluation of Field Report (15 marks)									**Viva-voce (10marks)**						
	A.Data collection				B.Data preparation	C. Analysis and interpretation of results and representation maps and diagrams (maps and diagrams are prepared by own hand)			D.Citation neatness							
	a.Landuse survey at cadastral level[1] or largest possible scale	b.Collection of primary Data using Instruments[2]	c. Collection of primary data with structure Questionnaires[3] (familiarity with local language of the study area is required)	d.Collection of secondary data from reliable sources	e.Treatment of data in tune with massive objectives	f.preparation of landuse map[1] [i.Rough (Step to be shown) ii.Final]	g.maps and diagrams to show physical, economic and social features (relevance to be justified)	h.Analysis of results and interpretation	i.Data/ Map sources; References; Bibliography; Neatness; Handwriting; Involvement of Students	1.Selection of the study area (Why?)	2.Objectives (What?)	3.Method of Data collection (primary) physical survey[2] (How?) Secondary data sources (Where from)	4.Questionnaires[2](How?) (familiarity with local language of the study area is to be judged)	5.Data Analysis (How/Method?)	6.Interpretation (Findings and comment)	
Roll no		2	2	1	2	3	2	2	1	1	1	2	2	2	2	Total mark

																5

1. Base map or image used; Reliability of the source to be documented.
2. Structured fields books with properly entered reading are to be supplemented for each of the instruments used. Substantial knowledge of the students in handing the instruments will be judged during viva.
3. Proper understanding of each of the questions included in the questionnaire in connection to the study goals will be judged during viva.
4. Filled in questionnaires are to be supplemented by individual students separately.

COURSE STRUCTURE
General Papers

Part	Type	Paper	Subject	Marks	Exam. Time
I	Theoretical	I	Physical Geography	100	3 hrs.
II	Theoretical	II	Geographical Thought, Economic and Human Geography	100	3 hrs.
	Practical	III	Cartographic Techniques in Geography	100	6 hrs.
III	Theoretical	IV A	Applied Geography, Remote Sensing and GIS	80	3.00 hrs.
	Practical	IV B	Project Report & Viva voce (to be carried out internally)	20	10 min. / student

GEOGRAPHY

PART – I

Paper – I (General)

Physical Geography

Full Marks -100

(University Exam – 90 & Internal Assessment- 10)

Number of lectures to be delivered for each unit: 20
Examination Time: 3 Hours.

Pattern of setting questions:

Long answer type question:
Each question of 10 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between (5X10 = 50).(EACH WITHIN 500 WORDS).

Semi-long answer type question:
Each question of 4 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between. (5X4 = 20)(EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered out of 15 questions uniformly (almost) set throughout the paper. (each within 50 WORDS) (10X2 = 20)

1.0 GEOTECTONICS

1.1 Geological time scale and geological history of the earth.
1.2 Thermal and physical state of the earth's interior with special reference to seismological evidences; origin and classification of rocks.
1.3 Continental drift and mountain building in the light of Plate Tectonics.
1.4 Geological structures: folds and faults.

2.0 GEOMORPHOLOGY

2.1 Weathering and resultant landforms.

2.2 Evolution of landforms under fluvial and marine processes.

2.3 Evolution of landforms under glacial and Aeolian processes.

2.4 Cyclic and non-cyclic concept of landscape evolution: Ideas of Davis and Hack.

3.0 SOIL GEOGRAPHY

3.1 Definition of soil. Soil forming factors; Soil types: Zonal, Azonal and Intrazonal.

3.2 Physical and chemical properties of soil (texture, structure, colour, pH, organic matter).

3.3 Soil forming processes: Podsolization and Laterization.

3.4 Causes of soil degradation; Methods of soil conservation.

4.0 BIOGEOGRAPHY

4.1 Definition of biosphere and biogeography; Meaning of ecology, niche, ecotone, communities, ecosystem, environment. Habitats and biotopes.

4.2 Impact of climate and soil in distribution of plants and animals.

4.3 Biomes: Rainforests and Temperate grasslands.

4.4 Forest and wildlife management.

5.0 CLIMATOLOGY, HYDROLOGY AND OCEANOGRAPHY

5.1 Thermal and chemical composition and layering of the atmosphere.

5.2 Forms and processes of condensation; Mechanism of precipitation.

5.3 Components and distribution of hydrosphere; Global hydrological cycle;

5.4 Nature and distribution of Salinity and Temperature of The Pacific, Atlantic and Indian Oceans; Ocean currents and Tides.

PART – II

Paper – II (General)

Geographical Thought, Economic and Human Geography

Full Marks -100

(University Exam – 90 & Internal Assessment- 10)

Number of lectures to be delivered for each unit: 20

Examination Time: 3 hours.

Pattern of setting questions:

Long answer type question: -

Each question of 10 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between (5X10 = 50). (EACH WITHIN 500 WORDS)

Semi-long answer type question:

Each question of 4 marks to be attempted out of two questions to be set from each unit with an 'OR' in-between. (5x4 = 20) (EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. Ten such questions are to be answered each within 50 words out of 15 questions uniformly set (almost) throughout the paper. (10x2 = 20).

1.0 GEOGRAPHICAL THOUGHT

1.1 Definition, scope and content of Geography.

1.2 Evolution of Geography in Ancient and Mediaeval period.

1.3 Development in Classical Period: Contribution of Humboldt and Ritter.

1.4 Major paradigms in Geography: Determinism and Possibilism, Regional approach and Quantitative revolution.

2.0 ECONOMIC GEOGRAPHY

2.1 Resource: Definition and types, energy resources, their importance, consumption, availability and sustainable management.

2.2 Agriculture in tropical region: Intensive subsistence agriculture with particular reference to rice; Plantation agriculture with particular reference to tea.

2.3 Major industrial regions in India with special reference to Haldia.

2.4 Growth and development of Cotton Textile and Iron & Steel Industries in UK and India.

3.0 POPULATION GEOGRAPHY

3.1 Growth: Types, variation and determinants. Distribution and density of population with special reference to India.

3.2 Population Composition: Age, Sex, Religion, Rural-Urban.

3.3 Concept of Optimum population, over population and under population.

3.4 Migration: Concept, Types, Streams, Pattern and recent trends with reference to India.

4.0 ETHNICITY, CULTURE & ECONOMY

4.1 Ethnicity and culture; Major ethnic groups and races and their world distribution.

4.2 Concept of tribe; man-environment relation: Pygmies and Bushmen

4.3 Tribes of India and their distribution; Man-environment relation: Toda and Bhils

4.4 Tribes of West Bengal; Man-environment relation: Santals

5.0 SETTLEMENT GEOGRAPHY

5.1 Rural-urban dichotomy; Criteria of classification of urban area (population, function and census);

5.2 Types and patterns of rural settlements; factors responsible for their origin and growth.

5.3 Urban Morphology: Concentric and Multiple-Nuclei Theory.

5.4 Functional classification of towns: Harris and Nelson.

Paper – III (General)
Practical
Cartographic Techniques in Geography
Full Marks – 100

Number of periods to be assigned for each of the unit 20; Examination Time: 6 hours.

Pattern of setting Questions: **Unit 1.0 to 4.0**; two compulsory questions are to be set from each unit; each question is to have at least two parts. **Unit 5**: Evaluation of Practical Note Book: 5 marks, Viva-voce: 5 marks.

Instructions for Practical Work

- Practical works are to be completed in the class room.
- Practical Works are to be done in pencil and are to be hand written and signed by respective class teachers (No need of final sheets).
- Practical Note books will be like those used in other laboratory based science subjects; Binding of note book is not required.

1.0 SCALE AND CARTOGRAMS (20 marks)

SCALE (10 Marks)

1.1 Scale: Concept and types;
1.2 Drawing of linear, Comparative and Diagonal scales.

CARTOGRAMS (10 marks)

1.3 Proportional diagrams: Circles and Squares.

1.4 Composite bar diagrams and age-sex pyramids.

1.5 Taylor's climograph.

2.0 MAPPING TECHNIQUES & MAP PROJECTION (25 marks)

MAPPING TECHNIQUES (10 Marks)

2.1 Maps: Definition and Types.

2.2 Isopleth method: Mapping elevation zones, rainfall distribution and temperature zones.

2.3 Choropleth method: Population density, population distribution and cropping intensity.

MAP PROJECTION (15 Marks)

2.4 Map Projection: Principles and Classification

2.5 Drawing of graticules on Cylindrical Equal Area Projection, Conical Projection with One Standard Parallel and Polar Zenithal Stereographic Projection (Graphical / Trigonometric method).

3.0 **MAP INTERPRETATION** (20 marks)

3.1 Topographical Map: Reference System , Scales and Extension.

3.2 Interpretation of relief, slope, drainage and settlement from Topographical Map (1:50000) of plateau region. (For morphometric techniques minimum spatial unit should be 1 sq Km)

3.3 Drawing of Transect Chart to show the relationship between physical and cultural features.

4.0 **SURVEYING (25 marks)**

SURVEYING (15 Marks)

4.1 Definition, Principle and Classification of Surveying.

4.2 Open and close traversing by Prismatic compass.

SOCIO-ECONOMIC SURVEY (10 marks)

4.3 Preparation of Socio-economic Survey Schedule and Questionnaire.

5.0 Laboratory Notebook & Viva - Voce (5 + 5 marks)

PART – III
Paper – IV (General)
Applied Geography, Remote Sensing and GIS
GROUP – A
(Theoretical)
Full marks – 80
(University Exam – 72 & Internal Assessment – 08)

Number of lectures to be delivered for each unit: 20
Examination Time: 3.00 hours
Pattern of setting questions:

Long answer type question:
Each question of 10 marks to be attempted out of two questions are to be set from each unit with an 'OR' in-between (4X10 = 40). ((EACH WITHIN 500 WORDS)

Semi-long answer type question:
Each question of 4 marks to be attempted out of two questions are to be set from each unit with an 'OR' in-between. (4X4 = 16) (EACH WITHIN 250 WORDS)

Short answer type question: Each question will bear 2 marks. **Eight** such questions are to be answered each within 50 words out of 12 questions uniformly (almost) set throughout the paper (8X2 = 16).

1.0 LAND AND WATER RESOURCES MANAGEMENT

1.1 Land Resource: Concepts of land, basic principle of landuse, characteristics of rural and urban landuse, Government policies.

1.2 Water Resource: Concept of water budget, watershed management, Multipurpose River Valley Projects with special reference to West Bengal.

1.3 Characteristics of river systems of peninsular and extra peninsular India.

1.4 Distribution of natural vegetation, soil and their interrelationship in India.

2.0 FOREST RESOURCES AND WILDLIFE MANAGEMENT

2.1 Forest Resource: Importance of forest cover, deforestation, desertification and afforestation.

2.2 World conservation strategy and national conservation policy; People's participation: social forestry and agro forestry; Chipko Movement.

2.3 Wildlife Resource: Classification of wildlife areas, endangered flora and fauna in India.

2.4 Wildlife management in India: Reserve Forest, Protected Forest, National Park, Sanctuaries, and Biosphere Reserves.

3.0 ENVIRONMENTAL ISSUSES AND HUMAN WELL-BEING

3.1 Environmental pollution: Air pollution, water pollution, noise pollution and their impacts on human beings.

3.2 Land degradation and its impacts on human well-being.

3.3 Selected environmental issues: Population growth, poverty, food security, energy crisis, urbanisation and industrialisation,

3.4 Conservation of biodiversity and its significance.

4.0 PRINCIPLES OF REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

4.1 Remote Sensing: Definition, Stages, Sources of energy, EMR spectrum (Bands).

4.2 Satellite sensor and its function, satellite platforms; Concept of resolution: Spatial, spectral, radiometric and temporal.

4.3 Principles of preparing Standard False Colour Composite (FCC), Principles of visual interpretation and Digital image classification.

4.4 Geographic Information System (GIS): Definition, scope, concept of map layers in GIS.

GROUP –B
(Practical) Full Marks – 20
Project work (15) – VIVA BASED ON PROJECT REPORT (5)

Viva-voce on project work (together in about 10 minutes duration): 15+5 = 20 marks. Project Report will have around 30 pages with no more than 15 pages for figures and photographs.

Project work will be done on a selected area (e.g. hill area, forest area, urban area, rural area etc.). It should emphasize on any specific issue/ issues such as natural hazard, socio- economic problems and resource inventory.

References

B.A/B.Sc. Geography (General)
Paper I: Physical Geography

- Biswas, T.D. and Mukharjee, S.K. 1987, Textbook of soil science, Tata McGraw-hill, 314p.
- Bradey, N.C. and Weil, R.R. 1996, The Nature and Properties of Soil, 11th edition, Longman, London, 740p.
- Das, P.K. 1995, Monsoons, 2nd edition, National book trust, New Delhi, 347p.
- Dash, M.C. 2001, Fundamentals of Ecology, 2nd edition, Tata McGraw-hill, New Delhi, 544p.
- Kale. V.S. and Gupta, A. 2001, Introduction to Geomorphology, Orient Longman Ltd. Hydrabad, 274pp.
- Lal, D.S. 1993, Climatology, 3rd edition, Chaitanya Publication House, New Delhi, 412p.
- Lautgens, F.K. and Tarbuck, E.J. 1998, The Atmosphere: An introduction to metrology, Prentice Hall Inc., Upper Saddle River, 434p.

- Sharma, P.D. 1996, Ecology and Environment, 7th edition, Rastogi Publications, Mirat, 653p.
- Singh, S., Geomorphology, Prayag Pustak Bhavan, Elhabad, 390p.

Paper II: Geographical Thought, Economic and Human geography

- Adhikari, S. 1992, Geographical thought, Chaitanya Publication House, Elhabad, 272p.
- Chandana, R.C. Population Geography, Kalyani Publishers, New Delhi.
- Ghosh, S. 1998, Introduction to Settlement Geography, Orient Longman Ltd, Kolkata, 158p.
- De, Lij. H.J. and Murfhy, A.B. 2002, Human Geography: Culture, society and space, 7th edition, John Willy and Sons, New York, 608p.
- Guhu, G.L. and Chatterjee, P.R. 1998, A new approach to economic geography: A study of resources, 15th edition, World Press, Kolkata, 849p.
- Hartshone, T.A. anmd Alexender, J.W. 1988, Economic geography, 3rd edition, Prentice Hall India Ltd., New Delhi, 885p.
- Hussain, M. 1994, Human Geography, Rawat Publications Co., New Delhi, 458p.
- Hussain, M. 1995, Evolution of Geographical Thought, 3rd edition, Rawat Publications Co., New Delhi, 432p.
- Leong, G.C. and Morgan, G.C. 1982, Human and Economic Geography, 2nd edition, Oxford University Press, Oxford, 662p.

Paper III: (Practical): Cartographic Techniques in Geography

- Kanitkar, T.P. and Kulkarni, S.B. 1988, Surveying and Leveling, Part 1, Pune Vidyarathi Griha Prakashan, Pune, 608p.
- Monkhouse, F.J. and Wilkinson, R. 1971, Map and Diagrams: there compilation and construction, B.I. Publications Private Ltd., New Delhi, 527p.
- Sarkar, A. 1997, Practical Geography: A Systematic Approach, Orient Longman Ltd., Hydrabad
- Singh, R.L. and Singh, R.P.B. 1991, Elements of Practical Geography, Kalyani Pub., New Delhi, 421p.

- Tamaskar B.G. and V.M. Deshmukh, Geographical Interpretation of Indian Topographical Maps.
- Venkatramaiah, C. 1996, A Textbook of Surveying, University Press/Orient Longman Ltd., Hydrabad, 76p.

Paper IV: Applied Geography, Remote Sensing and GIS.

Group-A (Theoretical): Applied Geography and Remote Sensing and GIS.

- Khullar, D.R. 1999, A Comprehensive Geography of India, Kalyani Publishers, New Delhi.
- Mamoria, C.B. 1996, Economic and Comercial Geography of India, Revised edition, Shivalal Aggarwala and Co., Agra, 556p.
- Mathur, S.M. 1986, Physical Geology of India, National Book Trust, New Delhi, 180p.
- Sen, P.K. and Presad, N. 2002, An Introduction to Geomorphology of India, Allied Publishers, Delhi.
- Sharma, T.C. and outinho, O. 1998, Economic and Commercial Geography of India, 3rd edition, Vikash Pub. House Pvt. Ltd., New Delhi, 392p.
- Spate, O.H.K. and Learmonth, A.T.A. 1967, India and Pakisthan, 3rd edition, Munshiram Monoharlal Pub. Pvt. Ltd., new Delhi, 877p.

B.A. / B.Sc. Geography (Honours)

Paper –I: Geotectonics, geomorphology & Hydrology

- Bland, W. And Rolls, D. 1998. Weathering, Hodder & Stonagnton, 236p.
- Bloom, A.L. 1998. Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, 3rd edition, prentice Hall India Ltd. 496p.
- Burbank, D.G. and Anderrson, R.S. 2001. Tectonic Geomorphology: A Frontier in Earth Science, Blackwell Science Inc. London, 254p.

- Carter, R.W.G. 1988. Coastal Environments: An Introduction to the Physical Ecological and Cultural Systems of Coastlines, Academic Press, London, 617p.
- Cox, A. And Hart, R.B. 1986. Plate Tectonics: How it Works, Blackwell Scientific Publications, Oxford, 300p.
- Duff, P.M.D. (Editor) 1994. Holmes Principles of Physical Geology, English Language Book Society/ Chapman & Hall, 791p.
- Faniran, A. And Jeje, L.K. 1983. Humid Tropical Geomorphology, Longman, London, 340p.
- Kale, V.S. and Gupta, A. 2001. Introduction to Geomorphology, Orient Longman Ltd., Hydrabad, 274p.
- Keary, P. And Vine, m. 1997. Global Tectonics, 2nd edition. Blackwell Scientific publications, Oxfords, 320p.
- Knighton, D. 1998. Fluvial Forms and Processes: A new Perspective, Arnold, London, 385p.
- Powell, J. 2001, Mysteries of Terra Firma: The age and evolution of the earth, Free press, London, 272p.
- Prasad, N. And Basu, R. (Editors) 2002. Contemporary Dimensions in Geography, Academic Staff College, University of Burdwan, Bardhaman.
- Selby, M.J. 1985. An Introduction to geomorphology, Clarendon, Oxford, 670p.
- Singh, S. Geomorphology, prayag Pustak Bhavan, Allahabad, 390p.
- Summerfield, M.A. (Editor) 1991, Global Geomorphology: An Introduction to the Study of Landforms, John Wiley and Sons Ltd., New York, 560p.
- Tarbuck, E.J., Lutgens, F.K. and Tasa, D. 2003. Earth Science, 10th edition, Printice Hall, Englewood Cliffs, 740p.
- Thronbury, W.D. 1969. Principles of Geomorphology, Wiley Easterb Limited, New Delhi, 594p.
- Woodroffe, C.D. 2002. Coasts: Form, process and Evolution, Cambridge University Press, Cambridge, 638p.
- Woolridge, S.W. and Morgan, R.S. 1959. Outline of Geomorphology: The Physics, Basis of Earth, Longman, London.

Paper – V (Practical): Analytical Techniques in Geography

- Alvi, Z. 1995. Statistical Geography: Methods and Applications, Rawat Pub. New Delhi, 194p.
- Mishra, R.P., Ramesh, A. 2000. Fundamentals of Cartography, Concept Publishing Company, New Delhi.
- Monkhouse F.J. and Wilkinson, H.R. 1971. Maps and Diagrams: their Compilation and Construction, B.I. Publications private Limited, New Delhi, 527p.
- Pal. S.K. 1999. Statistics for Geoscientists, Concept Publishing Company, New Delhi, 423p.
- Robinson, A.H., Sale, R.D., Morrison, J. 1984. Elements of Cartography, Wiley, New York
- Sarkar, A. 1997. Practical geography: A systematic Approach, Orient Longman Ltd., Hyderabad
- Sen, P.K. 1989. Geomorphological Analysis of Drainage Basin: An Introduction to Morphometric and Hydrological parameter, university of Burdwan, Badhaman.
- Silk, J. 1979, Statistical techniques in Geography, George Allen and Unwin, London, 276p
- Singh, R.L. and Singh, R.P.B. 1991. Elements of practical Geography, Kalyani Pub. New Delhi, 412p
- Steers, J.A. 1965, An Introduction to Map projections, 14th edition, University of London Press, London
- Tamaskar, b.G. Tamaskar and V.M. Deshmikh Geographical Interpretation of Indian Topographical Map
- Walford, P. 1995. Geographical Data Analysis, john Wiley and Sons Inc., New York, 446p

Paper- III: Climatology, Soil Geography & Biogeography

CLIMATOLOGY

- Anthes, R. 1987, Meteorology, 7th edition, Prentice- Hall Inc., Upper Saddle River: 214p.
- Barry, R. G. and Chorley, R.T 1998. Atmosphere, Weather and climate, 7th edition Rout ledge, London: 464p.
- Coch, N. K. 1995.Geohazards: Natural and human Prentice Hall, Englewood cliffs: 481p.

- Chritchfield, H. J. 1983 : General Climatology, 4th edition, Prentice Hall India Ltd., New Delhi : 453p
- Das, P. K. 1995, Monsoon, 2nd edition, National Book Trust, New Delhi: 347p
- Lal, D.S. 1993 : Climatology, 3rd edition, Chaitanya Pub. House, New Delhi: 412p.
- Lutgens, F.K. and Tarbuck, E. J. 1998 : The Atmosphere : An Introduction to Meteorology, 7th edition, Prentice-Hall Inc., Upper Saddle River : 434p.
- Moran, J.M. and Morgan, M. D. 1997 : Meteorology : The atmosphere and the Science of Weather, 5th edition, Prentice-Hall Inc., Upper Saddle River :530p.
- Pant, G. B. and Kumar, R.K. 1997 : Climates of South Asia, John Wiley and Sons Ltd., Chichester : 320p.

SOIL GEOGRAPHY

- Biswas, T.D. and Mukherjee, S.K. 1997: Textbook of Soil Science, Tata-McGraw Hill, 314p.
- Brady, N.C. and Weil, R.R. 1996. The Nature and Properties of Soil, 11th edition, Longman, London : 740p.
- Floth, H.D. 1990. Fundamentals of Soil science, 8th edition, John Wiley and Sons, New York: 360p.
- Morgan, R.P.C. 1995 Soil Erosion and Conservation, 2nd edition, Longman, London : 198p.
- Schwab, G.O., Fangmer, D.D. and Elliot, W.J. 1996. Soil and Water Management Systems, 4th edition, John Eiley and sons Inc., New York: 371p
- Young, A. 2000. Land Resource: Now and Future, Cambridge University Press, Cambridge: 332p.

BIOGEOGRAPHY

- Chapman J.L. and Rens, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press, Cambridge: 294p.
- Chairas, D.D. Reganold , J.P. and Owen, O.S. 2002. National Resource Conservation and management for a Sustainable Future, 8th edition, Prentice Hall, Lo—glewood Cliffs : 642p.

- Dash, M.C., 2001. Fundamental of Ecology, 2nd edition, Tata McGraw-Hill, New Delhi : 544p.
- Huggett, R. 1998. Fundamentals of Biogeography, Routledge, London: 288p.
- Kormondy, E.J. 1996. Concept of Ecology, 4th edition, Prentice- Hall, India, New Delhi : 576p.
- Myers, A. A. and Giller, P.S. (editors) 1988. Analytical Biogeography: an Integrated Approach to the Study of Animal and Plant Distribution. Chapman and Hall, London: 478p.
- Odum, E. P. 1997. Ecology: A Bridge between Science and Society, Sinaur Associates Inc. Publishers , Sunderland : 330p.
- Sharma, P. D. 1996. Ecology and Environment, 7th edition, Rastogi Publications, Meerut: 653p.
- Spellerberg, I. F. and Sarwyer, J. W. D. 1999. An Introduction to Applied Biogeography, Cambridge University Press, Cambridge: 257p.
- Weddell, B. J. 2002. Conserving Living Natural Resources in the Context of a Changing World, Cambridge University Press, and Cambridge: 442p.
- World Wide Fund for Nature- India (Eastern Region) 1995: Nature Conservation Hand book, Calcutta: 126p.

Paper II: Economic, Social, Cultural and Political Geography.

- Blunden, J., Haggett, P., Haggett, C. and Sarre, P. 1985. The Fundamentals of Human Geography, Harper and Row, New York, 345p.
- Carter, H. 1981. Urban Geography, 3rd edition Arnold-Heinemann, New Delhi. 434p.
- Carter, H. and Jones, T. 1989. Social Geography: An Introduction to Contemporary Issues, Edward Arnold, London, 259p.
- Ghosh, S. 1998. Introduction to Settlement Geography, Orient Longman Ltd. Calcutta, 158p.
- De Blij, H.J. and Murphy, A.B. 2002, Human Geography: Culture, society and space, 7th edition, John Willy and Sons, New York, 608p.
- Husssain, M. 1994, Human Geography, Rawat Publications Co., New Delhi, 458p.
- McCully, P. 1996. Silenced Rivers: The Ecology and politics of laerge Dams, Orient Longman, Hydrabad, 398p.

- Nagle, G. and Spencer, K. 1997. Sustainable Development, Hodder and Stoughton, London, 213p.
- Norton, W. 2001. Human Geography, 4th edition, Oxford Unversity Press, Oxford, 448p.
- Pickering, K. and Owen, I.A. 1997. An Introduction to Global Environment Issues, 2nd edition, Routledge, London, 345p.
- Raw, M. 1986. Understanding Human geography: A practical Approach, Bell and Hyman, London, 250p.
- Rubenstein, J.M. 2002. The Cultural Landscape 7th edition, Pentice Hall, Englewood Cliffs, 554p.
- Sayer, J., Campbell, B. 2003. The Science of Sustainable Development: Local Livelihoods and the Global Environment, Cambridge University Press, Cambridge, 262p and 638p.
- Simmons, H.I.G. 1997. Humanity and Environment: A Cultural Ecology, Adddison Wesley Longman Ltd. Harlow, 328p.
- Smith D.M. 1980. Human Geography: A Welfafe Approach, Edward Arnold, London, pp 1-16, 25-35, 361-370.
- Valentine, G. 2001. Social Geographies. Pentice Hall, Englewood Cliffs, 416p.
- Whynne, C.H. 1990. Elements of Human Geography, Unwin and Hyman Ltd. London, pp 25-68, 181-251.

Paper VII: (Practical): Cartographic Techniques in Geography

- Elfic, M.H., Fryer, J.G. Brinkner, R.C. and Wolf, P.R. 1994. Elementary Surveying, 8th edition, Harper Collins Publishers, London, 510p.
- Hussain, S.K. and Nagaraj, M.S. 1992. Textbook of Surveying, S. Chand and Co. Ltd., New Delhi.
- Kanetkar, T.P. and Kulkarni, S.V. 1988. Surveying and leveling, Part I, Pune Vidyarthi Griha Prakashan, Pune, 608p.
- Kellaway, G.P. 1979. Map Projections, 1st Indian edition, B.I. Publication, Delhi
- Kochher, C.L. 1993. A Textbook of Surveying, S.K. Katariya and Sons, Delhi.
- Mishra, R.P. Ramesh, A. 2000. Fundamentals of Cartography, Concept Publishing Company, New Delhi.

- Monkhouse, F.J. and Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, B.I. Publications Private Limited, New Delhi, 527p.
- Roy, P. 1988. An Analytical Study of Map Projections, Vol I, Kolkata.
- Sarkar, A. 1997. Practical Geography: A Systematic Approach, Orient Longman Ltd. Hydrabad.
- Singh, R.L. and Singh, R.P.B. 1991. Elements of Practical Geography, Kalyani Pub. New Delhi.
- Steers, J.A. 1965. An Introduction to Map Projections, 14th edition, university of London Press, London.
- Venkatramaiah, C. 1996. A textbook of Surveying. University Press/ Orient Longman Ltd. Hydrabad, 76p.

Paper – IV: Geographical Thought & Geography of India

Geographical Thought

- Adhikari, S. 1992. Geographical Thought, Chaitanya Pub. House, Allahabad, 272p.
- Binege, W. 1962. Theoretical Geography, Glenerp, London, 897p.
- Chorley, R.J. and Hoget, P. (editors) 1965. Frontiers in Geographical Teaching, OUP, Oxford, 231p.
- Dikshit, R.D. (editor) 1994. The Art and Science of Geography: Selected Readings, Prentice Hall India Ltd., New Delhi, 195p.
- Dhunbar, G.S. (editor) 1991. Modern geography: An Encyclopedic Survey, St. James Press, Chicago, 219p
- Gregory D. And Walford, R. (editors) 1998. Horizons in Human Geography, Macmillan, London, 390p.
- Hussain, m. 1995. Evolution of geographical thought, 3rd edition, Rawat Pub. Co., New Delhi, 432p.
- Johnston, R.J., Gregory, D., pratt, G. and Watts, M. 2000. The Dictionary of human Geography, 4th edition, Blackwell Pub. Ltd., London, 958p.
- Matthews, J.A. and Herbert, J.A. 2004. Unifying Geography: Common Heritage, Shared Future? Routledge, London, 368p.
- Messy, D and Allen, J. (editors) 1984. Geography Matters: A Reader, Cambridge University Press, Cambridge, 204p.
- Poet, R. 1998. Modern Geographical thought, Blackwell, London, 325p.

- Stoddaert, D.R. 1986. On Geography and its History, Basil Blackwell, Oxford, 236p.

Geography of India

- Dutta, R. And Sundaram, K.P.M. 1999. Indian Economy, S. Chand and Cooperation Limited, New Delhi.
- Guha, J.L. and Chattoraj, P.R. 1998. A new approach to Economic Geography: A Study of Resources, 15th edition, World Press, Calcutta, 849p.
- Khullar, D.R. 1999. A Comprehensive Geography of India, Kalyani Publishers, New Delhi.
- Kumar, R. 1985. Fundamentals of Historical Geology and Stratigraphy of India, Wiley-Eastern, New Delhi, 234p.
- Mamoria, C.B. 1996, Economic and Commercial Geography of India, revised edition, Shivalal Aggarwala and Co., Agra, 566p.
- Mathur, S.M. 1986. Physicalgeoogy of India, National Book Trust, New Delhi, 180p.
- Pathak, C.R. 2002. Spatial Structure and Process of Development in India, regional Science Association, Kolkata, 201p.
- Sen, P.K. and Prasad, N. 2002. An Introduction to Geomorphology of India, Allied Publishers, Delhi.
- Ray Chaudhuri, J. An Introduction to Development and Regional Planning, Orient longman Ltd., Hydrabad.
- Sharma, T.C. and Coutinho, o. 1998. Economic and Commercial Geography of India, 3rd edition, Vikash Pub. House pvt. Ltd, New Delhi, 329p.
- Shiva, V. 1992. The Violence of the green revolution: Agriculture, Ecology and Politics in the Southm, 2001 reprint, Other India Press, mapusa, 264p.
- Singh, R.L. (editor) 1971. India; A Regional Geography, national Geographical Sociaty of India/UBS pub. Dictributors Ltd., New Delhi, 876p.
- Spate, O.H.K. and Learmonth, A.T.A. 1967. India and Pakistan, 3rd edition, Munshiram Monoharlal Pub. Pvt. Ltd., New Delhi, 876p.

Paper-VI: Population Geography, Settlement Geography, Regional Planning Remote Sensing ans GIS.

- Chandana, R.C. Population, Kalyani Publishers, New Delhi
- Campbel, J.B. 1996. Introduction to Remote Sensing, 2nd Edition, Taylor & Francis, London 622p
- Chairsman, N. 1992. Exploring Geographical Information Systems, John Willey and Sons Inc., new York, 198p
- Harrison, P., pearce, F. And Raven, P.H. 2001. Atlas of population and Environment, University of California Press, 204p.
- Lillesand, T.M. and Kiefer, R.W. 1994. Remote Sensing and image Interpretation, 3rd edition, Jhon Wiley and Sons, New York, 750p
- Marcolongo, B.and Aantorani, F. 1997. Photogeology: Remote sensing Application in Earth Science, Oxford and IBH Pub. Pvt. Ltd., New Delhi, 195p
- Newbold, K.B. 2002. Six Billion Plus: Population Issues in the Twenty-First Century, Rowman & Littlefield Publishers, New York, 224p.
- National Remote Sensing Agency, 1996. India through images, Hydrerabad
- Pearce, D. 1995. Tourism Today: A Geographical Analysis, 2nd edition, Longman Scientific & technical, London, 202p.
- Robinson, 11. 1999. A Geography of Tourism, 2nd edition, McDonalds and Fvans, London.
- United Nations Populations Fund 1997. India towards Population and Development and Goals. Oxford University Press, New Delhi, 194p.

Paper –VIII: Modern Geographical Techniques Field Report and Remote Sensing & GIS

- Burrough, P.A., 1998. Principles of Geographical Information system for land resources assessment, 2nd edition, Oxford University press, New York
- Campbell, J.B. 1996. Introduction to Remote Sensing, 2nd Edition, Taylor & Francis, London 622p
- Curram, P.J. 1988. Principles of Remote Sensing, FIBS Edn., Longman group, U.K. Ltd.

- Curram, P.J. 1980. Multispectral remote sensing of vegetation amount, progress in Physical Geography, 4: 345
- Demers, M.N. Fundamentals of geographic information system, Wiley, new York, 1997.
- Guha, P.K. 2003. Remote Sensing for the Beginner, Affiliated East-West Press Pvt. Ltd., New Delhi.
- Jensen, J.R., 2000. Remote Sensing of the environment: An earth resource perspective, prentice Hall, upper saddle river, nJ.
- Joseph George, 2003. Fundamental of Remote Sensing, University Press (India) Pvt. Ltd., Hyderabad, India
- Laurini, R. And Thompson. D. 1992. Fundamentals Speritual Information System, London, Academy press
- Lillesand, t.M. and Kieffer, R.W.2003. Remote sensing and image Interpretation, 5th Edition, Wiley, New York.
- Rajan, M.S. 1995. Space Today, 2nd edition, national Book Trust, New Delhi, 344p
- Rao, U.R. 1996. Space Technology for Sustainable Development, Tata Memorial Hall, new Delhi, 564p992.
- Sabins, F.F. 1997, Remote Sensing. Principles and Applications, 3rd edition, W.H. Freeman & Company, New York, 494p.

Paper – VIII (Practical): Applied & Analytical Geographical Techniques & Field Report

- Beaumont, J.R. and Williams, S.W. 1983. Project Work in the Geography Curriculum, Croom Helm, London, 332p
- Campbel, J.B. 1996. Introduction to Remote Sensing, 2nd Edition, Taylor & Francis, London 622p
- Chairsman, N. 1992. Exploring Geographical Information Systems, John Willey and Sons Inc., new York, 198p
- Jensen, J.R., 2000. Remote Sensing of the environment: An earth resource perspective, prentice Hall, upper saddle river, nJ.
- Joseph George, 2003. Fundamental of Remote Sensing, University Press (India) Pvt. Ltd., Hyderabad, India
- Lillesand, T.M. and Kiefer, R.W. 1994. Remote Sensing and image Interpretation, 3rd edition, Jhon Wiley and Sons, New York, 750p

- Maltman, A. 1990. Geological Maps; An Introduction, Open University Press, Buckingham, 184p
- Marcolongo, B.and Aantorani, F. 1997. Photogeology: Remote sensing Application in Earth Science, Oxford and IBH Pub. Pvt. Ltd., New Delhi, 195p
- National Remote Sensing Agency, 1996. India through images, Hydrerabad
- Persons, T and Knight, P. 1995. How To Do. Your Dissertation in Geography and Allied Disciplines, Chapman and Hall, London 151p
- Rajan, M.S. 1995. Space Today, 2nd edition, national Book Trust, New Delhi, 344p
- Sabins, F.F. 1997, Remote Sensing. Principles and Applications, 3rd edition, W.H. Freeman & Company, new York, 494p
- Tamaskar, B.G. and deshmukh, V.M. Geographical Interpretation of Indian Topographical Maps, Orient Longman Ltd., Hyderabad.