CURRICULUM

B.A. Honours in Geography

(w.e.f. 2017-2018)

UNDER CHOICE BASED CREDIT SYSTEM

COOCH BEHAR PANCHNAN BARMA UNIVERSITY
COOCH BEHAR, WEST BENGAL

There will be six semesters in the three- year B.A./ B.Sc. Honours in Geography. The Curriculum consists of –

- 14 Core Courses **(C),**
- 2 Ability Enhancement Compulsory Courses **(AECC),**
- 2 Skill Enhancement Courses **(SEC)**
- 4 Discipline Specific Elective **(DSE)** Courses and
- 4 Generic Elective **(GE)** courses [to be taken from the pool of Generic Elective courses].

Each course is of 50 marks. L stands for *Lecture Hour*, T for *Tutorial Hour* and P for *Practical Hour*.

Cooch Behar Panchanan Barma University

Curriculum

B. A. Honours in Geography

(6 Semesters Pattern)

(With effect from 2017-2018 academic session and onwards)

B.A. Honours in GEOGRAPHY

There will be six semesters in the three- year B.A Honours in **Geography.** The Curriculum consists of 14 Core Courses (C), 2 Ability Enhancement Compulsory Courses (AECC), 2 Skill Enhancement Courses (SEC) and 4 Discipline Specific Elective (DSE) Courses and 4 Generic Elective (GE) courses [to be taken from the pool of Generic Elective courses]. Each course is of 50 marks. L stands for Lecture Hour, T for Tutorial Hour and P for Practical Hour.

B.A HONOURS IN GEOGRAPHY: 1ST SEMESTER

Course Title	**Course type**	**(L-T-P)**	**Credit**	**Marks for Written Examination**	**Attendance (4) + Continuous Evaluation(6)** =10 Marks	**Total Marks**
Geomorphology	C-1	5 - 1 - 0	6	40	Attendance (4) Tutorial(6)	50
Cartographic Techniques and Identification of samples of Rocks and Minerals (Practical)	C-2	0 - 0 - 12	6	40	Attendance (4) LNB evaluation(6)	50
Choose from Pool of Generic Electives (Choose any One) a) Geological aspects in Geomorphology b) Disaster Management	GE-1	5 -1 - 0	6	40		50
Environment Studies	AECC-1	4 - 0 - 0	4	40		50
	SEMESTER	TOTAL:	22			200

B.A HONOURS IN GEOGRAPHY: 2ND SEMESTER

Course Title	Course type	(L-T-P)	Credit	Marks for Written Examination	Attendance (4) + Continuous Evaluation(6) =10 Marks	Total Marks
Human Geography	C-3	5 – 1- 0	6	40	Attendance (4) Seminar(6)	50
Thematic cartography, Analysis of Geological Maps and Topographical Map Interpretation (Practical)	C-4	0-0- 12	6	40	Attendance (4) LNB evaluation(6)	50
Choose from Pool of Generic Electives (any one to be chosen) c) Rural Development d) Geography of Tourism	GE-2	5-1-0	6	40		50
English / MIL	AECC-2	2 - 0 - 0	2	40		50
	SEMESTER	TOTAL:	20			200

B.A. HONOURS IN GEOGRAPHY: 3RD SEMESTER

Course Title	Course type	(L-T-P)	Credit	Marks for Written Examination	Attendance (4) + Continuous Evaluation(6)=10 Marks	Total Marks
Climatology	C-5	5 – 1- 0	6	40	Attendance (4) Group Discussion(6)	50
Soil Geography and Biogeography	C-6	5 - 1 - 0	6	40	Attendance (4) Tutorial(6)	50
Statistical Methods in Geography & Meteorological Data Interpretation (Practical)	C-7	0-0-12	6	40	Attendance (4) LNB evaluation(6)	50
Choose from Pool of Generic Electives (any one to be chosen) e) Gender Studies f) Climate Change: Vulnerability and Adaptation	GE-3	5-1-0	6	40		50
Choose from Pool of Skill Enhancement Course Electives (any one to be chosen) i) Remote Sensing and GPS (Practical) ii) Environment Impact Assessment (Practical)	SEC-1	2-0-2	2	40	Attendance (4) LNB evaluation(6)/ Project Report (6)	50
	SEMESTER	TOTAL:	26			250

B.A HONOURS IN GEOGRAPHY: 4TH SEMESTER

Course Title	Course type	(L-T-P)	Credit	Marks for Written Examination	Attendance (4) + Continuous Evaluation(6) =10 Marks	Total Marks
Geographical Thought	C-8	5 - 1 - 0	6	40	Tutorial (4) Seminar(6)	50
Economic and Environmental Geography	C-9	5 - 1- 0	6	40	Attendance (4) Article Review(6)	50
Remote Sensing and Surveying (Practical)	C-10	0-0-12	6	40	Attendance (4) LNB evaluation(6)	50
Choose from Pool of Generic Electives (any one to be chosen) g) Industrial Geography h) Sustainable Development	GE-4	5-1-0	6	40		50
Choose from Pool of Skill Enhancement Course (any one to be chosen) iii) Research Methodology (Practical) iv) Geographic Information System (Practical)	SEC-2	2-0-2	2	40	Attendance (4) LNB evaluation(6) Research Report (6)	50
	SEMESTER	TOTAL:	26			250

B.A HONOURS IN GEOGRAPHY: 5TH SEMESTER

Course Title	Course type	(L-T-P)	Credit	Marks for Written Examination	Attendance (4) + Continuous Evaluation(6) =10 Marks	Total Marks
Regional planning and Transport Geography	C-11	5 - 1 - 0	6	40	Attendance (4) Seminar(6)	50
Computer Application in Geography, GIS and GPS (Practical)	C-12	0-0-12	6	40	Attendance (4) LNB evaluation(6)	50
Any two from Group B (Given below)	DSE-1	5 - 1 - 0	6	40	Attendance (4) Seminar(6)	50
DSE Group A	DSE-2	5 - 1 - 0	6	40	Attendance (4) Tutorial(6)	50
a) Urban Geography						
b) Geography of Health and Wellbeing						

c) Fluvial Geomorphology						
d) Cartography						
e) Population Geography						
	SEMESTER	TOTAL:	24			200

B.A HONOURS IN GEOGRAPHY: 6TH SEMESTER

Course Title	**Course type**	**(L-T-P)**	**Credit**	**Marks for Written Examination**	**Attendance (4) + Continuous Evaluation(6)** =10 Marks	**Total Marks**
Geography of India	C-13	5 - 1 - 0	6	40	Attendance (4) Group Discussion(6)	50
Research Methods and Field Work (Practical)	C-14	0-0-12	6	40	Attendance (4) Field Report Evaluation(6)	50
Any two from Group B (Given below)	DSE-3	5 - 1 - 0	6	40	Attendance (4) Seminar(6)	50
DSE Group B	DSE-4	5 - 1 - 0	6	40	Attendance (4) Tutorial(6)	50
f) Regional Planning						
g) Tribal Studies						
h) Agricultural Geography						
i) Social Geography						
j) Political Geography						
k) Hydrology and Oceanography						
	SEMESTER	TOTAL:	24			200
	GRAND	TOTAL:	**142**			1300

SYLLABUS

B.A HONOURS IN GEOGRAPHY: 1ST SEMESTER
C-1: GEOMORPHOLOGY

Time: 2 Hours **Full Marks: =50**

1. **Basic ideas of Geomorphology:** Nature and scope of Geomorphology (1), Fundamental concepts of Geomorphology.(2)

2. **The constitution of Earth's interior**: interior of the earth (2), theories of the Isostasy (2), Plate Tectonic (2), Sea floor spreading (1) and Continental Drift (2)

3. **Concept of Earth's Movement:** Types of Folds and Faults (4), Earth quake (2), Mountain Buildings Theories after Holmes and Kober (2)

4. **Geomorphic Processes:** i) Weathering, (2) Mass Wasting, (2) Cycle of Erosion (Davis, Penck, King and Hack). (4)
   ii). Development of drainage system on Horizontal, Uniclinal, Folded and Faulted structures (4)

4. **Evolution of Landforms:** Fluvial, Aeolian, Karst, Glacial and Coastal (10)

* Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)

Suggested Readings:

1. Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
3. Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed., Macmillan Publishing Company
4. Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
5. Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
6. Richards K. S., 1982: Rivers: Form and Processes in Alluvial Channels, Methuen, London.
7. Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
8. Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to physical Geology,
   4th Edition, John Wiley and Sons

9. Thornbury W. D., 1968: Principles of Geomorphology, Wiley.

C-2: CARTOGRAPHIC TECHNIQUES & IDENTIFICATION OF SAMPLES OF ROCKS AND MINERALS (PRACTICAL)

Time: 3 Hours **Full Marks: 50**

A. Scales: **(5 Marks)**

i. Concept, types and application (1);
ii. Graphical Construction of Plain, Diagonal and Vernier Scales (6).

B. Map Projections: **(12 Marks)**

i. Classification, Properties, Method of construction, Uses and Limitations (2)
ii. Graphical Construction of Polar Zenithal Stereographic, Simple Conical with one Standard Parallel, Polyconic, Bonne's, Cylindrical Equal- Area and Mercator's Projections.

C. Presentation of Data Using Different Cartographic Techniques: **(10Marks)**

i. Dots and Spheres (representing rural and urban population) (1).
ii. Proportional Pie Diagrams (showing variation in occupational structure or areal coverage under different crops) (1).
iii. Choropleth - Equal Interval Method (showing population density) (1).
iv. Pyramid Diagram (showing Age-sex structure of population) (1).

D. Identification of the samples of the following Rocks and Minerals (Megascopic Study): **(8 Marks)**

Granite, Basalt, Dolerite, Laterite, Sandstone, Limestone, Conglomerate, Shale, Slate, Phyllite, Schist, Quartzite, Gneiss, Marble, Quartz, Feldspar, Mica (Biotite & Muscovite), Talc, Graphite, Bauxite, Magnetite, Haematite, Chalcopyrite, Calcite, Galena (6).

E. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance **(5+6+4=15 Marks)**

Suggested Readings:

1. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
2. Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
3. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
4. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
5. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

GE-1: A. GEOLOGICAL ASPECTS IN GEOMORPHOLOGY

1. **Implications of geological knowledge in geomorphological investigation: concept** and scope; Evolution of lithosphere, hydrosphere, atmosphere, biosphere, and cryosphere.
2. **Geological succession of India**; Quaternary stratigraphy of India– continental records (fluvial, glacial, aeolian, palaeosols and duricrust).
3. **Geometry and mechanics** of development of folds, lineations; Faulted topography; Himalayan orogeny.
4. **Classification of sediments** and sedimentary rocks; Sedimentary facies and environments, reconstruction of paleo-environments.
5. **Tectonic geomorphology**, neotectonics, active tectonics and their applications to natural hazard assessment.

REFERENCES:

1. Bierman, P.R. and Montgomery, D.R.; Key Concepts in Geomorphology, Macmillan Learning, New York, USA, 2013
2. Boggs, S.; Principles of Sedimentology & Stratigraphy, Pearson Education,London, UK, Fifth edition, 2016
3. Burbank, D.W. and Anderson, R.S.; Tectonic Geomorphology, Blackwell Science Ltd, Oxford, UK, First Edition, 2001
4. King, C.A.M.; Techniques in Geomorphology, Edward Arnold, London, 1966
5. Billings, M.P.; Structural Geology, Pearson Education, London, UK, Third edition, 2016
6. Penck, W.; Morphologicalanalysis oflandforms,St.Martin'sPress,NewYork, USA, 1953
7. Wadia, D. N.;Geology of India, MacMillan and Company, London and Madras, Student edition,1959

GE-1: B. DISASTER MANAGEMENT

1. **Disasters:** Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification.
2. **Disasters in India:** (a) Flood: Causes, Impact, Distribution and Mapping;
   (b) Landslide: Causes, Impact, Distribution and Mapping;
   (c) Drought: Causes, Impact, Distribution and Mapping
   (d) Earthquake and Tsunami: Causes, Impact, Distribution and Mapping;
   (e) Cyclone: Causes, Impact, Distribution and Mapping.
   (f) Manmade disasters: Causes, Impact, Distribution and Mapping
3. **Response and Mitigation to Disasters**: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters.

Suggested Readings:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India

B.A HONOURS IN GEOGRAPHY: 2ND SEMESTER

C-3: HUMAN GEOGRAPHY

Time: 2 Hours **Full Marks:50**

1. Human Geography: Definition and Major Elements in Human Geography (1).

2. Culture and Society:

i. Cultural Hearth, Cultural Realms, Cultural Regions (1).

ii. Race (Risley and B.S. Guha's scheme), Religion and Language of World and India (5).

iii. Social Processes, Social space, Social Groups, Social Distance, Intra-urban mobility, Social Well-being (6).

3. Population:

i. Population Growth, Distribution and Age-Sex Composition (3)

ii) Demographic Transition Theory (6)

iii. Population-Resource relationship (1)

4. Settlements:

i. Factors affecting the location of Rural Settlements (1)

ii. Types of Rural Settlements (1)

iii. Hierarchy of Settlement as explained by Christaller's Central Place Theory (2)

iv. Functional Classification of Urban Settlements (1)

v. Trends and Patterns of World Urbanization with special reference to India (3)

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
6. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
7. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
8. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur

C-4: THEMATIC MAPPING, TOPOGRAPHICAL MAP INTERPRETATION & ANALYSIS OF GEOLOGICAL MAPS
(PRACTICAL)

Time: 3 Hours **Full Marks: 50**

A. **Techniques of Thematic Mapping Using:** **(10 Marks)**

i. Point Symbol: a comparative study of employment structure of the metropolitan cities of India/ West Bengal represented by Nelson's Dominant and Distinctive Functions (1).
ii. Line Symbol: Road accessibility represented by Physical Accessibility and Shortest Path Matrix (Shimbel Index)(2)
iii. Area Symbol: Zones of concentration represented by Location Quotient and Z-Score (single criterion and two or three criteria) (3).

B. Analysis and interpretation of S.O.I. Maps of Plateau area under the following heads: (15 Marks)

i. Broad Physiographic Divisions based on break-of- slopes along with Representative Profile(1)
ii. Serial Profiles; Superimposed, Projected and Composite Profiles (1)
iii. Longitudinal and Cross Profiles of river (2)
iv. Identification of Drainage Patterns and Drainage Characteristics (typical sketches)(1)
v. Morphometric Techniques: Relative Relief (after Smith), Average Slope (after Wentworth), Drainage Density (Horton), Dissection Index (Dov Nir), Ruggedness Index, Homestead Frequency, Road Density (10)
vi. Identification of Settlement Patterns (typical sketches)(1)
vii. Transect Chart showing the relationship between the Physical and Cultural features (1).

Note: An area of (10cms.X10 cms.) to be selected from the topographical sheet for doing the Morphometric analysis.

C. Drawing of Geological sections and Interpretation of Geological Map: (10 Marks)

i. Geological section drawing and interpretation of Horizontal, Uniclinal, Folded, Faulted with the presence of igneous intrusions and Unconformities. (9)

D. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance (5+6+4=15 Marks)

Suggested Readings

1. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
2. Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
3. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
4. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier,

International Cartographic Association.
5. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

GE-2: C RURAL DEVELOPMENT

1. **Defining Development:** Inter-Dependence of Urban and Rural Sectors of the Economy; Need for Rural Development, Gandhian Approach of Rural Development.
2. **Rural Economic Base:** Panchayatiraj System, Agriculture and Allied Sectors, Seasonality and Need for Expanding Non-Farm Activities, Co-operatives, PURA.
3. **Area Based Approach to Rural Development:** Drought Prone Area Programmes, PMGSY.
4. **Target Group Approach to Rural Development:** SJSY, MNREGA, Jan Dhan Yojana and Rural Connectivity.
5. **Provision of Services:** Physical and Socio-Economic Access to Elementary Education and Primary Health Care and Micro credit.

Suggested Readings:

1. Gilg A. W., 1985: *An Introduction to Rural Geography*, Edwin Arnold, London.
2. Krishnamurthy, J. 2000: *Rural Development - Problems and Prospects,* Rawat Publs., Jaipur
3. Lee D. A. and Chaudhri D. P. (eds.), 1983: *Rural Development and State,* Methuen, London.
4. Misra R. P. and Sundaram, K. V. (eds.), 1979: *Rural Area Development: Perspectives and Approaches,* Sterling, New Delhi.
5. Misra, R. P. (ed.), 1985: *Rural Development: Capitalist and Socialist Paths,* Vol. 1, Concept, New Delhi.
6. Palione M., 1984: *Rural Geography*, Harper and Row, London.
7. Ramachandran H. and Guimaraes J.P.C., 1991: *Integrated Rural Development in Asia – Leaning from Recent Experience,* Concept Publishing, New Delhi.
8. Robb P. (ed.), 1983: *Rural South Asia: Linkages, Change and Development*, Curzon Press.
9. UNAPDI 1986:*Local Level Planning and Rural Development: Alternative Strategies*. (United Nations Asian & Pacific Development Institute, Bangkok), Concept Publs. Co., New Delhi.
10. Wanmali S., 1992: *Rural Infrastructure Settlement Systems and Development of the Regional Economy in South India*, International Food Policy Research Institute, Washington, D.C.
11. Yugandhar, B. N. and Mukherjee, Neela (eds.) 1991: *Studies in Village India: Issues in Rural Development,* Concept Publs. Co., New Delhi.

GE-2: D GEOGRAPHY OF TOURISM

1. **Tourism Geography:** Definition, Nature and Scope; Importance of Tourism; Tourism as an interdisciplinary subject
2. **Factors affecting Tourism Development:** Physical factors and Socio-cultural factors; Identification of Tourism Potential, SWOT Analysis
3. **Classification of Tourism:** On the basis of Nationality, Function, Organisation, Intensity, Age Group, Funding Sources; Recent Trends of Tourism
4. **Tourism and Linkage:** Role of Public and Private Sector; Accommodation, Food Facility, Transportation, Intermediaries, Key Elements of Tour, Travel related Services
5. **Tourism Impact Analysis:** Environmental and Socio-economic Impact

Suggested Readings:

1. Aerni, M.J. (1972). The Social Effect of Tourism. Current Anthropology. Vol. 13
2. Anand, M.M. (1976). Tourism and Hotel Industry in India. New Delhi. Prentice-Hall
3. Bhatia, A.K. (1997). Tourism Development:Principles and Practices. New Delhi. Sterling
4. Burton, R. (1995). Travel Geography. London. Pitman
5. Bulter, R.W. (1974). The Social Implication of Tourism Development. Tourism Research. Vol. 2. Issue 2
6. Cooper, C. (1993). Tourism Principles and Practices. London. Pitman
7. Davis, H.D. (1968). Potentials for Tourism of Developing Countries. London. Finance and Development
8. Edward. J. M. (1981). The Psychology of Leisure Travel. Boston. CBI Publishing Company
9. Geetanjali (2010). Tourism Geography.New Delhi. Centrum Press
10. Ghosh, B (2008). Tourism and Travel Management.New Delhi.Vikas Publishing House
11. Gunn, C. (1998) Tourism Planning. New York. Taylor and Francis
12. Kotler, P. (1999). Principles of Marketing. New York. Prentice-Hall
13. Mill, R.C. (1985). The Tourism System. London. Prentice-Hall
14. Pearce, D. (1987). Tourism Today. Harlow. Longman
15. Ratti, M (2007). History and Geography of Tourism. New Delhi.Rajat Publications
16. Robinson, H. (1976). A Geography of Tourism. London. MacDonald and Evans
17. Saxena, H.M.(2010). Transport Geography.Jaipur.Rawat Publication
18. Smith, S.L.J. (1983). Recreation Geography. Harlow. Longman
19. White, J. (1967). History of Tourism. London. Leisure Art

B.A HONOURS IN GEOGRAPHY: 3RD SEMESTER

C-5: CLIMATOLOGY

Time: 2 Hours **Full Marks: 50**

1. Composition and structure of the atmosphere (1)
2. Heat budget of the earth; Latitudinal and seasonal variation of Insolation; Distribution of temperature; Inversion of Temperature, Green house gases and global warming (8)
3. Atmospheric pressure and general circulation of winds (3)
4. Monsoons, Jet streams; El-Nino, La-Nina, ENSO; Air masses and Fronts (10)
5. Temperate and Tropical cyclones (2)
6. Humidity, Condensation and Precipitation (6)
7. Koppen's and Thornthwaite's scheme of classification; Climate change (5).

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

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

C-6: SOIL GEOGRAPHY AND BIOGEOGRAPHY

Time: 2 Hours **Full Marks: 50**

A. SOIL GEOGRAPHY (16):

i. Factors affecting soil formation (active and passive) (1)
ii. Processes of soil formation (general and special processes) (1)
iii. Development of an idealized soil profile, development of soil profiles under different climatic conditions: Laterite, Chernozem and Podzol (4)
iv. Physical properties of soil (texture, structure, colour and moisture) (3)
v. Soil organic matter (1)
vi. Chemical properties of soil (Soil P^H, Base Exchange etc.) (1)
vii. Soil-plant-water relationship (1)
viii. Soil erosion: Types, factors and management and soil conservation (2)
ix. Soil Classification: Genetic school and USDA (Taxonomic classes) (2)

B. BIO-GEOGRAPHY (19):

i. **Some Concepts:** Biosphere, Ecology, Population, Habitat, Species Structure, Ecological Niche, Noosphere, Succession, Climax (3)

ii. **Ecosystem:** Components, Trophic structure, Productivity and Energy flow in Ecosystem; Types of Food Chain, Food Web; Ecological Pyramids (4)

iii. **Bio-geo-chemical cycles:** Nitrogen, Oxygen and Carbon (3)

iv. **Concept** of Biome, Ecotone and Community; **Study of different Biotic Regions of the world**: Equatorial Evergreen Rain Forests, Tropical Savannah, Steppes, Taiga and Tundra (6)

v. **Concept of Biodiversity and its importance** (1)

vi. **Deforestation and its impact on environment** (1)

vii. **Wetlands:** Characteristics, Conservation and Management (1)

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Anderson: Ecology for Environmental Science.
2. Biswas, T.D. and Mukherjee, S. K. 1987: Text book of Soil Science, Tata McGraw Hill, new Delhi.
3. Buckman, H.R. and Brady, N.C. 1974: Nature and Properties of Soil, McMillan, New York.
4. Bunting, A. 1965: Geography of Soil, Hutchinson, London.
5. Chapman, J.L. and Reiss, M.J. 1992: Ecology Principles and Applications, Cambridge University Press, Cambridge.
6. Daji, J.A., Kadam, J.R. and Patil, N.D. 1996: A Textbook of Soil Science, Media Promoters and Publishers Pvt Ltd, Mumbai.
7. Das, P and Basu, S. 2003: Mrittikar Katha O Damodar Upattakar Mrittika Khayer Ruparekha, (Bengali), Sandip, Kolkata.
8. De, N. K. and Sarkar, M. K. 1994: Mrittika Bhu-vidya, (Bengali) Paschim Banga Rajya Pustak Parshad, Kolkata.
9. Nebel, J.B. 1981: Environmental Science, Prentice Hall, New York.
10. Odum, F.P. 1971: Fundamentals of Ecology, W.B. Sanders, Philadelphia.
11. Shukla, R.S. and Chandel, P.S. 1930: Plant Ecology and Soil Science, S Chand, New Delhi.

C- 7: STATISTICAL METHODS IN GEOGRAPHY & METEOROLOGICAL DATA INTERPRETATION (PRACTICAL)

Time: 3 Hours **Full Marks: 50**

A. STATISTICAL METHODS IN GEOGRAPHY : **(25 marks)**

1. Descriptive Statistics:

i. **Sources of Data:** Primary and Secondary (1)
ii. **Variables:** Discrete and Continuous; Parametric and Non-parametric (1)
iii. **Scales of Measurement:** Nominal, Ordinal, Cardinal, Ratio, Interval (1)
iv. Different types of **Sampling** (2)
v. **Tabulation, Classification and Presentation of Data** (1)

2. Applied Statistics:

i. **Frequency Distribution:** Histogram, Frequency Polygon, Frequency Curve, Ogives, **Normal distribution and Skewed distribution** (Pearson's 1st and 2nd Measures; Bowley's Measure) (4)
ii. **Measures of Central Tendencies:** Mean, Median, Mode (3)
iii. **Partition Values:** Quartiles, Deciles and Percentiles (1)
iv. **Measures of Dispersion:** Range, Mean Deviation, Quartile Deviation, Standard Deviation, Co-efficient of variation and Variance (3)
v. **Simple Bi-variate Analysis**: Fitting of Regression Trend Line by least square method; Residual Mapping (4)
vi. **Rank Co-relation** (Spearman's Method) and **Product Moment Co-relation** (Pearson's Method) (2)
vii. **Time Series Analysis:** Linear Trend, Semi Average and Moving Average Methods (2)
viii. **Measures of Inequalities:** Lorenz Curve and Gini's Co-efficient (1)

B. METEOROLOGICAL DATA INTERPRETATION: **(10 Marks)**

1. Representation of climatic data: i. **Climograph (After Taylor) (1)**
ii. Hythergraph (After Taylor) (1)
iii. Ombrothermic Chart (1)

2. Interpretation of Indian Daily Weather Report: Pre-monsoon, Monsoon and Post-monsoon (6)

C. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance **(5+6+4=15 Marks)**

Suggested Readings

1. Berry B. J. L. and Marble D. F. (eds.): *Spatial Analysis – A Reader in Geography*.
2. Ebdon D., 1977: *Statistics in Geography: A Practical Approach*.
3. Hammond P. and Mc Cullagh P. S., 1978: *Quantitative Techniques in Geography: An Introduction*,

Oxford University Press.
4. King L. S., 1969: *Statistical Analysis in Geography*, Prentice-Hall.
5. Mahmood A., 1977: *Statistical Methods in Geographical Studies*, Concept.
6. Pal S. K., 1998: *Statistics for Geoscientists*, Tata McGraw Hill, New Delhi.
7. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
8. Silk J., 1979: *Statistical Concepts in Geography*, Allen and Unwin, London.
9. Spiegel M. R.: Statistics, *Schaum's Outline Series.*
10. Yeates M., 1974: *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.

GE-3: E GENDER STUDIES

1. **Introduction to Gender Studies :** Gender Perspectives of Body, Social Construction of Femininity, Social Construction of Masculinity, Women's Studies and Gender Studies.

2. **Gender and Society:** Gender, Family and Economy, Gender Lens: Political and Legal Systems, Gender and Education, Social Dynamics of Gender

3. **Feminist Movement:** Historical Overview of Feminist Movements, Feminist Movement in Europe and US, Women's Movement in pre-independent India, Women's participation in the movements in post-independent India, Grass root Movements.

4. **Gender and Development:** Approaches and Strategies: Approaches to women development, Approaches to women development, Approaches to women development, Women development: Role of non-state actors.

Suggested Readings:

1. Khullar, Mala (2005). *Writing the Women's Movement: A Reader* ed. New Delhi: Zubaan.
2. Jain, Devaki and Pam Rajput (1942). *Narratives from the Women's Studies Family: Recreating knowledge.* New Delhi: Sage.
3. *Programme of Women's Studies.*(1977) New Delhi: ICSSR, 1977.
4. Desai, Neera and Maithrey Krishnaraj.(1987) *Women and Society in India*. Delhi: Ajantha.
5. Nagla, Bhupendra Kumar. (1991).*Women, Crime and Law.* Rawat: New Delhi.
6. Nanda, B.R.(1976) *Indian Women: From Purdah to Modernity*. Delhi: Vikas
7. *Women's Studies* in India: A *Reader*.(2008) Ed. *Mary John.* Penguin: New Delhi.
8. Sahai, Shailly.(1991). *Social Legislation and Status of Hindu Women*. Jaipur: Rawat, 1986. Singh, Alka. *Women in Muslim Personal Law*. Rawat. Jaipur.

GE-3: F CLIMATE CHANGE: VULNERABILITY AND ADAPTATION

1. **Global climatic change:** Concept, causes and consequences; Role and response of man in climatic changes, Global warming and sea level change; environmental impacts.
2. **Extreme weather:** cyclone, drought, flood, delay in monsoon.

Suggested Readings:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India

SEC- 1: REMOTE SENSING AND GPS (PRACTICAL)

Time: 3 Hours **Full Marks: 50**

1. **Remote sensing:** definition, scope and types; Electro-magnetic radiation: characteristics, interaction with matter; Remote sensing regions and bands; Spectral signature.

2. **Aerial photograph:** types, scale, resolution and geometry.

3. **Satellite imagery:** Orbital characteristics of remote sensing satellites; Satellites: Landsat, SPOT and IRS, Characteristics of sensors: MSS, LISS and OLI. Application of remote sensing data in different areas Global Positioning System (GPS): principles and applications.

4. **C. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance (5+6+4=15 Marks)**

Suggested Readings

1. Bhatta , B. (2008) Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press
3. Jensen, J. R. (2005) Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
4. Joseph, G. 2005: Fundamentals of Remote Sensing United Press India.
5. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
7. Li, Z., Chen, J. and Batsavias, E. (2008) Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London
8. Mukherjee, S. (2004) Textbook of Environmental Remote Sensing, Macmillan, Delhi.
9. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
10. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Publication.

SEC-2: ENVIRONMENT IMPACT ASSESSMENT (PRACTICAL)

Time: 3 Hours **Full Marks: 50**

1. The Project Report based on any one field based case studies among following -

- Flood
- Drought
- Cyclone
- Earthquake
- Landslides
- Human Induced Disasters: Fire Hazards, Chemical, Industrial accidents

2. Viva-voce (10), Project Report (Internal (6) and external evaluation(30) and Attendance (4)

Suggested Readings

1. Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
2. Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of EnvironmentalScience: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
3. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
4. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
5. Miller G. T., 2004: *Environmental Science: Working with the Earth,* Thomson BrooksCole, Singapore.
6. MoEF, 2006: *National Environmental Policy-2006,* Ministry of Environment andForests, Government of India.
7. 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
8. Odum, E. P. et al, 2005: *Fundamentals of Ecology,* Ceneage Learning India.

9. Singh S., 1997: *Environmental Geography,* Prayag Pustak Bhawan. Allahabad.
10. UNEP, 2007: *Global Environment Outlook: GEO4: Environment For Development,* United Nations Environment Programme.
11. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
12. Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New Delhi, Oxford & IBH Pub.

B.A HONOURS IN GEOGRAPHY: 4TH SEMESTER

C-8: GEOGRAPHICAL THOUGHT

Time: 2 Hours **Full Marks: =50**

1. **Pre-Modern:** Early Origins of Geographical Thinking with reference to the Classical and Medieval Philosophies (6)
2. **Modern:** Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America (7)
3. **Debates:** Environmental Determinism and Possibilism, Systematic and Regional, Ideographic and Nomeothetic; Paradigms in Geography (8)
4. **Trends:** Quantitative Revolution and its Impact, Behaviouralism, Systems Approach, Radicalism, Feminism; Towards Post Modernism – Changing Concept of Space in Geography, Future of Geography (12)
5. Man- environment relationship(2)

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Arentsen M., Stam R. and Thuijis R., 2000: *Post-modern Approaches to Space,* eBook.
2. Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
3. Bonnett A., 2008: *What is Geography?* Sage.
4. Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
5. Hartshone R., 1959: *Perspectives of Nature of Geography*, Rand MacNally and Co.
6. Holt-Jensen A., 2011: *Geography: History and Its Concepts: A Students Guide,* SAGE.
7. Johnston R. J., (Ed.): *Dictionary of Human Geography,* Routledge.
8. Johnston R. J., 1997: *Geography and Geographers, Anglo-American Human Geography since 1945*, Arnold, London.
9. Kapur A., 2001: *Indian Geography Voice of Concern*, Concept Publications.
10. Martin Geoffrey J., 2005: *All Possible Worlds: A History of Geographical Ideas*, Oxford.
11. Soja, Edward 1989. *Post-modern Geographies,* Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

C-9: ECONOMIC AND ENVIRONMENTAL GEOGRAPHY:

Time: 2 Hours **Full Marks: =50**

A. ECONOMIC GEOGRAPHY:

i. **Introduction:** Concept of economic activities and different sectors of economy (2)
ii. **Factors Affecting location of Economic Activity** with special reference to Agriculture (Von Thunen's theory), Industrial location (Weber's theory), Profit maximization (A. Losch) (4)
iii. **Primary Activities:** Subsistence and Commercial agriculture, forestry, fishing and mining (5)
iv. **Secondary Activities:** Manufacturing (Cotton Textile, Iron and Steel), Concept of Manufacturing Regions, Special Economic Zones and Technology Parks (5)
v. **Tertiary Activities:** Transport, Trade and Services (3)

B. ENVIRONMENTAL GEOGRAPHY:

i. **Concept and components of Environment:** Physical Environment(geology, soil, relief, hydrology, flora and fauna) and Socio-cultural Environment (food and nutrition, shelter, health, education, social stability and leisure) (2)
ii. **Environmental Geography:** Definition and its relevance (1)
iii. **Man-Environment Relationship:** Adaptation of humans in different Biomes; Environmental Problems in Tropical, Temperate and Polar Ecosystems (5)
iv. **Environmental Programmes and Policies:** Global, National and Local levels (3)

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

1. Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
3. Hodder B. W. and Lee Roger, 1974: *Economic Geography*, Taylor and Francis.
4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
5. Wheeler J. O., 1998: *Economic Geography*, Wiley
6. Durand L., 1961: *Economic Geography*, Crowell.
7. Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
8. Willington D. E., 2008: *Economic Geography*, Husband Press.
9. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The *Oxford*
10. Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
11. Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of Environmental Science: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
12. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
13. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur

14. Miller G. T., 2004: *Environmental Science: Working with the Earth,* Thomson Brooks Cole, Singapore.
15. MoEF, 2006: *National Environmental Policy-2006,* Ministry of Environment and Forests, Government of India.
16. 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
17. Odum, E. P. et al, 2005: *Fundamentals of Ecology,* Ceneage Learning India.
18. Singh S., 1997: *Environmental Geography,* Prayag Pustak Bhawan. Allahabad.
19. UNEP, 2007: *Global Environment Outlook: GEO4: Environment For Development,* United Nations Environment Programme.
20. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
21. Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New Delhi, Oxford & IBH Pub.

C-10: REMOTE SENSING AND SURVEYING (PRACTICAL)

Time: 3 Hours **Full Marks: 50**

A. REMOTE SENSING: **(20 Marks)**

i. Definition, scope, development and types; Electro-magnetic radiation: characteristics, interaction with matter; Remote sensing regions and bands; Spectral signature. (4)
ii. **Aerial photograph:** types, scale, resolution and geometry. (4)
iii. **Satellite imagery:** Orbital characteristics of remote sensing satellites; Satellites: Landsat, SPOT and IRS, Characteristics of sensors: MSS, LISS and OLI. (8)
iv. **Application of Remote Sensing**: Land Use Land Cover by QGIS Software (8)

B. SURVEYING (9): **(15 marks)**

i. Concept of Surveying (1)
ii. Prismatic Compass Survey (open and closed traverse; measurement of included angles) (4)
iii. Preparation of a contour plan along three radiating lines by Dumpy level with at least one change point adopting either Collimation or Rise-Fall method (4)

C. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance **(5+6+4=15 Marks)**

Suggested Readings:

1. Ahuja, Ram 2001. *Research Methods*. Rawat Publications, Jaipur and New Delhi.
2. Bolton, T. and Newbury, P.A. 1968. *Geography through Fieldwork*. Blandford Press, London.
3. Denzin, N. K. and Lincoln, Y.S. (eds.) 2000. *Handbook of Qualitative Research*. Sage Publ., Thousand Oaks CA.
4. Flowerdew, R. and Martin, D. (eds.) 1997. *Methods in Human Geography. A Guide for Students Doing a Research Project*. Longman, Harlow.

5. Hay, Iain (ed.) 2004. *Communicating in Geography and the Environmental Sciences*. Oxford University Press, Melbourne. 2nd Ed.
6. Hay, Iain (ed.) 2005. *Qualitative Research Methods in Human Geography*. Oxford University Press, Melbourne. 2nd Ed.
7. Kitchen, Rob and Fuller, Duncan 2005. *The Academic's Guide to Publishing*. Vistaar Publs. (Sage), New Delhi.
8. Kitchen, Rob and Tate, Nicholas J. 2009. *Conducting Research into Human Geography: Theory, Methodology & Practice*. Prentice Hall-Pearson, Harlow U.K. 2nd Ed.
9. Knight, Peter G. and Parsons, Tony 2003. *How to do your Essays Exams & Coursework in Geography and Related Disciplines*. Nelson Thornes, Cheltenham U.K.
10. Lee, Roger Smith, David M. (eds.) 2004. *Geographies and Moralities: International Perspectives on Development, Justice and Place*. Wiley-Blackwell, Oxford

GE-4: G. INDUSTRIAL GEOGRAPHY

1. **Nature and Scope** of Industrial Geography
2. **Types, Geographical Characteristics and Location of Industries (Weber's Theory):** Small and Medium Industries, Heavy Industries: Coal and Iron based industries, Rural based Industries, Footloose Industry.
3. **Mega Industrial Complexes:** National Capital Region, Mumbai-Pune Industrial Region, Bengaluru-Chennai Industrial Region and Chota Nagpur Industrial Region
4. **Impact of Industrialisation in India:** Environmental; Social and Economic
5. Industrial Policy of India

Suggested Readings

1. Alexander J.W. (1979). Economic Geography, Printice Hall of India Pvt. Ltd., New Delhi.
2. Goh Cheng Leong (1997). "Human and economic geography", Oxford University Press, New York.
3. Thoman, R.S., Conkling E.C. and Yeates, M.H. (1968). Geography of Economic Activity, McGraw Hill Book Company, 1968.
4. Miller, E. (1962) Geography of Manufacturing Printice Hall - Englewood Cliff, New Jersey
5. Gunnar Alexandersson (1967). "Geography of Manufacturing, Prentice Hall, New Jersey Truman, A. Harishorn, John W. Alexander (2000) " Economic Geography", Prentice Hall of India Ltd., New Delhi.
6. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan, Gorakhpur.
7. Tirtha, Ranjit 2002: *Geography of India,* Rawat Publs., Jaipur & New Delhi.
8. Pathak, C. R. 2003: *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
9. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
10. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

GE-4: H SUSTAINABLE DEVELOPMENT

1. **Sustainable Development:** Concept, Principles, Guidelines and Historical Background.
2. **Indicators and Approaches of Sustainable Development:** Per Capita Income, Energy, Demographic and others Indicators; Economic, Environmental and Social approach.
3. **The Millennium Development Goals and Earth Charter:** National Strategies and International Experience; post 2017 Development Agenda.
4. **Sustainable Regional Development:** Need and examples from different Ecosystems.

5. **Inclusive Development:** Education, Health; Climate Change: The role of higher education in sustainable development; The human right to health; Poverty and disease; The Challenges of Universal Health Coverage; Policies and Global Cooperation for Climate Change.
6. **Sustainable Development Policies and Programmes:** The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy, CDM.
7. **Role of NGOs** for Sustainable Development.

Suggested Readings

1. Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
2. Ayers, Jessica and David Dodman (2010) "Climate change adaptation and development I: the state of the debate". Progress in Development Studies 10 (2): 161-168.
3. Baker, Susan (2006) Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, "The concept of sustainable development").
4. Brosius, Peter (1997) "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", Human Ecology 25: 47-69.
5. Lohman, Larry (2003) "Re-imagining the population debate". Corner House Briefing 28.
6. Martínez-Alier, Joan et al (2010) "Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm" Ecological Economics 69: 1741-1747.
7. Merchant, Carolyn (Ed.) (1994) Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp 1-25.)
8. Osorio, Leonardo et al (2005) "Debates on sustainable development: towards a holistic view of reality". Environment, Development and Sustainability 7: 501-518.
9. Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.
10. Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.

SEC- 2: III RESEARCH METHODOLOGY

(Practical)

Time: 1 Hour **Full Marks: 50**

A. RESEARCH METHODOLOGY: (15 Marks)

1. **Geographic Enquiry:** Definition and Ethics; Framing Research Questions, Objectives and Hypothesis; Literature Review; Preparing Sample Questionnaire
2. **Data Collection:** Type and Sources of Data; Methods of Collection; Input and Editing
3. **Data Analysis:** Qualitative Data Analysis; Quantitative Data Analysis; Data Representation Techniques
4. **Structure of a Research Report:** Preliminaries; Text; References, Bibliography and Citations; Abstract

B. PREPARATION OF RESEARCH REPORT: (15 Marks)

C) Viva-voce (10), Research Report -Internal Evaluation (6) and External Evaluation(30) and Attendance(4)

Suggested Readings

1. Creswell J., 1994: *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
4. Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
5. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
6. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
7. 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.
8. Special Issue on "Doing Fieldwork" *The Geographical Review* 91:1-2 (2001).
9. Stoddard R. H., 1982: *Field Techniques and Research Methods in Geography*, Kendall/Hunt.
11. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

SEC- 2: IV GEOGRAPHIC INFORMATION SYSTEM

(Practical):

Time: 2 Hours **Full Marks: =50**

A) GEOGRAPHIC INFORMATION SYSTEM

1. **Definition and evolution of GIS:** Components of GIS; Geographical data: types and characteristics; Earth's shape, coordinate systems and datum.
2. **Digital representation of geographical data:** data structure, spatial data model, database management systems, raster and vector models.
3. **Digital Elevation Model (DEM):** Characteristics and applications; Remote sensing and GIS integration; Applications of GIS.

B. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance **(5+6+4=15 Marks)**

Suggested Readings

1. Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing,Springer, Berlin Heidelberg.41
2. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press
3. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Infromation system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
8. Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.

B.A HONOURS IN GEOGRAPHY: 5TH SEMESTER

C-11: REGIONAL PLANNING AND TRANSPORT GEOGRAPHY

Time: 2 Hours **Full Marks=50**

A. REGIONAL PLANNING:

i. **Region:** Definition; Types and Characteristics of Natural, Formal, Functional and Planning Regions; Hierarchy of Planning regions (Macro, Meso, Micro) (3)

ii. **Schemes of Regionalization in India:** Natural Region, Planning Region, Economic Region (3)
iii. **Regional Planning:** Definition; Basic Principles; Types of Planning (2)
iv. Regional Disparity in India

B. TRANSPORT GEOGRAPHY:

i. **Introduction of Transportation:** Nature and Scope; Historical Development of Transport Geography; Models of Transportation; Importance of Transportation (4)
ii. **Structure of Transport Network:** Connectivity of Networks; Accessibility and Associated Number; Shimbel and Detour Index; Centrality within the Networks; Spread and Diameter of Networks (5)
iii. **Traffic Flow Analysis:** Traffic of the Networks; Traffic Flow Characteristics; Parameters of Traffic Flow (3)
iv. **Transport Problems:** Problems of Urban and Rural Transport (1)

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

i. Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
ii. Claval P.l, 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
iii. Friedmann J. and Alonso W. (1975): *Regional Policy - Readings in Theory and Applications*, MIT Press, Massachusetts.
iv. Gore C. G., 1984: *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
v. 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.
vi. Haynes J., 2008: *Development Studies*, Polity Short Introduction Series.
vii. Johnson E. A. J., 1970: *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
viii. Peet R., 1999: *Theories of Development*, The Guilford Press, New York.
ix. UNDP 2001-04: *Human Development Report*, Oxford University Press.
x. World Bank 2001-05: *World Development Report*, Oxford University Press, New York
xi. Adams, J., (1981) 'Transport Planning, Vision and practice', Routledge & Kegan Paul Ltd., Londan, UK.
xii. Arora, N.L. (2003). A Text Book of Transportation Engineering. Delhi: New Indian Publishing House.
xiii. Black, W. R. (2004). Recent developments in US Transport Geography. In Hensher, D.A et. al (2004). *Hand book of transport geography and spatial system.*
xiv. Ramanathan R. (2004). Indian transport towards the new millennium. New Delhi: Concept publishing company.
xv. Ramanujam, K.N. (1993). *Rural transportation in India*. New Delhi: Mittal Publication.
xvi. Rodrigue, J.P. et.al. 2nd ed. (2006). *The Geography of Transport System.* USA (Oxon): Routledge.
xvii. Taaffe, E.J., Gautheir, H.L. (1973). *Geography of Transportation*, Prentice Hall
xviii. Saxena, H.M. (2010). *Transport Geography.* New Delhi: Rawat Publication

C-12: COMPUTER APPLICATION IN GEOGRAPHY, GIS AND GPS (PRACTICAL)

Time: 2 Hours **Full Marks: =50**

A. **COMPUTER APPLICATION IN GEOGRAPHY:** **(10 Marks)**

i. Creating Geography related documents in **MS – Word** (2)

ii. Demographic data, Weather and Climatic data and Socio-economic data processing and Thematic Diagrams using Basic Calculations and formulas by **MS – Excel** (6)

iii. Geography related document presentation using **MS – PowerPoint** (4)

iv. **E – resources in Geography** (1)

B. GEOGRAPHICAL INFORMATION SYSTEM: (25 Marks)

i) **Definition and evolution of GIS:** Components of GIS; Geographical data: types and characteristics; Earth's shape, coordinate systems and datum. (4)

ii) **Digital representation of geographical data:** data structure, spatial data model, database management systems, raster and vector models. (4)

iii) **Digital Elevation Model (DEM):** Characteristics and applications; Remote sensing and GIS integration; (2)

iv) **GIS Data Analysis**: Input; Geo-Referencing; Editing, Output and Query; Overlays by QGIS Software (8)

C. GLOBAL POSITIONING SYSTEM (GPS):

i. **Global Positioning System (GPS**): principles, uses and applications. (4)

D. Viva-voce, Laboratory Note Book (Averaged from internal and external evaluation) and Attendance **(5+6+4=15 Marks)**

Suggested Readings:

1. Ahn, J. K. (1984). *Automatic Name Placement System*. Publication No. IPL-TR-063, Im-age Processing Laboratory, Rensselaer Polytechnic Institute, Troy, NY.
2. Andrews, S. K., and D. W. Tilton, (1993). "How Multimedia and Hypermedia Are Changing the Look of Maps." *Proceedings, AUTOCARTO 11, Eleventh Inter-national Symposium on Computer Assisted Cartography*, Minneapolis.
3. Hall, S. S. (1992). *Mapping the Next Millennium: The Discovery of New Geographies*. New York: Random House.
4. Moellering, H. (1983). "Designing Interactive Cartographic Systems Using the Concepts of Real and Virtual Maps." *Proceedings, AUTOCARTO 6, Sixth International Symposium on Computer-Assisted Cartography*, Ottawa.

5. Moellering, H., ed. (1991). "Special Content: Analytical Cartography.*" Cartography and Geographic Information Systems.*
6. Morrison, J. L. (1980). "Computer Technology and Cartographic Change. " in *The Com-puter in Contemporary Cartography*, edited by D. R. F. Taylor. New York: Wiley.
7. Tobler, W. R. (1959). "Automation and Cartography." *Geographical Review.*
8. Tobler, W. R. (1976). "Analytical Cartography." *American Cartographer.*
9. Wolter, J. A. (1975). *The Emerging Discipline of Cartograph*y. Department of Geogra-phy, University of Minnesota, Ph.D. Dissertation, University Microfilms, Ann Arbor, MI.

DSE: Group A: 1. URBAN GEOGRAPHY

Time: 2 Hours **Full Marks: =50**

1. Urban geography: Introduction, nature and scope
2. Patterns of Urbanisation in developed and developing countries
3. Functional classification of cities and Urban Morphology
4. Urban Issues: problems of housing, slums, civic amenities

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

1. Fyfe N. R. and Kenny J. T., 2005: *The Urban Geography Reader*, Routledge.
2. Graham S. and Marvin S., 2001: *Splintering Urbanism: Networked Infrastructures,Technological Mobilities and the Urban Condition*, Routledge.
3. Hall T., 2006: *Urban Geography*, Taylor and Francis.
4. Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: *Urban Geography*, John Wiley.
5. Knox P. L. and McCarthy L., 2005: *Urbanization: An Introduction to Urban Geography*, Pearson Prentice Hall New York.
6. Knox P. L. and Pinch S., 2006: *Urban Social Geography: An Introduction*, Prentice-Hall.
7. Pacione M., 2009: *Urban Geography: A Global Perspective*, Taylor and Francis.
8. Sassen S., 2001: *The Global City: New York, London and Tokyo*, Princeton University Press.
9. Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
10. Ramachandran, R., 1992: *The Study of Urbanisation*, Oxford University Press, Delhi
11. Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
12. Singh, R.B. (Ed.) (2015) Urban development, challenges, risks andresilience in Asian megacities. Advances in Geographical and Environmental Studies, Springer

DSE: Group A: 2. GEOGRAPHY OF HEALTH AND WELL-BEING

Time: 2 Hours **Full Marks: =50**

1. Perspectives on Health: Definition; linkages with environment, development and health; driving forces in health and environmental trends - population dynamics, urbanization, poverty and inequality.
2. Pressure on Environmental Quality and Health: Human activities and environmental pressure land use and agricultural development; industralisation; transport and energy.
3. Exposure and Health Risks: Air pollution; household wastes; water; housing; workplace.
4. Health and Disease Pattern in Environmental Context with special reference to India, Types of Diseases and their regional pattern (Communicable and Lifestyle related diseases).
5. Climate Change and Human Health: Changes in climate system – heat and cold; Biological disease agents; food production and nutrition.

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

1. Akhtar Rais (Ed.), 1990 : Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Avon Joan L. and Jonathan A Patzed.2001 : Ecosystem Changes and Public Health,Baltimin, John Hopling Unit Press(ed).
3. Bradley,D.,1977: Water, Wastes and Health in Hot Climates, John Wiley Chichesten.
4. Christaler George and Hristopoles Dionissios, 1998: Spatio Temporal Environment Health Modelling , Boston Kluwer Academic Press.
5. Cliff, A.D. and Peter,H., 1988 : Atlas of Disease Distributions, Blackwell Publishers, Oxford.
6. Gatrell, A.,and Loytonen, 1998 : GIS and Health, Taylor and Francis Ltd, London.
7. Hardham T. and Tannav M.,(eds): Urban Health in Developing Countries; Progress, Projects, Earthgoan, London.
8. Murray C. and A. Lopez, 1996 : The Global Burden of Disease, Harvard University Press.
9. Moeller Dade wed., 1993: Environmental Health, Cambridge, Harward Univ. Press.
10. Phillips, D.and Verhasselt, Y., 1994: Health and Development, Routledge, London.
11. Tromp, S., 1980: Biometeorology: The Impact of Weather and Climate on Humans and their Environment, Heydon and Son.

DSE: Group A: 3. FLUVIAL GEOMORPHOLOGY

Time: 2 Hours **Full Marks: =50**

1. **Fundamentals of river hydraulics:** Fluid mechanics, channel forces, factors controlling flow velocity, velocity and its distribution, measurement of velocity and water discharge, types of stream flow.
2. **Fluvial processes:** erosional processes and landforms development-valley development, valley widening, river terraces. Depositional processes and landforms development-alluvial fan, flood plain and delta.
3. **Channel patterns:** origin, development and characteristics of Straight channel, braided channel, meandering channel and floodplain channels.
4. **River profiles:** longitudinal and transverse profile.
5. **Drainage Basin as a Fundamental Geomorphic Unit:** definition, function and characteristics of drainage basin and morphometric units.
6. **Problems related to river:** river bank erosion, sedimentation, flood problem with particular reference to the sub-Himalayan Rivers in North Bengal.

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Ahmed, E. 1985. *Geomorphology*. Kalyani Publishers, New Delhi.
2. Allison, Robert J. (ed.) 2002. *Applied Geomorphology: Theory and Practice*. John Wiley, Chichester UK.
3. Bloom, A. L. 1998/ 2001. *Geomorphology*. 3rd edition. Prentice Hall of India, New Delhi.
4. Chorley, R.J., Schumm, S. A. and Sugden, D. E. 1984. *Geomorphology*. Methuen and Company Ltd., London.
5. Fairbridge, R.W. (ed.) 1968. *Encyclopaedia of Geomorphology*. Reinhold Book Corporation., New York
6. Goudie, Andrew (ed.) 2004. *Encyclopedia of Geomorphology*. Volume 2. Routledge, London.
7. Gregory, K.J. and Walling, D.E. 1973. *Drainage Basin Form and Process*. Edward Arnold, London.
8. Jog, S. R. (ed.) 1995. *Indian Geomorphology* (2 vols.). Rawat Publications, Jaipur
9. Kale, V. and Gupta, A. 2001. *Introduction to Geomorphology*. Orient Longman, Hyderabad.
10. King, C.A.M. 1966. *Techniques in Geomorphology*. Edward Arnold, London.
11. Kondolf, G. Mathias and Piégay, Hervé (eds.) 2003. *Tools in Fluvial Geomorphology*. John Wiley, Chichester UK.
12. Marchetti, Mauro and Rivas, Victoria (eds.) 2001. *Geomorphology and Environmental Impact Assessment*. Swets & Zeitlinger, the Netherlands.
13. Pethick, J. 1984. *An Introduction to Coastal Geomorphology*. Arnold, London. Indian reprint 2000.
14. Sparks, B.W. 1986. *Geomorphology*. Longmans, London.
15. Thornbury, W.D. 2005. *Principles of Geomorphology*. John Wiley, New York. Rev. Ed.
16. Wooldridge, S.W. and Morgan, R.S. 1959. *The Physical Basis of Geography: An Outline of Geomorphology*. Longman, London.

DSE: Group A: 4. CARTOGRAPHY

Time: 2 Hours **Full Marks: =50**

Cartography:

1. History, Nature and Scope of Cartography:

2. **Map Projections**: Basic terminologies, classification; scale factor,choice of map projection; Principle, Properties, limitation, mathematical Construction and drawing of graticule on the following Projections: **1. Zenithal Non-Perspective**: **1.a)**Polar Zenithal Equal Area **1.b.** Polar Zenithal Equidistant **2: Cylindrical**: **2.a)** Cylindrical Equal Area projections with Two standard Parallels **2.b)** Mercator's projection; **3) Conical:3.a)** Simple conical projection with two standard Paralles **4.b)** Conical Equal Area Projection with one standard Parallel **4.c)** Polyconic Projection

3. **Principles and Method of the following Surveying: (No need of Field work)**

a. Method of Triangulation for Determination of height and distance by Transit Theodolite

b. Computational problems of Prismatic Compass (Parallel Meridian and Interior angle method)

c. Computational problems of Dumpy Level (Rise Fall and Collimation Method)

4. **horopleth Map:** Basic Concept, Classification and Use of Choropleth Map. Calculation and determination of accuracy level of Equal Step and Nested Mean Method of Choropleth Map.

5. Basic Concept of Remote Sensing:

a. Principle, types of Remote Sensing, Principle of EMS, Platform, Sensor, Resolution, Types of Satellite;

b. Principle and Use of Photogrammetry;Definition of Fiducial Mark, Principal Point, Conjugate Principal Point, Crab, Overlap, Swath, Tilt, Parallax; Classification of Aerial photograph; Elements of Air photo interpretation; Determination of Scale (Normal Photograph) and determination of No of photographs to cover an area.

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Kanetkar, T.P. and Kulkarni, S.V. 1972: Surveying and Levelling, Pune Vidyarthi Griha Prakashan, Pune.
2. Misra, R.P. and Ramesh, A. 1986: Fundamentals of Cartography, McMillan, New Delhi
3. Monkhouse, F.J. and Wilkinson, H.R. 1980: Maps and Diagrams, B.I. Publications Private Limited, New Delhi.
4. Singh, R.L. and Singh, R.P.B. 1992: Elements of practical Geography, Kalyani Publisher, New Delhi.
5. John and keats: Cartographic design and production, II edition 1989, John wiley, New York.
6. Monkhouse F.JK and Maps and Diagrams Wilkinson H.R. Mathuen and Co, Ltd., London, 1952.
7. Raisz E General Cartography, 1948. Tata-MC-Graw Hill, New York.
8. Robinson. H. Elements of Cartography, John Wiley, London. 1963.
9. Singh.R.L. Elements of Practical Geography Kalyani Publishers, New Delhi, 1979.
10.Roy,P. An Anlytical study of Map Projections, Pan Publishing Com.Kolkata,1988
Bsak, N,N. Surveying and Levellinig, Tata McGraw Hill,New Delhi, 1994

DSE: Group A: 5. POPULATION GEOGRAPHY

Time: 2 Hours **Full Marks: =50**

1. **Nature and Scope:** Scope and Content of Population Geography; Sources of Data with special reference to India.
2. **Population Dynamics:** Spatial and temporal changes in the size, composition and distribution of population- global perspective with special focus on India; Population Structure: Age-Sex Specific; Population Composition: Economic and Ethnic.
3. **Demographic Attributes:** Fertility, Mortality and Migration: measures and determinants; Concepts of ageing: Inter-relationship between population ageing, fertility, mortality and migration: Stationary and Stable population; Problems of under, over, declining and zero population.
4. **Theories:** Theories of Population Growth: Malthus, Marx, Optimum and Demographic transition; Migration theories: Ravenstien and Everetts Lee.
5. **Population and Development:** Population resource regions of the world; Changing concept of Development: Physical Quality of Life Index (PQLI); Human Development Index (HDI); Gender Development Index (GDI); Concepts and Measures of Poverty: Human Poverty Index (HPI).
6. **Population Policies:** Population policies in developed and developing countries (case study of India). National Health and Family Planning Programmes: RCH, National Population Policy 2000, National Health Policy 2002, and National Rural Health Mission 2005.

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Barrett H. R., 1995: *Population Geography*, Oliver and Boyd.
2. Bhende A. and Kanitkar T., 2000: *Principles of Population Studies*, Himalaya Publishing House.
3. Chandna R. C. and Sidhu M. S., 1980: *An Introduction to Population Geography*, Kalyani Publishers.
4. Clarke J. I., 1965: *Population Geography*, Pergamon Press, Oxford.
5. Jones, H. R., 2000: *Population Geography*, 3rd ed. Paul Chapman, London.
6. Lutz W., Warren C. S. and Scherbov S., 2004: *The End of the World Population Growth in the 21st Century*, Earthscan
7. Newbold K. B., 2009: *Population Geography: Tools and Issues*, Rowman and Littlefield Publishers.
8. Pacione M., 1986: *Population Geography: Progress and Prospect*, Taylor and Francis.
9. Wilson M. G. A., 1968: *Population Geography*, Nelson.

B.A HONOURS IN GEOGRAPHY: 6TH SEMESTER

C-13: REGIONAL GEOGRAPHY OF INDIA

Time: 2 Hours **Full Marks: =50**

1. **Physical:** Structure, relief, soil, vegetation, climate (characteristics and classification) (15)
2. **Economic:** i. Agricultural Regionalization (2)
   ii. Industrial Regionalization (2)
3. **Social:** Social regions of India (regions of attraction & isolation) (2)
4. **Political:** Geo-political importance of India (2)
5. **Geographical account of some type regions of India:** The Ganga Plain (Upper, Middle and Lower), Marusthali and Chotonagpur Region (12)

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

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

C- 14: RESEARCH METHODS AND FIELD WORK (PRACTICAL)

Time: 1 Hour **Full Marks: 50**

A. RESEARCH METHODS: **(15 Marks)**

1. **Field Work:** Types and Methods, Role of field work in Geographical study.
2. **Geographic Enquiry:** Definition and Ethics; Framing Research Questions, Objectives and Hypothesis; Literature Review; Preparing Sample Questionnaire
3. **Data Collection:** Type and Sources of Data; Methods of Collection (Questionnaire and Schedule); Input and Editing
4. **Data Analysis:** Qualitative Data Analysis; Quantitative Data Analysis; Data Representation Techniques

5. **Structure of a Research Report:** Preliminaries; Text; References, Bibliography and Citations; Abstract

B. PREPARATION OF A FIELD REPORT: (15 Marks)

Guidelines for the preparation of the Field Report:

- The Field Work is to be conducted after the completion of the 5th semester examination.
- Participation in the field work is compulsory.
- It may be carried out in a rural or in an urban area or in a drainage basin within the country.
- The Report must contain a certificate from the supervisor(s) that it is a bonafide work prepared by the candidate concerned.
- The Field Report should be of A4 size and hard bound.
- The Report must not exceed 10 pages containing maps and diagrams and must be hand drawn.
- A single page may contain several diagrams/graphs/maps as required for proper presentation of the findings.
- Separate sheets for photographs can be used.
- Tables may be incorporated within the writing portions as per relevance and requirement.
- The Report should be computer written (i.e writing portion only); using MSWord, Times New Roman as the Font type with font size: 12 and doubly spaced singly printed within 5000-8000 words.
- Field Itinerary, Tabulation sheet, all calculations in tabular form and References should be presented in the appendices.

B) **Field Viva-Voce: (10Marks)**

C) **Continous Evaluation Internal (6) and Attendance (4) (10 Marks)**

Suggested Readings:

1. Creswell J., 1994: *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
4. Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
5. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
6. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
7. 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.
8. Special Issue on "Doing Fieldwork" *The Geographical Review* 91:1-2 (2001).
9. Stoddard R. H., 1982: *Field Techniques and Research Methods in Geography*, Kendall/Hunt.
12. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

DSE: Group B: 1. REGIONAL PLANNING

Time: 2 Hours **Full Marks: =50**

A. REGIONAL PLANNING:

1. **Region:** Definition; Types and Characteristics of Natural, Formal, Functional and Planning Regions; Hierarchy of Planning regions (Macro, Meso, Micro); Delineation of Regions.
2. **Schemes of Regionalization in India:** Natural Region, Planning Region, Economic Region.
3. **Regional Planning:** Definition; Basic Principles; Types of Planning.
4. **Urban and Urbanization:** Definition of Urban; Classification of Urban Settlements (based on: age and physical characteristics, technological characteristics, rise and fall, functional characteristics); Process of Urbanization in India.
5. **Hierarchy of Settlements:** Christaller's Theory, Philbrick's Model of Central Places; Urban Hierarchy in India.
6. **Metropolis and Metropolitan Concept:** Definition of Metropolis; Structural and Functional Characteristics of Metropolis; Metropolitan Area and Metropolitan Region; Urban Primacy; Rural-Urban Continuum; Some Concepts like: Megacity, Megalopolis, Conurbation, Ecumenopolis.
7. **Theories of Economic Growth:** Myrdal's Cumulative Causation, Perroux's Growth Pole Theory, Rostow's Stages of Economic Growth.
8. **Environment Vs. Regional Economic Development:** Example from India.
9. **Five Year Plans of India**.
10. **Regional Disparity in India**.
11. **Rural Development Programmes**.
12. **Urban Development Programmes**.

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*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
2. Claval P.l, 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
3. Friedmann J. and Alonso W. (1975): *Regional Policy - Readings in Theory and Applications*, MIT Press, Massachusetts.
4. Gore C. G., 1984: *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
5. 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.
6. Haynes J., 2008: *Development Studies*, Polity Short Introduction Series.
7. Johnson E. A. J., 1970: *The Organization of Space in Developing Countries*, MIT

Press, Massachusetts.
8. Peet R., 1999: *Theories of Development*, the Guilford Press, New York.
9. UNDP 2001-04: *Human Development Report*, Oxford University Press.
10. World Bank 2001-05: *World Development Report*, Oxford University Press, New York

DSE: Group B: 2. TRIBAL STUDIES

Time: 2 Hours **Full Marks: =50**

1. **Tribe :** Definition; General Characteristics; Special characteristics; nomenclature; geographical distribution; linguistic classification; racial classification; economic classification; cultural classification; religious classification; Antiquity of Indian Tribes; Tribes in translation and transcription; tribes in ancient; medieval and Modern present time.

2. **Tribes and Constitution:** 5th Schedule and 6th schedule of Constitution; Administration of Scheduled area- special power of Governor; Report to President; Tribal Advisory Council;(TAC) Administration of Tribal Areas.

3. **Problems of Tribes:** Nature of problems; tribes in transitions; education; economical; Health; communication; administrative infrastructures etc.

4. **Indian Tribes:** Santal, Garo, Naga, Bhil, Andamanese, Khasi, Gond

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Sharma, B.D : Planning for tribal Development, Prachi Prakashan, New Delhi. 1984(relevant chapters only).
2. Sharma T.C. & D.N. Mazumdar (eds.): Eastern Himalayas, Cosmo Publication, New Delhi (1980) relevant chapters only.
3. Thaper, Ramesh (Ed) : Tribe, Caste and Religion in India, Macmillan, Delhi, 1977 (relevant articles only.)
4. Vidharthi, L.P. and B.K. Rai : The Tribal Culture of India, Concept Publishing, New Delhi, 2nd Edition, 1985 (relevant parts).
5. Xaxa, Virginius (2008) : *State Society and Tribes : Issues in Post Colonial India*, Dorling Kindersley, Delhi.
6. Mibang.T. and Behera, M.C. 2007: *Tribal Studies: Emerging Frontiers of Knowledge*, (Edited), Mittal, New Delhi.

7. Behera, M.C. (2004): *Globalization and Development Dilemma-Reflections from North East India*, (Edited), Mittal Publications, New Delhi.
8. Behera, M.C. (2000): *Tribal Religion, Change and Continuity (Ed.)*, Commonwealth Publishers, New Delhi
9. Behera, M.C. (1997) : *Trends in Agrarian Structure in the Hills of North-East India* (Co-edited), Common wealth Publishers, New Delhi.

DSE: Group B: 3. AGRICULTURAL GEOGRAPHY

Time: 2 Hours **Full Marks: =50**

1. **Defining the Field:** Introduction, nature and scope; Land use/ land cover definition and classification.
2. **Determinants of Agriculture:** Physical, Technological and Institutional
3. **Agricultural Regions of India**: Agro-climatic, Agro-ecological & Crop Combination Regions.
4. **Agricultural Systems of the World** (Whittlesey's classification) and Agricultural Land use model (Von Thuenen, modification and relevance).
5. **Agricultural Revolutions in India**: Green, White, Blue, Pink

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

1. Basu, D.N., and Guha, G.S., 1996: *Agro-Climatic Regional Planning in India*, Vol.I & II, Concept Publication, New Delhi.
2. Bryant, C.R., Johnston, T.R, 1992: *Agriculture in the City Countryside*, Belhaven Press, London.
3. Burger, A., 1994: *Agriculture of the World*, Aldershot, Avebury.
4. Grigg, D.B., 1984: *Introduction to Agricultural Geography*, Hutchinson, London.
5. Ilbery B. W., 1985: *Agricultural Geography: A Social and Economic Analysis*, Oxford University Press.
6. Mohammad, N., 1992: *New Dimension in Agriculture Geography*, Vol. I to VIII, Concept Pub., New Delhi.
7. Roling, N.G., and Wageruters, M.A.E.,(ed.) 1998: *Facilitating Sustainable Agriculture*, Cambridge University Press, Cambridge.
8. Shafi, M., 2006: *Agricultural Geography*, Doring Kindersley India Pvt. Ltd., New Delhi
9. Singh, J., and Dhillon, S.S., 1984: Agricultural Geography, Tata McGraw Hill, New Delhi.
10. Tarrant J. R., 1973: *Agricultural Geography*, David and Charles, Devon.

DSE: Group B: 4. SOCIAL GEOGRAPHY

Time: 2 Hours **Full Marks: =50**

1. **Social Geography:** Concept, Origin, Nature and Scope.

2. **Peopling Process of India:** Technology and Occupational Change; Migration.
3. **Social Categories:** Caste, Class, Religion, Race and Gender and their Spatial distribution
4. **Geographies of Welfare and Well being:** Concept and Components – Healthcare, Housing and Education.
5. **Social Geographies** of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Ahmed A., 1999: *Social Geography*, Rawat Publications.
2. Casino V. J. D., Jr., 2009) *Social Geography: A Critical Introduction*, Wiley Blackwell.
3. Cater J. and Jones T., 2000: *Social Geography: An Introduction to Contemporary Issues*, Hodder Arnold.
4. Holt L., 2011: *Geographies of Children, Youth and Families: An International Perspective,* Taylor & Francis.
5. Panelli R., 2004: *Social Geographies: From Difference to Action*, Sage.
6. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: *Introducing Social Geographies,* Oxford University Press.
7. Smith D. M., 1977: *Human geography: A Welfare Approach*, Edward Arnold, London.
8. Smith D. M., 1994: *Geography and Social Justice,* Blackwell, Oxford.
9. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: *The SAGE Handbook of Social Geographies*, Sage Publications.
10. Sopher, David (1980): *An Exploration of India,* Cornell University Press, Ithasa
11. Valentine G., 2001: *Social Geographies: Space and Society*, Prentice Hall.

DSE: Group B: 5. POLITICAL GEOGRAPHY

Time: 2 Hours **Full Marks: =50**

1. **Introduction:** Concepts, Nature and Scope.
2. **State, Nation and Nation State:** Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)
3. **Electoral Geography**: Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering.
4. **Political Geography of Resource Conflicts:** Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals.
5. **Politics of Displacement:** Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings:

1. Agnew J., 2002: *Making Political Geography*, Arnold.
2. Agnew J., Mitchell K. and Toal G., 2003: *A Companion to Political Geography*, Blackwell.
3. Cox K. R., Low M. and Robinson J., 2008: *The Sage Handbook of Political Geography*, Sage Publications.
4. Cox K., 2002: *Political Geography: Territory, State and Society*, Wiley-Blackwell
5. Gallaher C., et al, 2009: *Key Concepts in Political Geography*, Sage Publications.
6. Glassner M., 1993: *Political Geography*, Wiley.
7. Jones M., 2004: *An Introduction to Political Geography: Space, Place and Politics*, Routledg .
8. Mathur H M and M M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
9. Painter J. and Jeffrey A., 2009: *Political Geography*, Sage Publications.
10. Taylor P. and Flint C., 2000: *Political Geography*, Pearson Education.
11. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
12. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), *Land Locked States of Africa and Asia* (vo.2), Frank Cass

DSE: Group B: 6. HYDROLOGY AND OCEANOGRAPHY

Time: 2 Hours **Full Marks: =50**

1. **Hydrological Cycle:** Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; Hydrological input and output.
2. **River Basin and Problems of Regional Hydrology**: Characteristics of river basins, basin surface run-off, measurement of river discharge; floods and droughts.
3. **Ocean Floor Topography and Oceanic Movements:** Waves, Currents and Tides.
4. **Ocean Salinity and Temperature:** Distribution and Determinants.
5. **Coral Reefs and Marine Deposits and Ocean Resources:** Types and Theories of Origin; Biotic, Mineral.

*** Marks for Written Examination (40), Attendance (4) and Continuous Evaluation (6)**

Suggested Readings

1. Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
2. Karanth, K.R., 1988 : Ground Water: Exploration, Assessment and Development, Tata- McGraw Hill, New Delhi.
3. Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
4. Rao, K.L., 1982 : India's Water Wealth 2nd edition, Orient Longman, Delhi,.
5. Singh, Vijay P. (1995): Environmental Hydrology. Kluwar Academic Publications, The

Netherlands.
6. Anikouchine W. A. and Sternberg R. W., 1973: *The World Oceans: An Introduction to Oceanography*, Prentice-Hall.
7. Garrison T., 1998: *Oceanography*, Wordsworth Company, Belmont.
8. Kershaw S., 2000: *Oceanography: An Earth Science Perspective*, Stanley Thornes, UK.
9. Pinet P. R., 2008: *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
10. Sharma R. C. and Vatal M., 1980: *Oceanography for Geographers*, Chaitanya Publishing House, Allahabad.