The University of Burdwan

Syllabus for B.A. / B.Sc. (Hons.)

in

Geography

under Semester with

Choice Based Credit System

w.e.f. 2017- 2018

COURSE STRUCTURE UNDER CHOICE BASED CREDIT SYSTEM FOR BA/B.Sc. HONOURS IN GEOGRAPHY

Semester-wise course structure

YEAR	SEMESTER	CORE COURSE (CC) (14)	ABILITY ENHANCEMENT COURSE (AECC) (2)	SKILL ENHANCEMENT COURSE (SEC) (2)	DISCIPLINE SPECIFIC ELECTIVE (DSE) (4)	GENERIC ELECTIVE (GE) (4)
FIRST YEAR	I	CC-1. GEOTECTONICS AND GEOMORPHOLOGY CC-2. Catrographic Techniques and Geological Map study	ENVIRONMENTAL STUDIES			GE-1 (Any discipline other than Geography)
	II	CC-3. HUMAN GEOGRAPHY CC-4. CARTOGRAMS AND THEMATIC MAPPING	COMMUNICATIVE ENGLISH/MIL			GE-2 (Any discipline other than Geography)
SECOND YEAR	III	CC-5. CLIMATOLOGY CC-6. STATISTICAL METHODS IN GEOGRAPHY CC-7. GEOGRAPHY OF INDIA		SEC-1. COMPUTER BASICS AND COMPUTER APPLICATIONS OR REMOTE SENSING		GE-3 (Any discipline other than Geography)
	IV	CC-8. REGIONAL PLANNING AND DEVELOPMENT CC-9. ECONOMIC GEOGRAPHY CC-10. ENVIRONMENTAL GEOGRAPHY		SEC-II ADVANCED SPATIAL STATISTICAL TECHNIQUES OR FIELD WORK		GE-4 (Any discipline other than Geography)
THIRD YEAR	V	CC-11. RESEARCH METHODOLOGY AND FIELD WORK CC-12. REMOTE SENSING AND GIS			DSE – 1 URBAN GEOGRAPHY OR CULTURAL AND SETTLEMEMT GEOGRAPHY DSE – 2 POPULATION GEOGRAPHY OR SOCIAL GEOGRAPHY	
	VI	CC-13. EVOLUTION OF GEOGRAPHICAL THOUGHTS CC-14. DISASTER MANAGEMENT			DSE – 3 FLUVIAL GEOMORPHO - LOGY OR RESOURCE GEOGRAPHY DSE – 4 SOIL AND BIO GEOGRAPHY OR AGRICULTURAL GEOGRAPHY	

COURSE STRUCTURE UNDER CHOICE BASED CREDIT SYSTEM FOR B.A/B.Sc. HONOURS IN GEOGRAPHY

Semester-wise distribution of Credits and marks

SEMESTER	COURSE OPTED	COURSE NAME	CREDIT	MARKS			NO. OF HOURS L-T-P (PER WEEK)
				IA	ESE	TOTAL	
I	ABILITY ENHANCEMENT: COMPULSORY COURSE - I	ENVIRONMENTAL STUDIES	4		100	100	
	CORE COURSE (CC 1)	GEOTECTONICS AND GEOMORPHOLOGY	6	15	60	75	5-1-0
	CORE COURSE (CC2)	CARTOGRAPHIC TECHNIQUES AND	4	15	40	75	4-0-0
		GEOLOGICAL MAP STUDY	2		20		0-0-4
	GENERIC ELECTIVE (GE1)	ANY DISCIPLINE OTHER THAN GEOGRAPHY	6	15	60	75	5-1-0
	TOTAL		**22**			**325**	
II	ABILITY ENHANCEMENT: COMPULSORY COURSE - II	COMMUNICATIVE ENGLISH/ MIL	2		50	50	
	CORE COURSE (CC3)	HUMAN GEOGRAPHY	6	15	60	75	5-1-0
	CORE COURSE (CC4)	CARTOGRAMS, SURVEY AND	4	15	40	75	4-0-0
		THEMATIC MAPPING	2		20		0-0-4
	GENERIC ELECTIVE (GE2)	ANY DISCIPLINE OTHER THAN GEOGRAPHY	6	15	60	75	5-1-0
	TOTAL		**20**			**275**	
III	CORE COURSE (CC5)	CLIMATOLOGY	6	15	60	75	5-1-0
	CORE COURSE (CC6)	STATISTICAL METHODS IN	4	15	40	75	4-0-0
		GEOGRAPHY	2		20		0-0-4
	CORE COURSE (CC7)	GEOGRAPHY OF INDIA	6	15	60	75	5-1-0
	SKILL ENHANCEMENT COURSE (SEC1)	SEC- 1 (COMPUTER BASICS AND COMPUTER APPLICATIONS OR REMOTE SENSING)	2	10	40	50	0-0-4
	GENERIC ELECTIVE (GE3)	ANY DISCIPLINE OTHER THAN GEOGRAPHY	6	15	60	75	5-1-0
	TOTAL		**26**			**350**	
IV	CORE COURSE (CC8)	REGIONAL PLANNING AND DEVELOPMENT	6	15	60	75	5-1-0
	CORE COURSE (CC9)	ECONOMIC GEOGRAPHY	6	15	60	75	5-1-0
	CORE COURSE (CC10)	ENVIRONMENTAL GEOGRAPHY	4	15	40	75	4-0-0
			2		20		0-0-4
	SKILL ENHANCEMENT COURSE (SEC2)	SEC- 2 ADVANCED SPATIAL STATISTICAL TECHNIQUES OR FIELD WORK	2	10	40	50	0-0-4
	GENERIC ELECTIVE (GE4)	ANY DISCIPLINE OTHER THAN GEOGRAPHY	6	15	60	75	5-1-0
	TOTAL		**26**			**350**	

SEMESTER	COURSE OPTED	COURSE NAME	CREDIT	MARKS			NO. OF HOURS L-T-P (PER WEEK)
				IA	ESE	TOTAL	
V	CORE COURSE (CC11)	RESEARCH METHODOLOGY AND FIELD WORK	4	15	40	75	4-0-0
			2		20		0-0-4
	CORE COURSE (CC12)	REMOTE SENSING AND GIS	4	15	40	75	4-0-0
			2		20		0-0-4
	DISCIPLINE SPECIFIC ELECTIVE (DSE)	DSE – 1 URBAN GEOGRAPHY OR CULTURAL AND SETTLEMENT GEOGRAPHY	6	15	60	75	5-1-0
	DISCIPLINE SPECIFIC ELECTIVE (DSE)	DSE 2 POPULATION GEOGRAPHY OR SOCIAL GEOGRAPHY	6	15	60	75	5-1-0
	TOTAL		**24**			**300**	
VI	CORE COURSE (CC13)	EVOLUTION OF GEOGRAPHICAL THOUGHTS	6	15	60	75	5-1-0
	CORE COURSE (CC14)	DISASTER MANAGEMENT	4	15	40	75	4-0-0
			2		20		0-0-4
	DISCIPLINE SPECIFIC ELECTIVE(DSE3)	DSE – 3 FLUVIAL GEOMORPHOLOGY OR RESOURCE GEOGRAPHY	6	15	60	75	5-1-0
	DISCIPLINE SPECIFIC ELECTIVE(DSE4)	DSE – 4 SOIL AND BIO GEOGRAPHY OR AGRICULTURAL GEOGRAPHY	6	15	60	75	5-1-0
	TOTAL		**24**			**300**	
	TOTAL OF ALL SEMESTERS		**142**			**1900**	

*L-T-P = LECTURE-TUTORIAL-PRACTICAL

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

CC1 - Geotectonics and Geomorphology 6 Credits

Unit 1: Geotectonics

1. Earth's tectonic and structural evolution with reference to geological time scale
2. Earth's interior with special reference to seismology.
3. Concept of Isostasy:Theories of Airy and Pratt
4. Plate Tectonics: Processes at constructive, conservative, destructive boundaries and hotspots: resulting landforms

Unit 2: Geomorphology

1. Degradational processes: Weathering, mass wasting and resultant landforms
2. Models of landscape evolution: Views of Davis, Penck, and Hack
3. Slope Development: Concept of Wood
4. Development of river network and landforms on uniclinal and folded structures
5. Types of rocks, mineralogical composition of igneous rocks; Landforms on igneous rocks with special reference to Granite and Basalt
6. Karst landforms: Surface and sub-surface
7. Glacial and fluvio-glacial processes and landforms
8. Aeolian and fluvio-aeolian processes and landforms.

Reference Books

- Bloom A. L., 2001: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms,Prentice-Hall of India, New Delhi
- Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed., Macmillan Publishing Company
- Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
- Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
- Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
- Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to physical Geology, 4th Edition, John Wiley and Sons
- Thornbury W. D., 1969: Principles of Geomorphology, Wiley.

CC2 (Theory) – CartographicTechniques and Geological map study 4 Credits

1. Maps: Classification and Types. Components of a Map
2. Concept of Scales: Plain, Comparative, Diagonal and Vernier
3. Coordinate Systems: Polar and Rectangular. Concept of Geoid and Spheroid. Map Projections: Classification, Properties and Uses. Concept and Significance of UTM Projection
4. Concept of Generating Globe, Grids: Angular and Linear Systems of Measurement

5. Survey of India Topographical Maps: Reference scheme of Old and Open series
6. Delineation of Drainage Basin from Survey of India Topographical Map. Concept of Relief, Slope and Stream Order.
7. Types of rocks and minerals. Characteristics of Granite, Basalt, Dolerite, Pegmatite, Gneiss, Shale, Sandstone, Slate, Marble, Quartzite, Quartz, Feldspar, Mica, Limestone, Calcite, Bauxite, Magnetite, Hematite, Galena
8. Concept of Bedding Plane, Unconformity and Non-conformity, thickness of Bed, Dip, Throw, Hade, heave

CC2 (Practical) – Cartographic Techniques and Geological map study2 Credits

1. Construction of Scales: Plain, Comparative, Diagonal and Vernier

2. Construction of Projections: Polar Zenithal Stereographic, Simple Conic with two Standard Parallels, Bonne's and Mercator's

3. Construction and Interpretation of Relief Profiles (Superimposed, Projected and Composite),Preparation of Relative Relief Map, Slope map (Wentworth), and Stream Ordering(Strahler) on a Drainage Basin.

4. Geological Map (Problems related to Horizontal, Uniclinal, Folded and Faulted structure); Drawing ofGeological section and Interpretation of the Map.

*A Project File, comprising one exercise each is to be submitted.

Reference Books

Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi
Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York
Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
Sarkar, A. 2015: Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

CC3 (Theory) – Human Geography 6 Credits

Unit 1: Nature and Principles

1. Nature, scope and recent trends of Human Geography
2. Evolution of humans, concept of race and ethnicity; Major Racial Groups of the world
3. Space, society and cultural regions (language and religion)
4. Concept of Culture, Cultural Diffusion, Convergence, Cultural Realms of the world

Unit 2: Society, Demography and Ekistics

1. Evolution of human societies: Hunting and gathering, Pastoral nomadism, Subsistence farming, Industrial and urban societies
2. Human - environment relations with special reference to Arctic and hot desert regions

3. Population growth and distribution, population composition; demographic transition model
4. Population–Resource regions
5. Human, population and environment relations with special reference to development– environmentconflict
6. Social morphology and rural house types in India
7. Types and patterns of rural settlements
8. Functional Classification of urban settlements

Reference Books

Bergman, E.F (1995): Human Geography-Culture, Connections and Landscape, Prentice Hall, New Jersey

Chisholm. (1975): Human Geography, Penguin Books, Hermondsworth.

Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.

Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.

Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.

Pearce D. (1995): Tourism Today: A Geographical Analysis, 2nd edition, Longman Scientific & Technical, London

Pickering K. and Owen A. A. (1997): An Introduction to Global Environmental Issues, 2nd edition Rutledge, London.

Raw, M. (1986): Understanding Human Geography: A Practical Approach, Bell and Hyman. London

Rubenstein, J.M. (2002), The Cultural Landscape, 7th edition, Prentice Hall, Englewood Cliffs Smith

D M (1982): Human Geography: A Welfare Approach, Edward Arnold, London

CC4 (Theory) – Cartograms, Survey and Thematic Mapping 4 Credits

1. Concepts of Cartograms and Thematic Maps
2. Concept and utility of Isopleths and Choropleth,
3. Concept, utility, and interpretation of :Climograph, Hythergraph and Ergograph
4. Preparation and interpretation of demographic charts and diagrams (Age-Sex Pyramid)
5. Concepts of Bearing: magnetic and true, whole-circle and reduced
6. Basic concepts of surveying and survey equipments: Abneys Level, Clinometer
7. Basic concepts of surveying and survey equipments: Prismatic Compass, Dumpy Level, Transit Theodolite
8. Interpretation of Land use and land cover maps

CC4 (Practical) – Cartograms, Survey and Thematic Mapping 2 Credits

1. Diagrammatic representation of data: Star and Age-sex pyramid diagram, pie diagram
2. Representation of data on map by proportional circles, dots and spheres, isolines and Choropleth method.
3. Contouring by Dumpy Level and Prismatic Compass

4. Determination of Height of objects using Transit Theodolite (Accessible and Inaccessible bases)

*A Project File, comprising one exercise each is to be submitted

Reference Books

Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books

Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education

Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.

Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.

Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.

Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.

Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.

Tyner J. A., 2010: Principles of Map Design, The Guilford Press.

Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan PrivateLtd., New Delhi

CC 5 (Theory) – Climatology **6 Credits**

Unit 1: Elements of the Atmosphere

1. Nature, composition and layering of the atmosphere,
2. Insolation: controlling factors. Heat budget of the atmosphere.
3. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences.
4. Greenhouse effect and importance of ozone layer

Unit 2: Atmospheric Phenomena, Climate Change and Climatic Classification

1. Condensation: Processes and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation.
2. Air mass: Typology, origin, characteristics and modification.
3. Fronts: warm and cold; frontogenesis and frontolysis.
4. Weather: stability and instability; barotropic and baroclinic conditions.
5. Circulation in the atmosphere: Planetary winds, jet stream and monsoons
6. Tropical and mid-latitude cyclones
7. Evidences and causes of climate change
8. Climatic classification after Köppen, Thornthwaite (1948)

Reference Books

Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.

Barry R. G. and Chorley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.

Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi

Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw

CC 6 (Theory) – Statistical Methods in Geography 4 Credits

Unit 1

1. Importance and significance of Statistics in Geography. Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio), sources of data
2. Collection of data and formation of statistical tables
3. Sampling: Need, types, and significance and methods of random sampling
4. Distribution: frequency, cumulative frequency

Unit 2

1. Central tendency: Mean, median, mode, partition values
2. Measures of dispersion range, mean deviation, standard deviation, coefficient of variation
3. Association and correlation: Rank correlation, product moment correlation
4. Linear Regression and time series analysis

CC 6 (Practical) – Statistical Methods in Geography 2 Credits

1. Construction of data matrix with each row representing an aerial unit (districts / blocks / mouzas / towns) and corresponding columns of relevant attributes.
2. Based on the above, a frequency table, measures of central tendency and dispersion would be computed and interpreted.
3. Histograms and frequency curve would be prepared on the dataset.
4. Based on of the sample set and using two relevant attributes, a scatter diagram and regression line would be plotted and residual from regression would be mapped with a short interpretation.

*A Project File, comprising one exercise each is to be submitted

Reference Books

Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
Ebdon D., 1977: Statistics in Geography: A Practical Approach.
Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
Spiegel M. R.: Statistics, Schaum's Outline Series.
Yeats M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

CC 7 – Geography of India **6 Credits**

Unit 1: Geography of India

1. Geology and physiographic divisions
2. Climate, soil and vegetation: Characteristics and classification
3. Population: Distribution, growth, structure and policy
4. Distribution of population by race, caste, religion, language, tribes
5. Agricultural regions, Green revolution and its consequences
6. Mineral and power resources distribution and utilisation of iron ore, coal, petroleum
7. Industrial development since independence.
8. Regionalisation of India: Views of Spate and Bhatt.

Unit 2: Geography of West Bengal

1. Physical perspectives: Physiographic divisions, forest and water resources
2. Population: Growth, distribution and human development
3. Resources: Mining, agriculture and industries
4. Regional Development: Darjeeling Hills and Sundarban

Reference Books

Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
Johnson, B. L. C., ed. 2001. Geographical Dictionary of India.Vision Books, New Delhi.
Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An Intenational Perspective. Vol. 3 – Indian Perspective.
Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, GyanodayaPrakashan, Gorakhpur.
Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
Tirtha, Ranjit 2002: Geography of India, RawatPubls., Jaipur & New Delhi
Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc.,
Kolkata. Tiwari, R.C. (2007) Geography of India. PrayagPustakBhawan, Allahabad
Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

Generic Elective

For Students other than Geography Honours

GE 1. Geomorphology and Cartography

Unit I: Geotectonics and Geomorphology (Theory) **Credits 4**

1. Weathering: Types and related landforms.
2. Lithosphere – Internal Structure of Earth based on Seismic Evidence,
3. Plate Tectonics and its associated landforms

4. Landform development in arid regions
5. Landform development in glaciated regions.
6. Development of fluvial landforms
7. Fluvial Cycle of Erosion – Davis and Penck
8. Hydrological Cycle and ground water.

Reading List

1. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.
2. Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
3. Garrett N., 2000: Advanced Geography, Oxford University Press.
4. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
5. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice Hall, N.J.
6. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, and Jaipur.
7. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
8. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.

Unit II: Scale and Cartography (Practical) Credits 2

1. Linear and Comparative scale
2. Proportional diagrams: Circles and squares
3. Composite bar diagram and age-sex pyramid.
4. Taylor's Climograph and Hythergraph

Reading List

1. Dent B. D., 1999: Cartography: Thematic Map Design, (Vol. 1), McGraw Hill.
2. Gupta K. K and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
3. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept Publishing.
4. Robinson A., 1953: Elements of Cartography, John Wiley.
5. Sharma J. P., 2010: PrayogicBhugol, Rastogi Publishers.
6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers
7. Singh R. L., 1998: PrayogicBhoogolRooprekha, Kalyani Publications.
8. Steers J. A., 1965: An Introduction to the Study of Map Projections, University of London.

GE 2 – Physical Environment and Surveying

Unit I: Climatology, Soil and Biogeography (Theory)Credits 4

1. Elements of weather and climate. Thermal and chemical composition and layering of the atmosphere.
2. Horizontal and vertical distribution of temperature
3. Forms of precipitation and types of rainfall
4. Tropical and Temperate Cyclones, Climatic Classification (Koppen)
5. Definition of soil. Physical and chemical properties of soil (soil texture, colour and pH)
6. Soil forming factors. Soil formation (Podzol and Laterite)

7. Definition of Biosphere and Biogeography. Meaning of Ecology, Ecosystem.Environment, Ecotone, Communities, Habitats and Biotopes.
8. Biomes: Rainforest and Temperate Grassland.

Reference Books

Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
Barry R. G. and Chorley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw

Unit II: Surveying and Levelling (Practical) Credits 2

1. Definition and classification of surveying
2. Plane table survey by radiation method.
3. Open and close traversing by Prismatic Compass
4. Drawing of longitudinal profile by Dumpy level

GE 3 – Human Geography and Map Study

Unit I: Human Geography (Theory) Credit4

1. Definition, Nature, Major Subfields, Contemporary Relevance
2. Space and Society: Cultural Regions; Race; Religion and Language
3. Eskimos: Adjustment to the environment and recent development
4. Population: Population Growth and Demographic Transition Theory
5. Types of population migration with reference to India
6. World Population Distribution and Composition (Age, Gender and Literacy)
7. Settlements: Types and Patterns of Rural Settlements;
8. Classification of Urban Settlements; Functional classification of towns

Reading List

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
3. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
4. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
5. Kaushik, S.D. (2010) ManavBhugol, Rastogi Publication, Meerut.
6. Maurya, S.D. (2012) ManavBhugol, ShardaPustakBhawan. Allahabad.
7. Ghosh, S. (2015) Introduction to settlement geography. Orient Black Swan Private Ltd.,Kolkata
8. Hussain, Majid (2012) ManavBhugol. Rawat Publications, Jaipur

Unit II: Map Projection and Map interpretation (Practical) Credits 2

1. Simple Conical projection with one standard parallel

2. Cylindrical Equal Area projection
3. Interpretation of Topographical maps: Relation between Physiography, drainage and settlement
4. Interpretation of weather maps

Reading List

1. Dent B. D., 1999: Cartography: Thematic Map Design, (Vol. 1), McGraw Hill.
2. Gupta K. K and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
3. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept Publishing.
4. Robinson A., 1953: Elements of Cartography, John Wiley.
5. Sharma J. P., 2010: PrayogicBhugol, Rastogi Publishers.
6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers
7. Steers J. A., 1965: An Introduction to the Study of Map Projections, University of London.

SEC 1 – Computer Basics and Computer Applications **2 Credits**

1. Numbering Systems; Binary Arithmetic
2. Data Computation, Storing and Formatting in Spreadsheets: Computation of Rank, Mean, Median, Mode, Standard Deviation, Moving Averages, Derivation of Correlation, Covariance and regression; Selection of technique and interpretation.
3. Preparation of Annoted Diagrams and its interpretation: Scatter diagram and Histogram
4. Internet Surfing: Generation and extraction of information

Reference Books

Bartee, Thomas C. (1977): Digital Computer Fundamental; McGraw Hill.
Chauhan, S.; Chauhan, A. and Gupta, K. (2006): Fundamental of Computer; Firewall Media.
Flake, L.J.; McClintock, C.E. and Turner, S. (1989): Fundamental of Computer Education; Wordsworth Pub. Co.
Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
Malvino, A.P. and Leach, D.P. (1981): Digital Principles and Appications; Tata McGraw Hill.
Mano, Moris M. and Kime, Charles R. (2004): Logic and Computer Design Fundamental; Prentice Hall.
Rajaraman, V. (2003): Fundamentals of Computer, Prentice Hall Publisher
Sarkar, A. and Gupta, S.K (2002) Elements of computer Science, S Chand and Company, New
Delhi Blissmer (1996): Working with MS Word; Houghton Mifflin Co.
Johnson, Steve (2007): Microsoft Power Point 2007; Pearson Paravia Bruno.
Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
Leon, A. and Leon, M.(1999): A beginners Guide to Computers, Vikas
Rajaraman, V. (2008): Computer Primer; Prentice Hall of India Pvt. Ltd.
Sarkar, A. and Gupta, S.K (2002) Elements of computer Science, S Chand and Company, New
Delhi Shepard, Aaron (2007): Perfect Pages; Shepard Publications. Tyson, Herbert L. (2007):
Microsoft Word 2007 bible; John Wiley.
Walkenbach, John (2007): Excel 2007 Bible; John Wiley.

OR

SEC 1 – Remote Sensing **2 Credits**

1. Concepts and Principles of Remote Sensing (RS): Classification of RS satellites and sensors

2. Sensor resolutions and their application with reference to IRS and Landsat missions, image referencing schemes and data acquisition.

3. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM. Principles of image rectification and enhancement.

4. Principles of image interpretation and feature extraction, Preparation of inventories of land use land cover features from satellite images.

A project file consisting of four exercises on the above themes is to be submitted

Reference Books

Bhatta, B. 2008.Remote Sensing and GIS, Oxford University Press, New Delhi.

Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press

Jensen, J. R. (2005) Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.

Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.

Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).

Li, Z., Chen, J. and Batsavias, E. (2008) Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London

Mukherjee, S. (2004) Textbook of Environmental Remote Sensing, Macmillan, Delhi.

Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.

Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.

Syllabus for B.A./B.Sc. (Honours) in Geography Semester IV

Core Course (CC)	Skill Enhancement Course (SEC)	Generic Elective (GE)
CC-8 (Theory) **REGIONAL PLANNING AND DEVELOPMENT**	**SEC –2 (Practical)** **ADVANCED SPATIAL STATISTICAL TECHNIQUES**	**GE4 (Any Discipline other than Geography**
CC-9 (Theory) **ECONOMIC GEOGRAPHY**	**OR**	
CC-10 (Theory) **ENVIRONMENTAL GEOGRAPHY**	**SEC –2 (Practical)** **FIELD WORK**	
CC-10 (Practical) **ENVIRONMENTAL GEOGRAPHY**		

Semester - IV

CC8 (Theoretical) : REGIONAL PLANNING AND DEVELOPMENT Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05Marks, Total 20 Marks. Each question shall have at least two parts;
- 2 questions to be answered out of 4, each question carries 10 Marks, Total 20 Marks;Each question shall have at least two parts;
- Internal Assessment: 15 (Assessment 10 and Attendance 05) Marks

Unit 1: Regional Planning

1. Concept and Classification of Regions
2. Types of Planning; Principles and Techniques of Regional Planning
3. Need for Regional Planning; Multilevel Planning in India
4. Metropolitan Concept: Metropolis, Metropolitan Areas, Metropolitan Region

Unit 2: Regional Development

1.Development: Meaning, Growth versus Development
2. Models for Regional Development: Growth Pole (Perroux) and Core Periphery (Hirschman)
3. Model for Regional Development in India: Growth Foci (R.P.Misra)
4. Concept of Regional Inequality and Disparity
5. Human Development: Significance, Indicators and Measurement
6. Status of Regional Imbalances in India
7. Strategies for Regional Development in India
8.NITI Aayog and its Functions

References:

- Berry, BJ.L. and Horton, F.F. (1970): Geographic Perspectives on Urban Systems.Prentice Hall, New Jersey
- Bhat L.S. (1972): Regional Planning In India, Statistical Publishing Society
- Blij H. (1971): Geography: Regions and Concepts, John Wiley and Sons
- Chand,M and Puri, V.K. (1983): Regional planning In India, Allied publishers, New Delhi
- Claval P.L (1998): An Introduction to Regional Geography, Blackwell Publishers, Oxford and Massachusetts

- Dickinson, R.E. (1964): City and Region, Rutledge, London
- Friedmann J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts
- Glasson John: An Introduction to regional planning,concepts, Theory and Practise
- Gore C. G.(1984): Regions in Question: Space, Development Theory and Regional Policy, Methuen, London
- Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention, Metropolis-Verlag, Marburg
- Hall, P. (1992): Urban and Regional Planning, Routledge, London
- Haynes J. (2008): Development Studies, Polity Short Introduction Series
- Johnson E. A. J.(1970): The Organization of Space in Developing Countries, MIT Press, Massachusett
- Kapila U, Indian Economy since Independence, 17th edition,2016-2017
- Kulshetra, S.K (2012): Urban and Regional Planning in India: A hand book for ProfessionalPractioners , Sage Publication, New Delhi
- Kundu, A. (1992): Urban Development Urban Research in India, Khanna Publ. New Delhi
- Misra , R.P, Sundaram K.V, PrakashRao , VLS (1974): Regional Development Planning in India , Vikas Publication , New Delhi
- Misra, R.P (1992): Regional Planning: Concepts, techniques, Policies and Case Studies, Concept, New Delhi
- Peet, R.(1999): Theories of Development, The Guilford Press, New York
- William Thomas, Christopher A.J.(2013): Rural development:concept and recent approaches,2013(for growth versus development, pp:1-4)

CC 9 (Theoretical) : ECONOMIC GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks, Total 20 Marks. Each question shall have at least two parts;
- 2 questions to be answered out of 4, each question carries 10 Marks, Total 20 Marks; Each question shall have at least two parts;
- Internal Assessment: 15 (Assessment 10 and Attendance 05) Marks

Unit 1: Concepts and Approaches

1. Meaning and Approaches to Economic Geography
2. Concepts in Economic Geography: Goods; Services; Production; Consumption
3. Factors Influencing Location of Economic Activity and Forces of Agglomeration
4. Determining Factors of Transport Cost

Unit 2: Economic Activities

1. Concept and Classification of Economic Activities
2. Location Theories: Von Thünenand Alfred Weber
3. Primary Activities: Subsistence and Commercial Agriculture; Forestry; Fishing
4. Secondary Activities: Manufacturing (Iron and Steel in India and Japan, Petrochemical in India and USA)
5. Tertiary Activities: Types of Trade and Services
6. Agricultural Systems: Tea Plantation in India and Mixed Farming in Europe
7. Highways: Roles in Economic Development of Indiasince 1990s
8. International Trade Blocs: WTOand OPEC

Reference Books

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell
- Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press
- Wheeler J. O., 1998: Economic Geography, Wiley
- Durand L., 1961: Economic Geography, Crowell

CC 10 : ENVIRONMENTAL GEOGRAPHY Credit: 6 (4+2)

Pattern of Setting Questions:

- 5 questions to be answered out of 8, each question carries 02 Marks, Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 05 Marks, Total 10 Marks. Each question shall have at least two parts;
- 2 questions to be answered out of 4, each question carries 10 Marks, Total 20 Marks. Each question shall have at least two parts.

Theoretical Credit 4 Total Marks: 40 End Term Examination Time: 2 hours

Environmental Issues

1. Geographers' Approach to Environmental Studies
2. Changes in Perception of Environment in different stages of Human Civilization
3. Ecosystem: Concept, Structure and Functions
4. Environmental Degradation and Pollution: Water and Air
5. Environmental Issues related to Agriculture
6. Urban Environmental issues related to Waste Management
7. Concept and Issues related to Bio-diversity
8. Environmental Programs and Policies on Forest and Wetland: National and Global

CC 10 (Practical) : ENVIRONMENTAL GEOGRAPHY Credit: 2

Total Marks: 20 {10+ 10(5+5)} End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 2 questions to be answered, each question carries 5 Marks, Total 10 Marks;
- Evaluation of Laboratory Note Book 5 Marks
- Viva-Voce 5 Marks

Environmental Geography (Practical)

1. Preparation of questionnaire for perception survey on environmental problems
2. Environmental Impact Assessment: Leopold Matrix
3. Quality assessment of soil using field kit: pH and NPK
4. Interpretation of air quality using CPCB / WBPCB data

- **Internal Assessment: 15 (Assessment 10 and Attendance 05) Marks**

Reference Books

1. Chandna R. C., 2002. Environmental Geography. Kalyani, Ludhiana.
2. Cunninghum W. P. and Cunninghum M. A., 2004. Principals of environmentalcience: Inquiry and Applications. Tata Macgraw Hill, New Delhi.
3. Goudie A. 2001. The Nature of the Environment. Blackwell, Oxford.
4. Kormondy, Edward J.2012.Concepts of Ecology.PHI Learning Pvt. Ltd., New Delhi.

5. Miller G. T. 2004. Environmental Science: Working with the Earth, Thomson, Brooks Cole, Singapore.
6. MoEF, 2006. National Environmental Policy-2006. Ministry of Environment and Forests, Government of India.
7. Odum, E. P. et al.2005.Fundamentals of Ecology. Ceneage Learning, India.
8. Sharma, P.D.2015. Ecology and Environment. Rastogi Publications, Meerut.
9. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur.
10. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies. Springer.
11. Singh, S. 1997. Environmental Geography. PrayagPustakBhawan. Allahabad.
12. Singh, R.B. 1998. Ecological Techniques and Approaches to Vulnerable Environment. Oxford & IBH Pub, New Delhi.
13. UNEP, 2007. Global Environment Outlook: GEO4: Environment For Development. United Nations Environment Programme.
14. Basu, R.andBhaduri, S.(Eds.).2007.Contemporary Issues and Techniques in Geography. Progressive Publishers, Kolkata.
15. Gilpin, A. 1994. Environmental Impact Assessment: Cutting Edge for the 21st Century (EIA: Cutting Edge for the Twenty-First Century. Cambridge University Press)

SEC -2 (Practical) : ADVANCED SPATIAL STATISTICAL TECHNIQUES Credit: 2

Total Marks: 50{(30+ 10+10(5+5)} End Term Examination Time: 5 hours

Pattern of Setting Questions:

- 3 questions to be answered, each question carries 10 Marks, Total 30 Marks;
- Evaluation of Laboratory Note Book 5 Marks
- Viva-Voce 5 Marks
- Internal Assessment: 10 (Assessment 05 + 05) Marks

1. Concept of Probability and Normal Distribution and their Geographical Applications, Skewness (Pearson's Method)

2. Differences between Spatial and non-Spatial data,Nearest Neighbour Analysis

3. Correlation and Regression Analysis, t-test, Spearman's Rank Correlation, Product Moment Correlation; Linear Regression

4. Time Series Analysis; Smoothing time series by Least Square and/or Moving Average Method

**Analysis using MS Excel not earlier than 2007 Version, is to be practiced for Unit 3 and Unit 4*

- **A Project File Consisting of Four Exercises on the above Themes is to be Submitted**

OR

SEC –2 (Practical) **: FIELD WORK** Credit: 2

Total Marks: 50 (20+ 15+5+(5+5)) End Term Examination Time: 5 hours

Pattern of Setting Questions:

- 2 questions to be answered, each question carries 10 Marks, Totalling 20 Marks;
- Evaluation of Field Report 15 Marks
- Viva-Voce 5 Marks
- Internal Assessment: 10 (Assessment 05 and Attendance 05) Marks

FIELDWORK

Students are required to carry out a comprehensive field work in a village/mouza/town/C.D. Block/ drainage basin selecting a particular **research problem**. There should be a clear-cut **Problem background, major Objectives, Methodology and Findings**. The text of the fieldwork should not exceed 5000 words and 15-20 pages of illustrations (A4 Pages). The fieldwork along with the diagrams and illustrations should be prepared in computer using the standard (Using MS-Word for typing and Excel for calculation and graphs). The cartographic and statistical techniques used in the fieldwork should be at par with the syllabus of the UG Course.

Guidelines for Fieldwork:

The following methods are to be followed for fieldwork:

1) Preparation of questionnaire for assessing the physical/cultural/environment/socio-economic components. A filled-in questionnaire used in the survey should be attached with the report signed by the concerned teacher and the student
2) Preparation of maps (hand-drawn) with suitable scale and latitude and longitude

3) Preparation of charts/graphs in MS-Excel and duly labelled
4) The report should be typed in MS-Word . The font size is fixed at 12 in Times New Roman and the line spacing 1.5
5) Each field work should have a certificate of authenticity duly signed by the project supervisor

GENERIC ELECTIVE [For other discipline(s)]

GE- 4 : ENVIRONMENTAL GEOGRAPHY Credit: 4

Theoretical : Credit: 4 Total Marks: 40 End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 5 questions to be answered out of 8, each question carries 02 Marks, Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 05 Marks, Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Total 20 Marks

1. Concepts and Approaches of Environmental Geography:
2. Concept, Structure and Functions of Ecosystem
3. Human-Environment Relationship in Mountain and Coastal Regions
4. Environmental Problems and Management: Air and Water Pollution
5. Environmental Programmes and Policies: MAB
6. Forest and Wild Life Policy of India
7. Environmental Movements in India: Chipko
8. Wetlands: Ramsar Sites in India

Reference

1. Casper J.K. (2010) Changing Ecosystems: Effects of Global Warming. Infobase Pub. New York.
2. Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI
3. Learning Private Limited, New Delhi.

4. Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions,

5. Brooks/ Cole Cengage Learning, Belmont.

6. Singh, R.B. (1993) Environmental Geography, Heritage Publishers, New Delhi.

7. UNEP (2007) Global Environment Outlook: GEO4: Environment For Development, United

8. Nations Environment Programme. University Press, Cambridge.

9. Wright R. T. and Boorse, D. F. (2010) Toward a Sustainable Future, PHI Learning Pvt Ltd,

10. New Delhi.

11. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya:

12. Case studies from changing socio-economic environments in Himachal Pradesh,

13. India. Advances in Geographical and Environmental Studies, Springer

GE – 4 (Practical) : ENVIRONMENTAL GEOGRAPHY Credit: 2

Total Marks: 20 {10+ 10(5+5)} End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 2 questions to be answered, each question carries 5 Marks, Totalling 10 Marks;
- Evaluation of Laboratory Note Book 5 Marks
- Viva-Voce 5 Marks
    1. Questionnaire for Air Pollution and Health Perception Survey
    2. Soil Test using Kit : pH and Organic Carbon
    3. Mapping of Wetlands from Topographical Sheet
    4. Mapping of Forest from Topographical Sheet
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Syllabus for B.A./B.Sc. (Honours) in Geography Semester V

Core Course (CC)	Discipline Specific Elective (DSE)
CC-11 (Theory) RESEARCH METHODOLOGY AND FIELD WORK	DSE – 1 URBAN GEOGRAPHY OR CULTURAL AND SETTLEMENT GEOGRAPHY
CC-11 (Practical) RESEARCH METHODOLOGY AND FIELD WORK	
CC-12 (Theory) REMOTE SENSING AND GIS	DSE – 2 POPULATION GEOGRAPHY OR SOCIAL GEOGRAPHY
CC-12 (Practical) REMOTE SENSING AND GIS	

Semester - V

CC 11 : **RESEARCH METHODOLOGY AND FIELD WORK** Credit: 6 (4+2)

Theoretical : Credit 4 Total Marks: 40 End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 5 questions to be answered out of 8, each question carries 02 Marks, Total 10 Marks. ;
- 2 questions to be answered out of 4, each question carries 05 Marks,Each question shall have at least two parts. Total 10 Mark.
- 2 questions to be answered out of 4, each question carries 10 Marks,Each question shall have at least two parts; Total 20 Marks

Unit 1: Research Methodology

1. Research in Geography: Meaning, types and significance
2. Significance of Literature review in research
3. Defining research problem, objectives and hypothesis. Research materials and methods
4. Techniques of writing scientific reports: Preparing notes, references, bibliography (APA Style), abstract and keywords

Unit 2: Field Work

1. Fieldwork in Geographical studies – Role and significance. Selection of study area and objectives. Pre-field preparations. Ethics of fieldwork
2. Field techniques and tools: Questionnaires (open, closed, structured, non-structured). Interview with special reverence to focused group discussions.
3. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording.
4. Collection of samples. Preparation of inventory from field data. Post-field tasks.

Reference Books

- Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
- Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods.

Concept Publs. Co., New Delhi
► Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
Page 27
► Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
► Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/
Kothari, C. R. and Garg, G., 2018, Research Methodology, Methods and Techniques, New Age International Publication, New Delhi

CC 11 (Practical) : RESEARCH METHODOLOGY AND FIELD WORK

Credit: 2 Total Marks: 20 {10+ 10(5+5)} End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 2 questions to be answered, each question carries 5 Marks, Total 10 Marks;
- Evaluation of Field work: 5
- Viva-Voce 5 Marks

1. Students will prepare a field report based on primary data collected form field survey and secondary data collected from different sources for either a rural area (mouza) or an urban area (municipal ward) based on cadastral or municipal maps to study specific problems

2. The report should be typed in MS-Word in English language on A4 size paper in candidate’s own words within 2500 words. The total number of pages in the Field Report should not exceed 25 pages including texts, figures, tables, photographs, maps, references (APA) and appendices

3. A copy of the bound report, duly signed by the concerned teacher, should be submitted

4. Preparation of maps (hand-drawn) with suitable scale and latitude and longitude

5. Preparation of charts/graphs in MS-Excel and duly labelled

6.The report should be typed in MS-Word. The font size is fixed at 12 in Times New Roman and the line spacing 1.5

- **Internal Assessment: 15 (Assessment 10 and Attendance 05)** Marks

Reference Books

1. Monkhouse, F.J. and Williamson, R.H. (1963): Maps and Diagrams: Their Compilation and Construction, Methuen, London
2. Saha, P.K. and Basu, P. (2009): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
3. Sarkar, A. (2008): Practical Geography: A Systematic Approach, Orient Black Swan, Kolkata
4. NarasinhaMurthy , R.L. (2014) Research Methodology in Geography , Concept , New Delhi
5. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography.

CC 12 : REMOTE SENSING AND GIS Credit: 6(4+2)

Theoretical : Credit 4 Total Marks: 40 End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 5 questions to be answered out of 8, each question carries 02 Marks, Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 05 Marks,Each question shall have at least two parts. Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Each question shall have at least two parts. Total 20 Marks

Unit 1: Remote Sensing

1. Definition, Concepts and Principles of Remote Sensing (RS): Types of Air Photo, RS satellites, sensors and platforms.
2. EMR Interaction with Atmosphere and Earth Surface, Sensor resolutions and their applications with reference to IRS.
3. Principles of False Colour Composites (FCC) from IRS LISS-III and Landsat Images (ETM+) data: Image Processing, Pre-processing; Enhancement; Classification.
4. Principles of image interpretation for Forest, Water and Soil

Unit 2: GIS and GNSS

1. Definition and Components of Geographical Information System (GIS) and raster and vector data structures
2. Principles of preparing attribute tables and overlay analysis
3. Principles of GNSS positioning - Uses and Waypoint Collection Methods
4. Applications of Geographical Information System in Flood Management and Urban Sprawl

CC 12 **(Practical)** : **REMOTE SENSING AND GIS**

Credit: 2 Total Marks: 20 {10+ 10(5+5)} End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 2 questions to be answered, each question carries 5 Marks, Totalling 10 Marks;
- Evaluation of Laboratory Note Book: 5
- Viva-Voce 5 Marks

Note: **QGIS version 3.0 or above** to be used

1. Georeferencing of Scanned Maps
2. Preparation of FCC using IRS LISS-III and/or Landsat (ETM+) data
3. Preparation of LULC Map by Supervised Image Classification (Maximum Likelihood) using IRS LISS-IIIor Landsat (ETM+) data
4. Digitisation of Point. Line and Polygon Features and Preparation of Thematic Map (using bar, pie and choropleth method)

- **Internal Assessment: 15 (Assessment 10 and Attendance 05)** Marks

Reference Books

1. Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.
2. Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
3. Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
5. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
6. Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
7. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw- Hill.
9. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

DSE-1 (Theoretical) : URBAN GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Each question shall have at least two parts. Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks,Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Each question shall have at least two parts. Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05) Marks

Unit-1

1.Urban Geography: Nature, Scope and Approaches

2.Development of Urban Geography and its Recent Trends

3.Urban Economy: Basic and Non-Basic Concepts

4. Concept of Settlement Hierarchy; Christaller's Central Place Theory

5. Rank Size Rule; Concept of Primate City

6. Theories of City Structure: Concentric Zone Theory, Sector Theory and Multiple Nuclei Theory

Unit-2

7.Ecological Processes of Urban Growth

8. City Region: Concept, Structure and Characteristics

9.Patterns and Trends of Urbanization in India

10.Major Urban Issues in Mega Cities of India

11.Policies on Urbanization in India: After 1990s

12.Characteristics of Urbanisation in Developed and Developing Countries

References

- Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.
- Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobility and the Urban Condition, Routledge.
- Hall T., 2006: Urban Geography, Taylor and Francis.

- Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.
- Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
- Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice-Hall.
- Mahala.O.M.,Urban Governance in india, emerging challenges in Liberalised Era,2011
- Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.

OR

DSE-1 (Theoretical) : CULTURAL AND SETTLEMENT GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks,Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks,Each question shall have at least two parts. Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit 1: Cultural Geography

1. Definition, Scope and Content of Cultural Geography
2. Development of Cultural Geography
3. Concept of Cultural Hearth, Realm; Cultural Landscape
4. Cultural Innovation and Diffusion; Diffusion of Major World Religions
5. Cultural Segregation, Cultural Diversity, and Acculturation
6. Major Races of the World: Distribution and Characteristics

Unit 2: Settlement Geography

1. Scope and Content of Settlement Geography
2. Definition and Characteristics of Rural Settlement
3. Rural Settlements: Site and Situation
4. Urban Settlements:Census Definition, Urban Outgrowth, Urban Agglomeration
5. Urban Morphology: Classical Models of Burgess, Hoyt, Harris and Ullman
6. Functional Classification of Cities: Harris and Nelson

Reference:

Bergman, E.F (1995): Human Geography-Culture, Connections and Landscape, Prentice Hall, New Jersey

Chisholm. (1975): Human Geography, Penguin Books, Hermondsworth.

Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.

Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.

Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H.
Freeman and Company, New York.

Pearce D. (1995): Tourism Today: A Geographical Analysis, 2nd edition, Longman Scientific & Technical,
London

Pickering K. and Owen A. A. (1997): An Introduction to Global Environmental Issues, 2nd edition Rutledge, London.

Raw, M. (1986): Understanding Human Geography: A Practical Approach, Bell and Hyman. London

Rubenstein, J.M. (2002), The Cultural Landscape, 7th edition, Prentice Hall, Englewood Cliffs

Smith D M (1982): Human Geography: A Welfare Approach, Edward Arnold, London

DSE-2 (Theoretical) : POPULATION GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks. Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks,Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks,Each question shall have at least two parts. Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05) Marks

Unit 1: (2 Credits)

1. Development of Population Geography; Relation between Population Geography and Demography

2. Determinants of Population Dynamics; Concept of Optimum Population

3. Theories of population growth: Malthusian Theory and Marxian Approach, Demographic Transition Model

4. Distribution, Density and Growth of Population in India since 1951

Unit 2 : (4 Credits)

1. Population Composition and Characteristics: Age-Sex; Female-Male Ratio
2. Measures of Fertility and Mortality
3. Population Composition of India: Rural and Urban, Occupational Structure as per Census of India
4. Migration: Theories, Causes and Types
5. Concept of Human Development Index
6. Population and development: population-resource regions,
7. Population policies in Selected Countries: Sweden and China
8. Contemporary Issues in Population: Health and Unemployment

OR

DSE-2 (Theoretical) : SOCIAL GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks,Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Totalling 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit: 1

1. Social Geography: Nature, Scope and Content
2. Social Groups and Social Behaviour
3. Concept of Social Structure and Process
4. Elements of Social Structure: Caste, Class, Religion, Race
5. Social Stratification in India

6. Contemporary Social Issues in India: Gender and Old-age

Unit:2

1. Concept of Social Well-being, Quality of Life
2. Indicators of Social Well-being after Knox and Smith
3. Social Pathology: Crime and Violence
4. Social Area Analysis after Shevky and Bell
5. Social Impact Assessment (SIA): Concept and Importance
6. Social Policies in India: Sarva Shiksha Abhiyan and NRHM

Reference:

Ahmed A., 1999: Social Geography, Rawat Publications.

- Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
- Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
- Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.
- Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
- Rachel P., Burke M ., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
- Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, and London.
- Smith D. M., 1994: Geography and Social Justice, Blackwell, Oxford
- Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa
- Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.

Syllabus for B.A./B.Sc. (Honours) in Geography Semester VI

Core Course (CC)	Discipline Specific Elective (DSE)
CC-13 (Theory) EVOLUTION OF GEOGRAPHICAL THOUGHT	DSE – 3 FLUVIAL GEOMORPHOLOGY OR RESOURCE GEOGRAPHY
CC-14 (Theory) DISASTER MANAGEMENT	DSE – 4 SOIL AND BIO GEOGRAPHY OR AGRICULTURAL GEOGRAPHY

Semester - VI

CC 13 (Theoretical) : EVOLUTION OF GEOGRAPHICAL THOUGHT Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks,Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Each question shall have at least two parts.Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit: 1

1. Definition, Scope and Content of Geography; Geography as a Spatial Science
2. Geography in Ancient Period: Greek and Roman
3. Development of Geography in Medieval period: Arabian
4. Development of Mapping and Knowledge about the World Regional Geography in the Age of Explorations
5. Classical Geography in 19^{th} Century: Humboldt, Ritter
6. Quantitative Revolution and its Critique

Unit: 2

1. German School of Thought
2. French School of Thought
3. American School of Thought
4. Indian Contribution to Geography
5. Concept of Determinism, Possibilism and Neo-Determinism
6. Approaches to the study of Geography: Systematic and Regional

References:

Adhikari S. 1992, *Geographical Thought.* Chaitanya Pub. House. Allahabad.
Binege. W. 1962, Theoretical Geography. Glenerp. London.
Chorley. R.J. and Hagget. P. (eds) 1965, *Frontiers in Geographical Teaching.* OUP. Oxford.

Dikshit. R.D. (eds) 1994, *The Art and Science of Geography: Selected Readings.* Prentice Hall India. New Delhi.
Dunbar. G.S. (eds) 1991, *Modern Geography: An Encyclopaedic Survey.* St. James Press. Chicago:.
Gregory D. and Walford. R. (eds) 1988, *Horizons in Human Geography, Macmillan London*.
Hussain. M. 1995, *Evolution of Geographical Thought*, 3rd edition, Rawat Pub. Co., New Delhi.
Johnston. R.J. Gregory. D. Prett. G and Watts. M. 2000, *The Dictionary of Human Geography*. 4th edition. Blackwell Pub. Ltd. London.
Lahiri-Dutt, K. *BhugolChintarBikash, World Press*
Matthews. J.A. and Herbert. J.A. 2004, *Unifying Geography: Common Heritage, Shared Future?* Routledge. London.
Messy D. and Allen J. (eds) 1984, *Geography Matters: A Reader*, Cambridge University Press Cambridge.
Peet. R. 1998, *Modern Geographical Thought.* Blackwell, London.
Stoddart. D.R. 1986, *On Geography and its History.* Basil Blackwell, Oxford

CC 14 : DISASTER MANAGEMENT Credit: 6 (4+2)

Theoretical : Credit 4 Total Marks: 40 End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 5 questions to be answered out of 8, each question carries 02 Marks, Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 05 Marks, Each question shall have at least two parts. Total 10 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Each question shall have at least two parts. Total 20 Marks

Unit 1

1. Classification of hazards and disasters
2. Approaches to hazard study: Risk perception and vulnerability assessment. Hazard paradigms
3. Responses to hazards: Preparedness, trauma and aftermath. Resilience and capacity building
4. Hazards mapping: Data and techniques.

Unit 2

1. Earthquake: Factors, vulnerability, consequences and management
2. Landslide: Factors, vulnerability, consequences and management
3. Cyclone: Factors, vulnerability, consequences and management
4. Fire: Factors, vulnerability, consequences and management

References:

- Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
- Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
- Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
- Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
- Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
- Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
- Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.

CC 14 (Practical) : DISASTER MANAGEMENT Credit: 2

Total Marks: 20 {10+ 10(5+5)} End Term Examination Time: 2 hours

Pattern of Setting Questions:

- 2 questions to be answered, each question carries 5 Marks, Totalling 10 Marks;
- Evaluation of Laboratory Note Book: 5
- Viva-Voce 5 Marks

Disaster Management Project Work

List of Practical

An individual Project Report based on any one among the following disasters incorporating preparedness, mitigation and management plan.

1. Earthquake
2. Landslide
3. Cyclone
4. Flood
5. Drought
6. River Bank Erosion
7. Mining Area Subsidence
8. Tsunami

1. Students will prepare a Project Report based on the topic mentioned by the Department;
2. The report should be typed in MS-Word in English language on A4 size paper in candidate's own words within 2000 words. The total number of pages in the Field Report should not exceed 20 pages including texts, figures, tables, photographs, maps, references (APA) and appendices
3. A copy of the bound report, duly signed by the concerned teacher, should be submitted
4. Preparation of maps with suitable scale and latitude and longitude
5. Preparation of charts/graphs in MS-Excel and duly labelled
6. The report should be typed in MS-Word. The font size is fixed at 12 in Times New Roman and the line spacing 1.5

- **Internal Assessment: 15 (Assessment 10 and Attendance 05)** Marks

DSE - 3 **(Theoretical)** : **FLUVIAL GEOMORPHOLOGY** Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks, Each question shall have at least two parts.Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks,Each question shall have at least two parts. Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit: 1

1. Scope and Content of Fluvial Geomorphology
2. Run off Cycle: Components and Controlling Factors
3. Concepts of Overland flow, Constant of Channel Maintenance and Belt of No Erosion
4. Drainage Basin as a Hydrological and Geomorphic Unit

Unit: 2

1. Linear, Areal and Relief properties of Drainage Basin
2. Horton's Laws of Stream: Number, Length and Area
3. Fluvial Landforms: Terraces and Alluvial Fans

4. Riverbank Erosion Processes and Mechanisms
5. Adjustment of Channel Bed Forms to Hydrological Regime
6. Human Intervention on Fluvial Systems: Dams and Barrages
7. Concept of Watershed Management
8. DVC as a Watershed Planning Unit: Success and Failure

Reference:

- Bloom, A. L. 1998: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, 3rd Ed, Prentice Hall, Upper Saddle River, New Jersey
- Bridges, E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Charlton, R. 2016: Fundamentals of Fluvial Geomorphology, 2nd Ed., Routledge, London
- Chorley, R., Schumm, S. and Sugden, D.E. 1994: Geomorphology, Methuen, London
- Chorley, R.J. and Kennedy, B.A. 1971: Physical Geography: A Systems Approach, Prentice Hall, Upper Saddle River, New Jersey
- Faniran, A. and Jeje, L.K. 1983: Humid Tropical Geomorphology, Longman, London
- Goudie, A.S. (ed) 2004: Encyclopaedia of Geomorphology, vol. 1 & 2, Routledge, London
- Gupta, A. 2011: Tropical Geomorphology, Cambridge University Press, Cambridge
- Gupta, A. (ed) 2008: Large Rivers, Wiley, New York
- Huggett, R.J. 2011: Fundamentals of Geomorphology, Routledge, New York

- Kale V.S. and Gupta A. 2001. Introduction to Geomorphology, Orient Longman, Hyderabad
- Knighton, D. 1998: Fluvial Forms and Processes: A New Perspective, Arnold, London
- Morisawa, M. 1985: Rivers, Longman, London
- Petts, G.E. and Amoros, C (eds). 1996: Fluvial Hydrosystems, Chapman and Hall, London
- Selby, M.J. 1985: Earth's Changing Surface, Oxford University Press, London

OR

DSE - 3 (Theoretical) : RESOURCE GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks,Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Each question shall have at least two parts.Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit: 1

1. Resource Geography: Its Importance and relation with other sub-disciplines
2. Resource: Concept and Classification
3. Functional Theory of Resource
4. Problems of Resource Depletion with Special Reference to Forest, Water and Fossil Fuels
5. Resource Conservation : Principles and Methods
6. Concept of 'Limits to Growth'

Unit: 2

1. Distribution and Utilisation of Metallic Mineral Resources in Indian Context: Iron ore, Bauxite
2. Distribution and Utilisation of Non-Metallic Mineral Resourcesin Indian Context: Mica, Limestone
3. Distribution, Problems and Management of Energy Resourcesin Indian Context: Conventional (Coal) and Non-Conventional (Solar)
4. Power resources and problems with reference to Petroleum
5. Contemporary Energy Crisis and Future Scenario
6. Sustainable Resource Development

Reference:

- Cutter S. N., Renwich H. L. and Renwick W., 1991: Exploitation, Conservation, And Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons, New York.
- Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.
- Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
- Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.
- Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.
- Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.
- Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
- Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.
- Rees J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge. London

DSE - 4 (Theoretical) : SOIL AND BIO GEOGRAPHY Credit: 6

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks, Each question shall have at least two parts.Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks,Each question shall have at least two parts. Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit: 1: **Soil Geography**

1. Soil: Definition, Factors of Formation
2. Development and Characteristics of an ideal Soil Profile
3. Physical and Chemical Properties of Soil with special reference to Texture, Structure, Organic Carbon and pH
4. Concept of Zonal, Azonal and Intrazonal Soil; Formation and Profile Characteristics of Laterite and Podsol
5. Classification of Soil : Russianand Indian (ICAR)
6. Soil Degradation and Management

Unit-2: **Bio-Geography**

1. Definition and Scope of Bio-geography, Meaning of Biosphere,Ecology, Ecosystem, Environment, Communities, Habitats, Niche,Ecotoneand Biotopes
2. Biosphere and Energy: Laws of Energy Exchange, Food Chain, Food Weband Energy Flow
3. Bio-Geo Chemical Cycle: Carbon, Nitrogen
4. Factors of Plant Growth: Light, Heat, Moisture, Wind, Soil and Topography
5. Biomes – Concept and Classification;Tropical Rainforest and Temperate Grassland
6. Threat to Biodiversity- Causes, Consequences and Conservation

Reference

Soil Geography

Biswas, T.D. and Mukherjee, S.K. 1987, *Text book of Soil Science.* Tata-McGraw-Hill.

Brady. N.C. and Weil. R.R. 1996, *The Nature and Properties of Soil.* 11th edition. Longman. London.

Floth. H.D. 1990, *Fundamentals of Soil Science,* 8th edition. John Wiley and Sons. New York.

Morgan. R.P.C. 1995, *Soil Erosion and Conservation,* 2nd edition. Longman. London.

Schwab. G.O. Fandmeir. D.D. and Eliot, W.J. 1996, *Soil and Water Management Systems, 4th edition, John Wiley and Sons Inc.* New York.

Young. A. 2000, *Land Resources: Now and for the Future,* Cambridge University Press. Cambridge. De

N K and P Ghosh, 2013, Geography of Soils, Shribhumi Publishing House, 101B, Sitaram Ghosh Street, Kolkata - 700009

Biogeography:

Chapman J.L. and Reiss. J.J. 1993, *Ecology: Principles and Applications,* Cambridge University Press, Cambridge.

Chiras D.D. Reganold J.P. and Owen, O.S. 2002, Natural Resource Conservation. *Management for a Sustainable Future.* 8th edition, Prentice Hall. Englewood Cliffs.

Dash. M.C. 2001, *Fundamentals of Ecology,* 2ndedtion, Tata McGraw-Hill, New Delhi.

Huggett. R. 1998, *Fundamentals of Biogeography, Routeledge. London.*

Kormondy. E.J. 1996, *Concepts of Ecology, 4th edition.* Prentice-Hall, India. New Delhi.

Myers. A.A. AND Giller. P.S. (editors) 1988, *Analytical Biogeography: An Integrated Approach to the study of Animal and Plant Distributions. Chapman and Hall. London.*

Odum E.P. 1997, *Ecology: A Bridge between Science and Society, Sinaur Associates Inc. Publishers, Sunderland..*

Sharma P.D. 1996, *Ecology and Environment,* 7th edition, Rastogi Publications, Mirat.

Weddell, B.J. 2002, *Conserving Living Natural Resources in the Context of a Changing World.* Cambridge University Press. Cambridge.

World Wide Fund for Nature-India (Eastern Region) 1995, *Nature Conservation Handbook. Calcutta.*

OR

DSE - 4 (Theoretical) : **AGRICULTURAL GEOGRAPHY** **Credit: 6**

Total Marks: 60+15 End Term Examination Time: 3 hours

Pattern of Setting Questions:

- 10 questions to be answered out of 15, each question carries 02 Marks, Total 20 Marks;
- 4 questions to be answered out of 6, each question carries 05 Marks, Each question shall have at least two parts. Total 20 Marks;
- 2 questions to be answered out of 4, each question carries 10 Marks, Each question shall have at least two parts. Total 20 Marks;
- Internal Assessment: 15 (Assessment 10 and Attendance 05 Marks) Marks

Unit-I

1. Origin and Diffusion of Agriculture
2. Concepts and Types of Agricultural Systems
3. Physical and Human Influences on the Distribution of Agricultural Systems
4. Classification and Characteristics of Agricultural Regions of the World
5. Characteristics and Distribution of Dairy Farming
6. Models of Agricultural Location by Sinclair
7. Crop Combination (Weaver)
8. Crop Diversification (Jasbir Singh)

Unit-II

1. Methods of Agricultural Regionalization
2. Agro-climatic Regions of India
3. Green Revolution in India: Problems and Prospects
4. Agricultural Credit and Marketing: NABARD

Reference:

Anderson, R.H.1936. Grain Drills through 39 Centuries. Agricultural History

Buchanan, R.O.1959. Some Reflections on Agricultural Geography

Candolle & Alphonse De. 1967. Origin of Cultivated Plants. Hafner. NewYork

Carrier & Lyman, H. 1968. Beginning of Agriculture in America Johnson. New York Husain, M.2007.Systematic Agricultutral Geography. Rawat. Jaipur

Sharma. T.C. and Coutinho. O. 1998, *Economic and Commercial Geography of India*. 3rd edition. Vikash Pub. House Pvt. Ltd. New Delhi.

Shiva. V. 1992, *The Violence of the Green Revolution: Agriculture, Ecology and Politics in the South*, 2001 reprint, Other India Press. Mapua.