THREE YEAR DEGREE COURSE

GEOGRAPHY

(MAJOR COURSE)

1st Year

Semester	Paper per week	Marks	Class	Credit
1st	101 (Theory)	75	6	6
	102 (Theory)	75	6	6
	103 (Practical)	50	4	4
2nd	201 (Theory)	75	6	6
	202 (Theory)	75	6	6
	203 (Practical)	50	4	4
2nd year				
3rd	301 (Theory)	75	6	6
	302 (Practical)	75	6	6
	303 (Practical)	50	4	4
4th	401 (Theory)	75	6	6
	402 (Theory)	75	6	6
	403 (Practical)	50	4	4
3rd year				
5th	501 (Theory)	75	6	6
	502 (Theory)	75	6	6
	503 (Theory)	75	6	6
	504 (Theory)	75	6	6
	505 (Practical)	75	6	6
	506 (Practical)	75	6	6
6th	601 (Theory)	75	6	6
	602 (Theory)	75	6	6
	603 (Theory)	75	6	6
	604 (Theory)	75	6	6
	605 (Practical)	75	6	6
	606 (Practical)	75	6	6

Total marks : 1700; Theory marks :1200; Practical marks: 500

Paper	Paper Title	Marks
101	Understanding Geography	75
102	Basis of Geomorphology	75
103	Geomorphology Practical	50
201	Oceanography and Climatology	75
202	World Regional Geography	75
203	Practicals on Ocenography, Climatology and World Regional Geography	50
301	Soil and Biogeography	75
302	Economic Geography	75
303	Practical on Biogeography, Economic Geography and Field Study	50

401	Forms and Processes in Geomorphology	75
402	Human Geography	75
403	Practical on Geomorphic Processes	50
501	Concept of Regional Development Planning & Geography of Development of USA and Japan	75
502	Regional Geography of India and SAARC Nations	75
503	Cartographic and Quantitative Methods	75
504	Population and Settlement Geography	75
505	Practical on Cartographic Methods (Surveying and Map Works)	75
506	Practical on Cartographic and Quantitative Methods	75
601	Environment and Development	75
602	Social and Political Geography	75
603	Regional Geography of N.E. India with Special Focus on Assam	75
604	Principles and Applications of Remote Sensing, GIS and GPS	75
605	Practical on Advanced Technique in Geography	75
606	Project Work	75

FIRST SEMESTER

Paper 101: UNDERSTANDING GEOGRAPHY

Total Marks: 75

(Including 10 marks of Internal Assessment)

Total Credit : 6 (Total Number of Classes: 60)

Time: 3 hours

(5 questions carrying 13 marks each taking two from Unit 1 and 1 each from the remaining three units)

Unit 1 : **Field of Geography** (two questions) (24 classes) **26**

Nature and scope of Geography: Geography as a spatial science, present day relevance of Geography, Geography as interdisciplinary and integrated discipline.

Unit 2 : **Development Trend of Geography** (one question) (12 classes) **13**

Development of Geography through ages – ancient, medieval, modern and contemporary

Unit 3 : **Physical versus Human Geography** (one question) (12 classes) **13**

Physical Geography and Human Geography: Nature, Contents and Interrelationship

Unit 4 : Basic Concepts in Geography (one question) (12 classes) **13**

Spatial context, spatial variation, spatio-temporal variation, spatial association, spatial interaction, spatial diffusion, spatial organization, human ecology, system concept.

Books Suggested :

1. Hussain, M., 1989: *Evolution of Geographic Thought*, Rawat Publications, Jaipur
2. Dikshit, R.D., 1997: *Geographical Thoughts : A Contextual History of Ideas*, Printice Hall of India, New Delhi
3. Adhikari, S., 1992: Geographical Thought, Chaitanya Pustak Allahabad
4. Abler, R., Adams, J. and Gould, P.P., 1971: *Spatial Organization: the Geographers' View of the World*, Prentice Hall, Englewood Cliff
5. Hussain, M.: *Human Geography*, Rawat Publications, Jaipur
6. Brunhes, J., 1920 : *Human Geography*, edited by Isaisah Bowman

7. Hartshorne, R., 1939: *The Nature of Geography*, Rand Mckully, Chicago
8. Knox, P.L., 1975: *Social Well-being: A Spatial Perspective*, Oxford University
9. Smith, David M., 1977: *Human Geography* : A Welfare Approach, Edward Arnold, London
10. Chorley, R.J. & Hagget, P. (eds.) 1967: *Models in Geography*, Methuen, London
11. Hartshorne, R., 1959: *Perspective on the Nature of Geography*, Indians edition, Scientific Publishers, Jodhpur
12. Johnston, R.J. (ed): *The Dictionary of Human Geography*, Oxford, Basil, Blackwell
13. Harvey, D., 1969: *Explanation in Geography*, St. Martin Press, New York
14. Dikshit, R.D., 1994: *The Art and Science of Geography*, Printice Hall of India, New Delhi

FIRST SEMESTER
PAPER 102: BASIS OF GEOMORPHOLOGY

Total Marks : 75
(Including 10 marks of Internal Assessment)
Total Credit : 6 (Total Number of Classes: 60)
Time: 3 hours

(5 questions carrying 13 marks each taking one from Unit 1 and four from Unit 2)

Unit 1 : **Bases of Physical Geography** (one question of 13 marks) (12 classes) **13**

- The nature and scope of Physical Geography
- Branches of Physical Geography, Relation of Physical Geography with other branches of earth sciences
- The place of Geomorphology in Physical Geography, Branches of Geomorphology – Structural, Fluvial, Glacial, Arid, Coastal and Tropical

Unit 2 : **Concepts in Geomorphology** (four questions of 13 marks each) (28 classes) **52**

- Structure and composition of earth's crust and interior
- Origin and development of major landforms – Views of Alfred Wegener, Lowthian Green
- Concept of Isostasy and Eustatism
- Earth Movements - Orogenic and Epeirogenic movements
- Mountain Building Theories of L. Kober and Arthur Holmes
- Concept and theory of Plate Tectonics
- Earthquakes and Volcanoes – their causes and geomorphic impact
- Development of landforms under Normal, Arid and Glacial conditions : Views of W.M. Davis, W. Penck and L.C. King
- Concept of relief and relief features – mountains, plateaus, hills, foothills, valleys, plains and floodplains.

Books Suggested :

1. Bloom, Arthur L., 1978: Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, N.J.
2. Ahmed, E., 1985: Geomorphology, Kalyani Publishers, New Delhi
3. Sharma, V.K., 1986: Geomorphology, Earth Surface, Process and forms, Tata McGraw Hill, New York
4. Lal, D.S., : Physical Geography

5. Strahler, A.N.: Physical Geography, 3rd Ed., Wiley
6. Singh, S. : Physical Geography, Pustak Bhawan, Allahabad
7. Thornbury, W.D., 1969: Principles of Geomorphology, 2nd Ed., Wiley International Edition, Wiley Eastern Reprint, 1984
8. Wooldridge, S.W. and Morgan, R.S., 1948: The Physical Basis of Geography, Longman (First published in 1937)
9. Worcestor, P.G., 1965: A Textbook of Geomorphology, Van Nostrand, 2nd Ed., East West Edition, New Delhi.
10. Chorley, Richard J., 1972: Spatial Analysis in Geomorphology, Harper and Row Publishers, New York, London.
11. Dayal, P. (2nd edition) 1996: A Textbook of Geomorphology, Shukla Book Depot, Patna
12. Sharma, H.S. (ed), 1982: Perspective in Geomorphology, Vol. I & IV, Concept, New Delhi.
13. Sharma, V.K., 1986: Geomorphology, Earth Surface Processes and Forms, Tata Mc. Graw Hill, New Delhi.
14. Sparks, B.W., 1960: Geomorphology, Longman, London, 2nd edition.

FIRST SEMESTER
PAPER 103: GEOMORPHOLOGY PRACTICAL

Total Marks : 50
(Including 5 marks of Internal Assessment)
Total Credit: 4 (Total Number of Classes: 40)
Time: 3 hours

Unit 1: Representation of Relief through Profiles (12 classes) (one question of 10 marks) **10**

· Relief representation through serial profiles, superimposed profiles, composite profiles and projected profiles

· Demarcation of basin and representation of basin relief through profiles and their interpretation

Unit 2: Representation and Interpretation of Relief and Slope (20 classes)
(Two questions of 10 marks each) **20**

· Expression of slope in gradient and percentage forms from contour differences identified on a Topographical Map

· Preparation of Relative Relief Map using Smith's Method from Topographical Maps

· Drawing and analysis of Average Slope Map by Wentworth's Method

· Drawing of Longitudinal Profiles of (i) Himalayan and (ii) Indian Peninsular Rivers from Topographical Maps and comparative interpretation of profiles in terms of their geomorphic characteristics

· Representation of interrelationship among the physical and cultural features from Topographical Maps and Interpretation

· Mapping of the major crustal plates of the earth

Unit 3: Identification of Common Rocks and Listing of their Characteristics
(8 classes)(One question of 5 marks) **5**

· Identification of sedimentary rocks and listing of their characteristics (sandstone, shale, limestone, coal, breccias and conglomerate)

· Identification of igneous rocks and listing of their characteristics (granite, pragmatite, syenite, diorite, grabbro, periodolite

Unit 4: Practical Note Book and Viva-Voce **10**

· Practical Note Book & Viva-voce (5+5 marks)

Books Suggested :

1. Chorley, Richard. J. (ed.), 1989: Water, Earth and Man, Methuen & Co., London
2. Goudie, Andrew, et al. (eds), 1981: Geomorphological Technique, George Allen & Unwin, London
3. Gregory, K.J. and Walling, D.E., 1973: Drainage Basin – Form and Process, Edward Arnold, London
4. King, C.A.M., 1966: Techniques in Geomorphology, Edward Arnold, London
5. Leopold, L.B, Wolman, M.G. and Miller, J.P., 1964: Fluvial Processes in Geomorphology, Freeman, San Francisco
6. Misra, R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept Publishing Co., New Delhi
7. Monkhouse, F.J. and Wilkinson, H.R., 1989: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
8. Singh, R.L. and Singh Rana P.B., 1908, Elements of Practical Geography, Kalyani Publishers, New Delhi
9. Strahler, A.N., 1969: Physical Geography, 3rd Ed., Wiley.
10. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

SECOND SEMESTER
PAPER 201: OCEANOGRAPHY AND CLIMATOLOGY

Total Marks: 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time – 3 hours

(5 questions carrying 13 marks each taking two from Unit 1 and three from Unit 2)

Unit 1: Oceanography (two questions of 13 marks each) (24 classes) **26**

· Nature and scope of Oceanography
· Distributional pattern of land, sea and oceans
· Bottom Relief of Oceans – Atlantic Ocean, Indian Ocean, Pacific Ocean
· Waves and currents of Ocean water – Origin, type, characteristics and impact of ocean current and waves,
· Ocean deposits- their types distribution and characteristics
· Man and ocean: Ocean resources and their influences on man

Unit 2: Climatology (three questions of 13 marks each) (36 classes) **39**

(Three questions of 13 marks each)

· Nature and scope of Climatology and its importance in Geography
· Structure, composition and characteristics of Earth's atmosphere
· Elements and factors of weather and climate
· Distribution of temperature over the earth's surface- Horizontal, vertical and seasonal variation
· Global Pressure belts and wind system : origin, type and characteristics of air mass; formation and characteristics of cyclones and anticyclones

Books Suggested :

1. Chritchfield, H.J., 1975: General Climatology, Prentice Hall of India, New Delhi.
2. Berry, R.G. and Chorley, R.J., 1971: Atmosphere, Weather and Climate, Methuen Co. Ltd., London
3. Das, P.K., 1968: The Monsoons, National Book Trust, New Delhi.
4. Gentilli, J.A., 1958: A Geography of Climate.
5. Lal, D.S., 1998: Climatology, Sharda Pustak Bhawan, Allahabad.
6. Miller, A.A., 1953: Climatology, Dutton.
7. Sellers, W.D.: Physical Climatology, Chicago University Press
8. Trewartha, G.T. and Horn, L.A., 1980: An Introduction to Climate, International Serieds
9. Weiesner, C.J.: Hydrometeorology, Champman & Hall Ltd.
10. Singh, Savinder : Climatology, Sharada Pustak Bhawan, Allahabad
11. Oceanography: A Brief Introduction, K. Siddharthakislaya
12. Summerhayes, 1998: Oceanography: An illustrated guide
13. C.A.M. King, Oceanography for Geographers
14. Johnstone, An Introduction to Oceanography
15. Jenklno, J.T., A Text Book of Oceanography
16. Richard, R., Oceanography
17. Sears, M. (ed.): Oceanography
18. Defant, A., Physical Oceanography, Vol. I, Pergamon Press, 1961
19. Ommaney: The Ocean, 1960

SECOND SEMESTER
PAPER 202: WORLD REGIONAL GEOGRAPHY

Total Marks: 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(5 questions carrying 13 marks each taking two from Unit 1, one from Unit 2 and two from Unit 3)

Unit 1: The World Geography in regional context

(24 classes) (Two questions of 13 marks each) **26**

- World Regional Geography : An overview
- Brief regional account of the continents: Physiography, Climate, Natural Vegetation, Population growth, Density and distribution, major population density zones.

Unit 2: Profile of developed and developing nations

(12 classes) (One questions of 13 marks each) **13**

- Developed and developing nations: Demographic, Social and Economic Profile.

Unit 3: **Regional Geography of Asia** (24 classes) **26**

(Two questions of 13 marks each)

- Regional Geography of Asia: Location, Physiography, Climate, Population growth and distribution, agriculture and industries.

Books Suggested :

1. Manku Darshan Singh: *A Regional Geography of the World*
2. Khullar, D.R.: *India : A Comprehensive Geography*
3. Singh, R.L. (ed).: India – A Regional Geography, National Geographical Society, India

4. Cole, J. : *A Geography of the World's Major Regions*, Routledge, London
5. Israel, S. Johnson, D.I. and Wood, D.: *World Geography* Today
6. Jackson, R.H. and Hudman, L.E.: *Regional Geography: Issues for Today*.
7. *An Introduction to Regional Geography*, Paul claval, Rawat Publication, Jaipur & Delhi
8. Wheeler, J.H. Jr. and Kostbade, J.T., 1990: *World Regional Geography*, Holt Rinshort and Winston, Inc
9. Israel, S., Johnson, D.I. & Wood, D., 1976: *World Geography Today*, Holt Renehart and Winston Publishers
10. Holier, G.P., 1988: Regional Development in Michael Pacione (ed), *The Geography of the 3rd World: Progress & Prospects*, Rutledge, London, New York.

SECOND SEMESTER

Paper 203 (Practical on Oceanography, Climatology and World Regional Geography)

Total Marks: 50

(including 5 marks for Internal Assessment)

Total Credit: 6 (Total Number of Classes: 40)

Time : 3 hours

Unit I: Practical on Oceanography (one question) (10 classes) **10**

Drawing and interpretation of

- Hypsometric/ hypsographic curves of land surface and ocean bottom
- Bathymetric curves of Atlantic and Indian Oceans
- Ocean currents on a Mercator's Chart
- Major sea ports on a world map
- Bottom relief features of Indian and Atlantic ocean

Unit 2: Practicals on Climatology (two questions) (20 classes) **20**

- Construction of a schematic diagram of the vertical layers of earth's atmosphere and tabulation of compositional characteristics
- Drawing and interpretation of rainfall-temperature-humidity graph of tropical, sub-tropical and temperate regions/stations
- Drawing of climograph and hythergraph and their interpretation
- Study of weather condition depicted by Indian Weather maps and prediction of weather conditions for next 48 hours
- Calculation of average annual rainfall and variability of annual rainfall, and mapping and interpretation thereof

Unit 3: Practical on World Regional Geography (one question) (10 classes) **10**

- Showing trend of world population growth by line/bar graph
- Mapping and interpretation of world population density
- Demarcation of developed, developing and underdeveloped countries on a world map based onappropriate social and economic indicators
- Showing location of the megalopolis, and metropolitan and port cities of the world
- Mapping interrelationship of climatic and vegetation zones of Asia through superimposition by proportionate spheres
- Plotting locations of Million Cities of India circle and interpretation
- Showing the distribution of major rivers and lakes on a map of Asia

Unit 4: Practical Notebook Evaluation and Viva-voce 5

- **Practical Notebook & Viva-voce (3 + 2 marks)**

Books Suggested :

1. Bygot, J.: An Introduction to Map Work and Practical Geography
2. Campbell, J., 1984: Introductory Cartography, Printice Hall, Inc Englewood
3. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Pub. Co., New Delhi
4. Monkhouse, I.J. and Wilkinson, H.R., 1989: Maps and Diagram, B.I. Publication, New Delhi
5. Raisz, E.: General Cartography, McGraw Hills Co., London
6. Robinson, A.H., et al,: Elements of Cartography, John Wiley and Sons, New York
7. Singh, R.L.: Elements of Practical Geography, Kalyani Publishers, New Delhi
8. Jackson, R.H. and Hudmar, L.E.: Regional Geography: Issues for today
9. Singh, R ; Singh L.R., Mapworks in Practical Geography, Central book Depot, Allahabad

THIRD SEMESTER
PAPER 301: SOIL AND BIOGEOGRAPHY

Total Marks: 75
(Including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(5 questions carrying 13 marks each taking two from Unit 1 and three from Unit 2)

Unit 1: **Soil Geography** (Two questions each carrying 13 marks) (24 classes) **26**

- Nature and scope of soil geography
- Soil as a basic component of environment, soil as life supporting system
- Soil profile (Soil horizon) – their characteristics and significance
- Physical properties of soil: Soil texture, classification of soil according to texture
- Chemical properties of soil: Soil colour, pH value
- Processes and factors of soil formation
- Soil types and their characteristics

Unit 2: **Biogeography** (Three questions each carrying 13 marks) (36 classes) **39**

- Definition and scope of biogeography
- Biosphere: its concept and components, vertical and horizontal limits of biosphere
- Ecology and ecosystem: concept and relevance in biogeography
- Global distribution and characteristics of major plants and animals
- Concept of biodiversity, its types and conservational issues
- Biogeographic regions of the world
- Nature and distribution of biodiversity in N.E. India and Assam
- Man as an agent of environmental/ecological change

Books Suggested :

1. Strahler, A.N., 1969:Physical Geography, Wiley, London.
2. Dayal, P., 2001: A Textbook of Geomorphology, Shukla Book Depot, Patna.
3. Backman, H.O. and Brady, N.C., 1960: The Nature and Propertieds of Soil, New York.

4. Bunting, B.T., 1967: The Geography of Soil, Hutchinson, London
5. De, N.K. and Sarkar, H.K., 1993: Soil Geography, pub. by MS Sunita Sarkar, Gariahat, Kolkata.
6. Robinson, G.W., 1951: Soil, their Origin, Constitution and Classification, Longman, London.
7. Husain, M. (ed)., 1994: Biogeography(Part I & II), Anmol Publications, Pvt. Ltd., New Delhi.
8. Newbigin, M.I., 1939: Plants and Animal Geography.
9. Tiby, 1982: Biogeography, Longman, London.
10. Walts, D., 1971: The Principles of Biogeography, Mc. Graw Hill, London.
11. Bhattacharyya, N.N.: Biogeography, Rajesh Publications, New Delhi.
12. Singh, Savindra, 2010: Biogeography, Prayag Pustak Bhawan, Allahabad.

THIRD SEMESTER
PAPER 302: ECONOMIC GEOGRAPHY

Total Marks: 75
(Including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(5 questions carrying 13 marks each taking one from Unit 1, two from Unit 2 and two from Unit 3)

Unit 1: **The Field of Economic Geography**
(one question of 13 marks)(12 classes) **13**

- Meaning and scope
- Approaches in economic geography: regional, systematic and sectoral

Unit 2: **Geography of Resource**
(Two questions of 13 marks each) (24 classes) **26**

- Concept of resources and resource classification; natural and human resources, renewable and non-renewable resources, biotic and abiotic resources; conservation of resources
- Distribution and production of resources in global context: Forests, Coal, Iron ore, Water

Unit 3: **Geography of Economic Activity**
(Two questions of 13 marks each) (24 classes) **26**

- Classification of economic activity
- Agriculture: physical and socio-economic factors influencing agriculture; types of agriculture; major food crops and cash crops, their distribution and production: Rice & wheat, Sugar- cane, Tea, Cotton.
- Industry: Factors of industrial location, classification of industries, distribution and production of iron and steel, textile, petro-chemicals.

Books Suggested :

1. Guha, J.L. and Chattoraj, P.R.: A New Approach to Economic Geography, The World Press Pvt. Ltd., Kolkata.
2. Alexander, J.W.: Economic Geography, Prentice Hall.
3. Leong, G.C. and Morgan, G.C.: Human and Economic Geography, Oxford University Press, New Delhi.
4. Roy, P. and Mukherjee, S.: Economic Geography – An Appraisal of Resources, Central Educational Enterprise, Kolkata.
5. Thoman, R.S. and Corbin, P.B.: The Geography of Economic Activity, McGraw Hill

6. Negi, B.S.: Geography of Resources, Kitab Mahal, Delhi
7. Sadhukhan, S.K.: Economic Geography – An Appraisal of Resources, S. Chand and Company Ltd., New Delhi
8. Memoria, C.B.: Economic and Commercial Geography, Shivlal Agarwala and Company Educational Publishers, Agra-3
9. Hartshorne, T.A., Alexander, J.W.: Economic Geography, Printice Hall, Upper Saddle River, New Jersey
10. Das, M.M. : Arthanoitik Bhugol, G.U., Guwahati
11. Gautam, Alka, 2010: Advanced Economic Geography, Sharda Pustak Bhawan, Allahabad.

THIRD SEMESTER
PAPER-303: PRACTICAL ON BIOGEOGRAPHY & ECONOMIC GEOGRAPHY AND FIELD STUDY

Total Marks – 50
(Including 5 marks for internal assessment)
Total Credit: 4 (Total Number of Classes: 40)
Time: 3 hours

Unit1: (2 questions carrying 10 marks each)(25 classes) **20**

- Construction and interpretation of soil profile with the data derived from the field (college campus/ river site/ foot hill, etc.)
- Drawing and interpretation of soil map of India/North East India
- Mapping of vegetation of India/north east India
- Representation of soil-vegetation relationship along selected cross-section of India and North-East India
- Mapping of the national parks and sanctuaries of India with the major species therein.

Unit 2: (One question carrying 10 marks)
(15 classes) **10**

- Cartographic representation of economic data of India/N.E. India in spatio-temporal contexts : pie-graph, line graph, bar graph and choropleth mapping
- Trend analysis of production, etc. of India/N.E. India using moving average method
- Transport network analysis using connectivity indices (alpha, beta & gamma).

Unit 3: **Field study report & Viva-voce** **5+5= 10**
Unit 4: **Evaluation of Practical Note Book & viva-voce** **3+2= 5**

Books Suggested :

1. Monkhouse, F.J. & Wilkinson, H.R. (1989): Maps and Diagrams, B.I. Publications, New Delhi
2. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publication, New Delhi
3. Singh, R.L.: Elements of Practical Geography, Kalyani Publishers, New Delhi
4. Singh, R & Sing L.R.: Map work and Practical Geography, Central Book Depot, Allahabad
5. Bygot, J.: An Introduction to Map work and Practical Geograph, Kalyani Publishers, Ludhiana

FOURTH SEMESTER
PAPER 401: FORMS AND PROCESSES IN GEOMORPHOLOGY

Total Marks – 75
(Including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(To answer 5 questions carrying 13 marks each taking 2 from Unit 1, 2 from Unit 2 and 1 from Unit 3)

Unit 1: **Geomorphic processes** (2 questions)(24 classes) **26**

- Geomorphic agents: concept, types and processes
- Endogenetic processes of folded and faulted landform development
- Exogenetic processes of landform development : their processes of weathering, mass-wasting and erosion
- Processes of landform development in hills and mountains areas, foothill and piedmont areas, alluvial plain and floodplain areas

Unit 2: Drainage basin processes and landforms (2 questions) (24 classes) **26**

- Concept of drainage basin, catchment and watershed
- River as a fluvio-geomorphic agent; evolution of drainage network and basin; drainage pattern and its relationship with underlying rock structure; development of basin landform features, viz. natural levee, floodplain, alluvial fan and cone.
- Channel processes and landforms : channel pattern, channel changes with time, characteristics of channel long and cross profiles

Unit 3: Geomorphic hazards and landforms (1 question)(12 classes) **13**

- Flood, river bank erosion and landslide as geomorphic hazards – their causes, processes and impact on land and people.
- Geomorphic Hazard Management and Planning

Books Suggested :

1. Ahmed, E., 1985: Geomorphology, Kalyan Publishers, New Delhi
2. Bloom, A.L., 1978: Geomorphology – A Systematic Analysis of Late Cenozoic Landform, Prentice Hall of India, New Delhi
3. Dayal, P. 2001: A Textbook of Geomorphology, Shukla Book Depot, Patna.
4. Mc Cullagh, P., 1978: Modern Concept of Geomorphology, Oxford University Press, London
5. Thornbury, W.D., 1954: Principles of Geomorphology (latest Indian edition), Wiley Eastern India Ltd, New Delhi
6. Strahler, A. & Strahler, A.N., 2001: Modern Physical Geography (4^{th} edition), John Wiley and Sons, Inc, New York, Toronto
7. Sparks, B.W. (1960): Geomorphology, Longman, London
8. Leopold, L.B., Wolman, M.C. and Miller J.P., 1964: Fluvial Processes in Geomorphology, Freeman, San Fransisco
9. Petts, G.E., 1983: Rivers (Source and Methods in Geography), Butterworths, London, Boston
10. Fairbridge, R.W. (ed), 1968: Encyclopedia of Geomorphology,, Reinhold, New York

FOURTH SEMESTER
PAPER 402: HUMAN GEOGRAPHY

Total Marks – 75
(Including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(5 questions taking one from every unit carrying 13 marks each)

Unit1: Nature of human geography and its development (one question) (12 classes) **13**

- Definition and contents; human versus physical geography; branches of Human Geography; Development of Human Geography; Contributions of German and French Geographers.

Unit 2: Approaches and schools in human geography
(one question) (12 classes) **13**

- Approaches: determinism, possibilism, human ecology and positivism; **S**chools: ecology, landscape, locational, welfare and humanistic.

Unit 3: Man-environment relationship (one question) (12 classes) **13**

- Elements of environment; physical and human environment; constraints and opportunities of the environment; impact of environment on man; impact of man on environment; environmental problems.

Unit 4: Human response to environment (one question) (12 classes) **13**

- Human adjustment, mode of living and emerging problems in different environments: cold desert, mountain, plain, hot desert, coastal and riverine lands.

Unit 5: Major races (one question) (12 classes) **13**

- Physical characteristics and distribution of the major racial groups (Caucasoid, Mongoloid and Negroid); Origin and diffusion of major racial groups in the world; Linguistic and religious regions in the world.

Books Suggested :

1. Huntington, E., 1951: Principles of Human Geography, John Wiley & Sons, Inc, New York
2. Hussain, M., 1994: Human Geography, Rawat Publication, New Delhi.
3. Johnston, R.J. et al (eds.): The Dictionary of Human Geography, Basil Blackwell, Oxford.
4. Leong, G.C. and Morgan, G.C., 1992: Human and Economic Geography, Oxford University Press, Oxford
5. Chandna, R.C., 1986: A Geography of Population, Kalyani Publisher, New Delhi
6. Hagget, P., 1972: Geography: A Modern Synthesis, Harper & Row, New York
7. Strahler, A.N. & A.H. Strahler, 1976: Geography and Man's Environment, John Willey, New York
8. Park, C., 1997: The Environment, Routledge, London
9. Singh, S., 1991: Environmental Geography, Pustak Bhawan, Allahabad
10. Chhokas, K.B., Understanding Environment, Sage Publication.

FOURTH SEMESTER
PAPER 403: PRACTICAL ON GEOMORPHIC PROCESSES

Total Marks – 50
(Including 5 marks for internal assessment)
Total Credit : 4 (Total Number of Classes: 40)
Time: 3 hours

Unit 1: (Three questions carrying 15 marks each) (40 classes) **45**

- Drawing of a representative part from topographical map and delineation of relief zones there from such as - Structural mountain zone, Hill zone, Plateau zone, Foot-hill zone, Piedmont zone, Alluvial plain zone and Floodplain and Active floodplain zone and description of their geomorphic characteristics
- Delineation of different floodplain zones, e.g. occasionally flood-affected, chronically flood-affected and active floodplain zones from topographical map; identification, demarcation and naming of floodplain features with analysis of their development and associated geomorphic processes.
- Delineation of a drainage basin from topographical map. Ordering of streams following Horton's and Strahler's methods and analysis thereon using Bifurcation Ratio.
- Preparation of stage-discharge hydrograph for the Brahmaputra or any of its tributaries for a year and also separately for monsoon months and non-monsoon months taking at least five years data and interpretation of the flow characteristics of the river concerned
- Analysis of stage-discharge relationships (taking mean monthly data) with the help of regression technique.
- Channel pattern analysis: Drawing of three representative sections of river channels of the Brahmaputra or its tributaries representing straight, meandering and braided channel patterns and their comparative analysis in terms of forms and associated processes of their development
- Analysis of geometry of meanders, calculation of sinuosity index and braiding index (Brice method, 1964) to analyse channel pattern.

Unit 2: Practical Note-Book and Vive-voce **5**

Practical Note Book Evaluation & viva-voce (3+2=5)

Books Suggested :

1. Bygot, J.: An Introduction to Map work and Practical Geography
2. Hanwell, J. & Newson, M., 11973: Techniques in Physical Geography, Macmillan, London
3. Misra, R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept Publishing Co., New Delhi
4. Monkhouse, F.J. and Wilkinson, H.R., 1989: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
5. Singh, R.L. and Sing Rana, P. B., 1998: Elements of Practical Geography, Kalyani pub. Ludhiana
6. King, C.A.M., 1966: Techniques in Geomorphology, Edward Arnold, London
7. Petts, G.E. and L. Foster, 1985: Rivers and Landscape, Edward Arnold, London
8. Leopold, L.B., Wolman, M.C. and Miller J.P., 1964: Fluvial Processes in Geomorphology, Freeman, San Francisco.
9. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

FIFTH SEMESTER
PAPER 501: CONCEPT OF REGIONAL DEVELOPMENT PLANNING AND GEOGRAPHY OF DEVELOPMENT OF USA AND JAPAN

Total Marks : 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(Five questions carrying 13 marks each taking one from Unit 1, *two* from Unit 2 and two from Unit 3)

Unit 1: Concept of Regional Planning and Development
(one question) (12 classes) **13**

- Concept of Region, Regionalism and Regional Planning
- Concept of Development, Sectoral Development and Regional Development, and development indicators

Unit 2: Resource Base and Development of USA and Japan (two questions) (24 classes) **26**

- Resource base of Japan and USA: Natural and Human
- Development Policies of Japan and USA
- Sectoral Development Patterns in USA and Japan
- Regional Development Patterns in USA/Japan

Unit 3: Industrial Development Patterns of USA and Japan
(two questions) (24 classes) **26**

- Industrial Location factors in Japan and USA
- Iron and Steel Industries in Japan and USA
- Ship-building Industries in Japan
- Automobile Industries in USA
- Problem Regions in Japan and USA and Strategies for management

Books Suggested :

1. E. Trewartha. Geography of Japan
2. P. Dempster: Japan Advances.
3. P.L. Knox and John Agnew. The Geography of the World Economy London. 1998.
4. Lordes, D.S. The wealth and Poverty of Nations, 1998.
5. Bhum, P.C., 1978: The Japanese Islands: A Physical and Social Geography, Charles, E. Juttle, J. Tokyo
6. Wheeler, J.H., Jr. and Kostvada, J.T., 1990, World Regional Geography, Holt, Rimrhart & Winda Inc.
7. Harvam, J. De Blij, 1971: Geography, Regions and Concepts, John Wiley & Sons, Inc, New York, London, Sydney Toronto
8. Paul Claud: An Introduction to Regional Geography, Blackwell Publisher Ltd., Oxford, UK
9. John Glasson: An Introduction to Regional Planning: Concept, Theory and Practice, Hutchinson Educational Ltd., Pitzroy Square, London
10. John W., Alexander: Economic Geography, Prentice-Hall of India Pvt. Ltd., New Delhi
11. Bhat, L.S. : Microlevel Planning, Rajesh Publication,N.Delhi

FIFTH SEMESTER
PAPER 502: REGIONAL GEOGRAPHY OF INDIA AND SAARC NATIONS

Total Marks : 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(Five questions carrying 13 marks each taking four from unit 1 and one from unit 2)

Unit 1: Regional Geography of India

(Four questions each carrying 13 marks) (48 classes) **52**

- Locational significance, unity and diversity
- Physical Environment: Physiographic Characteristics – climate, soil and natural vegetation
- Population characteristics: Peopling growth, distribution, density, structure and composition
- Agriculture: Agricultural development and Indian economy, modernization of Indian agriculture, agro-climatic regions and special characteristics, agricultural trade.
- Industry: Industrial development and Indian economy, distribution production pattern of major Industries (Iron and steel, cotton textile, petrochemicals, sugar, paper and cement industries), Industrial policies and industrial trade.
- Transport: Roads and railways, air transport and pipe transport

Unit 2: Regional Geography of SAARC Nations

(one question carrying 13 marks)(12 classes) **13**

- Locational significance, unity & diversity, conflict & co-operation, trade & commerce.

Books Suggested :

1. Roy, P. and Mukherjee, S., 1993 (2nd edn): Economic Geography, Central Education Enterprise, Kolkata
2. Smith, David, M., 1981: Industrial Location: An Economic Geographical Analysis, Willey, New York
3. Wheeler, J.O. and Muller, P.O., 1981: Economic Geography, John Wiley & Sons, New York
4. Mohammad, N.: New Dimension in Agricultural Geography, Concept Publishing
5. Alexander, 1986: Economic Geography, Prentice Hall Inc.
6. Gunner, Alexanderson, 1988: Geography of Manufacturing, Prentice Hall Inc.
7. Mamoria, C.B.: Economic Geography of India, Shivelal Agarwal & Co., Agra-3
8. Spate, O.H.K. and Learmonth, A.T.A., 1967: India and Pakistan – Land, People and Economy, Methuen & Co., London
9. Tirtha, R.: Geography of India, Rawat Publications
10. Singh, R.L. (ed) India: A Regional Geography, National Geographical Society, India, Varanasi
11. Khullar,D.R. : India – A Comprehensive Geography, Kalyani Publishers, Ludhiana
12. Govt. of India, National Atlas of India, NATMO Publications, Kolkata.

FIFTH SEMESTER
PAPER 503: CARTOGRAPHIC AND QUANTITATIVE METHODS

Total Marks : 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

To answer five questions of 13 marks each taking one from units 1, 2 and 3, and two from Unit 4

Unit 1: Fundamentals of Cartography
(1 question of 13 marks) (12 classes) **13**

- The nature and scope of cartography, development trend, traditional versus modern Geography
- Concept of base map and map types, map design and layout
- The Earth: shape, size, coordinate system, latitude and longitude, direction and distance; concept of scale and spatial resolution
- Thematic mapping types and techniques

Unit 2: Surveying
(1 question of 13 marks) (12 classes) **13**

- Principles of plane and geodetic surveying
- Principles of triangulation
- Principles and techniques of surveying by Plane Table, Prismatic Compass, Dumpy Level and Theodolite; Principles of traversing, contouring and leveling

Unit 3: Map Projection
(1 question of 13 marks) (12 classes) **13**

- Map projection – Definition, classification and history of map projections
- Basic principles of constructing Zenithal, cylindrical and conical projections
- Concept of orthomorphism, equal-area, equi-distance
- Choice of map projection for various regions of the world and India

Unit 4: Quantitative Methods
(2 questions of 13 marks each) (12 classes) **26**

- Quantification in Geography – rationale and limitation
- Sampling techniques and their utilities in geographical studies
- Measures of central tendency and dispersion and their application in geographical studies
- Time series analysis techniques: Moving average and least squares methods
- Concept of correlation; Application of linear bi-variate correlation and regression analysis in geographical studies

Books Suggested :

1. Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff
2. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, New Delhi
3. Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, New York
4. Raisz, E. : Principles of Cartography, McGraw Hills, London
5. Kenetkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I & II, Vidyarthi Gritha Prakashan, Pune
6. Kellaway, G.P.: Map Projection, Methuen & Co., London
7. Steers, J.A., 1965: An Introduction to the Study of Map Projection, University of London, London

8. Bygott, J., An Introduction to Map work and Practical Geography
9. Talukder, S., 2008: Introduction to Map Projections, Eastern Book House, Guwahati.
10. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
11. Hammond, R. and Mc Cullagh, P. (1965): Quantitative Techniques in Geography, Clarendon Press, Oxford Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
12. Elhance, D.N., 1972: Fundamentals of Statistics, Kitab Mahal, Allahabad
13. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
14. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London
15. Singh, R. & Singh, R.: Map Work & Practical Geography, Central Book Depot, Allahabad.
16. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

FIFTH SEMESTER
Paper 504: POPULATION AND SETTLEMENT GEOGRAPHY

Total Marks: 75
(including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(5 questions taking one from every unit carrying 13 marks each)

Section A: Population Geography

(3 questions of 13 marks each)

Unit 1: Field of Population Geography (10 classes)

Meaning, development and scope of population geography; sources of population data; Malthus theory of population growth; and Demographic Transition Model

Unit 2: Population growth, distribution and Migration(14 classes)

Components of population growth; trend of world population growth; factors influencing distribution and density of population; major population density zones in the world; Definition, types, and causes and consequences of migration.

Unit 3: Population Characteristics and Population-Resource Relationship (12 classes)

Age-Sex composition; literacy and education; and work participation and occupational composition; concept of population-resource relationship with reference to optimum population, over population and under population.

Section B: Settlement Geography

(2 questions of 13 marks each)

Unit 4: Field of Settlement Geography (12 classes)

Meaning and scope of settlement geography; concept of hierarchy of settlements and Christaller's Central Place Theory; concept of dichotomy and continuum.

Unit 5: Origin, Growth and Morphology of Settlements (12 classes)

Factors influencing origin and growth of rural and urban settlements; Morphology and functional characteristics of rural and urban settlements.

Books Suggested :

1. Leong, G.C. and Morgan, G.C., 1992: Human and Economic Geography, Oxford University Press, Oxford
2. Chandna, R.C., 1986: A Geography of Population, Kalyani Publishers, New Delhi
3. Clarke, J.I., 1972: Population Geography, Pargamon Press, Oxford
4. Singh, R.L. and Sing, K.N. (eds), 1975: Readings in Rural Settlement Geography, BHU, Varanasi
5. Singh., R.Y., 1994: Geography of Settlement, Rawat Publication, Jaipur & Delhi
6. Zelinsky, W., 1966: A Prologue to Population Geography, Printice-Hall, Englewood Cliffs.
7. Hagget, P., 1972: Geography: A Modern Synthesis, Harper & Row, New York
8. Money, D.C., 1972: Patterns of Settlement, Evan Brothers, London

FIFTH SEMESTER
PAPER 505: PRACTICAL ON CARTOGRAPHIC METHODS (SURVEYING & MAP WORKS)

Total Marks : 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 4 hours

Unit 1: Surveying and Mapping

(One question of 20 marks) (24 classes) **20**

- Plane table surveying (Radiation & Intersection methods)
  (2 Exercises)
- Traverse Surveying with Prismatic Compass and Theodolite (Open and Closed Traverse); Computation of Reduced Bearing, Consecutive and Independent Co-ordinates.
  (3 Exercises)
- Profile leveling and contouring by Dumpy Level / Theodolite (2 Exercises)

Unit 2: Map Projection and mapping

(One question of 20 marks) (20 classes) **20**

- Construction of graticules based on Mathematical derivation and calculation ;
  (a) Zenithal group (polar cases)- Gnomonic, Stereographic, Orthographic, Equal-area (4 Exercises)
  (b) Cylindrical group : Cylindrical equal area and Gall's Stereographic projection (2 Exercises)
  (c) Conical Group: Conical Projection with two standard parallels and Bonne's Projection (2 Exercises)
  (d) Conventional Group : Sinusoidal (1 Exercise)

Unit 3: Mapping of socio-economic data

(One question of 15 marks) (16 classes) **15**

- Choropleth mapping by grouping the data following Natural Break, Equal interval and Standard Deviation method (Density of population/Land Use/Cropping pattern) (3 Exercises)
- Isopleth Mapping of distribution of rainfall and variability of rainfall of given data set for rain gauge stations or any other data of point locations (2 Exercises)
- Urban Population Distribution of Assam or North East Region or India by proportional sphere method (1 Exercise)
- Pie-graph for representation of land use, cropping pattern, rural-urban composition, etc.
  (2 Exercises)

Unit 4: Practical Note Book and Viva-Voce (5+5 marks) **10**

Books Suggested :

1. Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff
2. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, New Delhi
3. Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, New York
4. Raisz, E. : Principles of Cartography, McGraw Hills, London
5. Kenelkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I & II, Vidyarthi Gritha Prakashan, Pune
6. Kellaway, G.P.: Map Projectio, Methuen & Co., London
7. Steers, J.A., 1965: An Introduction to the Study of Map Projection, University of London, London
8. Bygott, J., An Introduction to Map work and Practical Geography
9. Talukder, S., 2008: Introduction to Map Projections, EBS Publication, Guwahati
10. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
11. Hammond, R. and Mc Cullagh, P. (1965): Quantitative Techniques in Geography, Clarendon Press, Oxford
12. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
13. Elhance, D.N., 1972: Fundamentals of Statistics, Kitab Mahal, Allahabad
14. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
15. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London
16. Singh, R. & Singh, R.: Map Work & Practical Geography, Central Book Depot, Allahabad.
17. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

FIFTH SEMESTER
PAPER 506: PRACTICAL ON CARTOGRAPHIC AND QUANTITATIVE METHODS

Total Marks : 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 4 hours

Unit 1: **Cartographic Methods**

(one question of 14 marks) (16 classes) **14**

- Population data representation and interpretation - Trend of Growth, Calculation of Growth Rates and Population Projection of Assam and North East India or India (3 Exercises)
- Construction of Age-Sex Pyramid for developed and less developed countries and their interpretation (2 Exercises)
- Enlargement and Reduction of Maps by Graphical and Instrumental Methods (2 Exercises)

Unit 2: Map Reading and Analysis

(one question of 13 marks) (16 classes) **13**

- Reading and Analysis of Topographical Maps of 1:50,000 scale for an area covering 5 minutes x 5 minutes of map extent including measurement of area and length of various geographic features taking two areas of different environmental conditions(2 Exercises)
- Preparation of Thematic Map/and Generation of Data from the topographical maps (land use map and area under different land-use categories) (2 Exercises)
- Construction of Transect Chart showing the relationship among Relief, Drainage, Vegetation, Settlements, Agriculture and Transport Network (1 Exercise)

- Weather Map Interpretation and Analysis, Study of Temperature, Pressure, Wind system, Rainfall, Cloud condition, Sea condition, etc. and weather prediction (2 Exercises)

Unit 3: Quantitative Methods

(Two questions of 14 marks each) (28classes) **28**

- Computation of Measures of Central Tendency, Standard Deviation and Coefficient of Variation for a given sets of geographical data (3 Exercises)
- Preparation of Variability Map using Standard Deviation and Coefficient of Variation taking temporal data (Rainfall/Cropping Pattern or Land Use/Population Growth) for few years (3 Exercises)
- Determination of Spatial Mean and Median Centres of Settlements, Services and Population using Centrographic Measures (3 Exercises)
- Computation and Interpretation of Correlation Coefficient by Spearman's and Karl Pearson's Method for a given geographic data set including t-test (2 Exercises)
- Linear Regression Analysis for bi-variate geographic data sets (1 Exercise)

Unit 4: Practical Note Book and Viva-Voce (5+5 marks) **10**

Books Suggested :

1. Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff
2. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, New Delhi
3. Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, New York
4. Raisz, E. : Principles of Cartography, McGraw Hills, London
5. Kenetkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I & II, Vidyarthi Gritha Prakashan, Pune
6. Kellaway, G.P.: Map Projectio, Methuen & Co., London
7. Steers, J.A., 1965: An Introduction to the Study of Map Projection, University of London, London
8. Bygott, J., An Introduction to Map work and Practical Geography
9. Talukder, S., 2008: Introduction to Map Projections, Eastern Book House, Guwahati
10. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
11. Hammod, R. and Mc Cullagh, P. (1965): Quantitative Techniques in Geography, Clarendon Press, Oxford
12. Elhance, D.N., 1972: Fundamentals of Statistics, Kitab Mahal, Allahabad
13. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
14. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London
15. Singh, L. R. & Singh, R.: Map Work & Practical Geography, Central Book Depot, Allahabad.
16. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

SIXTH SEMESTER
PAPER 601: ENVIRONMENT AND DEVELOPMENT

Total Marks : 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 3 hours

(Five questions carrying 13 marks each taking two from unit 1, two from unit 2 and one from unit 3)

Unit 1 : Concept and Issues of Environment and Development (2 questions carrying 13 marks each) (24 classes) **26**

- Concept of Environment, Environmental Issues
- Concept of Development, Sustainable Development
- Concept of Environment and Development: Ethical, Ecological and Socio-Economic Issues

Unit 2: **Major Environmental Problems**
(2 questions carrying 13 marks each) (24 classes) **26**

- Defining Environmental Problem
- Types and geographical dimensions of environmental problems
- Major Environmental Problems: Climate Change, Desertification, Environmental Pollution (Air, Land and Water), Earthquake and Flood Hazards

Unit 3: **Sustainable Management of Environment and Development**
(1 question carrying 13 marks) (12 classes) **13**

- Concept of Sustainable Management
- Management of Environment and Development: Role of Geography
- Management of Earthquake and Flood Hazard

Books Suggested :

1. Park, C.. 1997: The Environment, Routledge, London
2. Pickering, K.T. & L.A., Owne, 1994: An Introduction to Global Environmental Issues, Routledge, London
3. Singh, S., 1991: Environmental Geography, Prayag Pustak Bhawan, Allahabad
4. Goudie, A., 1984: The Nature of Environment, Basil Blackwell, London
5. Strahler, A.N. & A.H. Strahler, 1976: Geography and Man's Environment, John Willey, New York
6. Simon, I.G., 1982: Biogeographical Process, Allen & Unwin, London
7. Newson, M., 1992: Land, Water and Development, Routledge, London
8. Varma, P.S. & V.K. Agarwal, 1989: Principles of Ecology, S. Chand & Co., New Delhi
9. Ress, J., 1985: Natural Resources, Routledge, London
10. Cantledge, B. (ed.), 1992: Monitoring the Environment, Oxford University Press, Oxford

THIRD SEMESTER
PAPER 602 : SOCIAL AND POLITICAL GEOGRAPHY

Total Marks: 75
(Including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time : 3 hours
(5 questions carrying 13 marks each taking three from Unit 1 and two from Unit 2)

Unit 1: Social Geography

(Three questions carrying 13 marks each) (36 classes) **39**

- Meaning, nature and scope of Social Geography
- Approaches to the study of Social Geography
  Concepts in Social Geography : Society and environment, type of society, Social Space, Social differentiation and integration
- Urbanization, westernization and social change

Unit 2: Political Geography

(Two questions carrying 13 marks each) (24 classes) **30**

- Nature, scope and subject matter of political geography
  Approaches to the study of political geography
- State, nation, nation-state and nation building
- Frontiers, boundaries and border zones; boundary problems with reference to India and North East India
- Colonialism, desalinization and Neocolonialism, Lebensraum

Books Suggested :

1. Sen, Jyotirmoy : A text book of Social and Cultural Geography
2. Taher, M 1994 : An Introduction to Social Geography, NEIGS
3. Ahmed, A : 1999 Social Geography, Rawat Publications Jaipur & New Delhi
4. Jones E and John, E (1977) : An Introduction to Social Geography (Oxford & New York : Oxford University Press)
5. Jones, E (ed : 1975) : Readings in Social Geography, Oxford University Press
6. Sharma, H N,2000 : 'Social Geography, in Singh J (ed) Progress in Indian Geography, (1996-2000) INSA, New Delhi
7. Sopher D.E. 1980 : An Exploration of India : Geographical Perspective on Society and Culture, Longman, London
8. Weigort : Principles of Political Geography, New York,1957
9. Pounds NTC, 1972 Political Geography Mc Graw Hills, Newyork
10. Moodies A E : Geography Behind Politics, London, 1957
11. Peancy and Associate : World Polical Geography,1957
12. Cole, J.P : Geography of World Affirs
13. Adhikary S : Fundamentals of Political Geography, Rawat Publications,Jaipur & New Delhi
14. Hussain M : Principles of Political Geography
15. Dikshit R.D : Modern Political Geography
16. Sukhuwal : Political Geography
17. Dikshit , R.D.1982 : Political Geography – A Contemporary Perspective, Tata
18. McGraw Hill Publishing Co.Ltd,NewDelhi
19. Carlson : Geography and World Politics

20. Taylor,P.J.,1989 : Political Geography,Longman,London
21. Sukhuwal,B.J.,1979 : Modern Political Geography of India, Sterling, New Delhi
22. De Blij, H.J. 1972 : Systematic Political Geography, John Wiley, New York
23. Adhikari 1996 : Political Geography, Rawat Publications Jaipur & New Delhi

SIXTH SEMESTER

PAPER 603 : REGIONAL GEOGRAPHY OF NORTH EAST INDIA WITH SPECIAL FOCUS ON ASSAM

Total Marks : 75

(Including 10 marks for internal assessment)

Total Credit: 6 (Total Number of Classes: 60)

Time : 3 hours

(5 questions carrying 13 marks each taking three from Unit 1 and two from Unit 2)

Unit 1: North-East India **39**

(Three questions carrying 13 marks each) (36 classes)

- Locational significance
- Physical characteristics : Physiography, drainage, climate, soil and natural vegetation
- Population characteristics : peopling ,growth, distribution and density, age sex composition, rural-urban composition and religious composition.
- Economic basis : Agriculture and Industries
- Transport and communication system
- Disparity in socio-economic development; socio-economic problems

Unit 2: **Assam** **26**

(Two questions carrying 13 marks each) (24 classes)

- Locational Significance
- Regions of Assam and their population, agriculture and industrial characteristics (Brahmaputra valley, the Barak Valley, Hill region)
- Tourism and its potentiality in Assam
- Biodiversity and its conservation issues

Books Suggested :

1. Bhagabati, A.K., Bora, A. K. and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi.
2. Taher, M and Ahmed, P.: Geography of North East India, Mani Manik Prakash, Guwahati.
3. Das, M..M.: Peasant Agriculture in Assam, Inter – India Publications, New Delhi.
4. Govt of India : National Atlas of India, NATMO Publication, Kolkota
5. North Eastern Geographer,NEIGS Publications, Guwahati
6. Gopal Krishnan, R : Geography of North East India
7. North Eastern Council : Various Publication in different years
8. Bhattacharya, P.2006 : Trend in Tourism Potentiality, Bani Mandir, Guwahati
9. Bhagabati, A.K. (ed) : Biodiversity of Assam, Eastern Book House, Guwahati
10. Bhattacharyya, N.N. : North East India, Rajesh Publication, New Delhi
11. Srivastava, S.C., : Demographic Profile of N.E. India, Mittal Publications

SIXTH SEMESTER

PAPER 604: PRINCIPLES AND APPLICATIONS OF REMOTE SENSING, GIS AND GPS

Total Marks : 75

(including 10 marks for internal Assessment)

Total Credit: 6 (Total Number of Classes: 60)

Time: 3 hours

(Five questions carrying 13 marks each taking three from unit 1, one from unit 2 and one from unit 3)

Unit 1 : Remote Sensing

(3 questions carrying 13 marks each) (36 classes) **39**

- Basic concept of Remote Sensing
- Components of Remote Sensing – Electromagnetic Radiation (EMR), Sensors and Sensor carrying platforms
- Types of Remote Sensing – Aerial Remote Sensing and Satellite Remote Sensing
- Concept of photogrammetry, Types of aerial photographs, Elements of vertical photographs
- History of Remote Sensing, Development of Aerial and Satellite Remote Sensing in India
- Applications of Remote Sensing in Geographical studies – Resource inventory and management with special reference to forest, water and land resources

Unit 2 : Geographical Information System

(1 question carrying 13 marks) (12 classes) **13**

- Introduction to GIS – Definition and components of GIS
- Functional units of GIS
- Nature and types of Geographic data: spatial and non-spatial
- Spatial data structure – Raster and Vector data
- Applications of GIS in thematic representation and analysis of change and spatial interrelationship of various geographical phenomena (including physical and cultural resources)

Unit 3 : **Global Positioning System**

(1 question carrying 13 marks) (12 classes) **13**

- Concept of GPS
- Functions and working principles of GPS
- Geographical data acquisition techniques
- Application of GPS in geographical surveying and mapping of geographical features

Books Suggested :

1. Patel, A.N. and Singh, S., 1999: Principles of Remote Sensing, Scientific Publishers, Jodhpur
2. Nag, P. and Kudra, M., 1998: Digital Remote Sensing, Concept Publishing Co., New Delhi
3. Nag, P., 1992: Thematic Cartography and Remote Sensing, Concept Publishing Co., New Delhi
4. Joseph, G. 2003: Fundamentals of Remote Sensing, University Press Pvt. Ltd. Hyderabad
5. Introduction to GIS, Pearson Education, Delhi
6. Burrough, Peter, A., MC Donel, R.A., Principles of GIS, Regency Publication, New Delhi
7. Lo.C.P., Albert, K. Young, W., 2002: Concepts and Techniques of Geographic Information System, Printice Hall of India
8. Burrough, P.A. & Mc Donnell, R.A, 1998: Principles of Geographical Information System, Oxford University Press
9. De Mex, M., 1999: Fundamentals of Geographic Information System, New York, Wiley

SIXTH SEMESTER
PAPER 605: PRACTICAL ON ADVANCED TECHNIQUES IN GEOGRAPHY

Total Marks: 75
(including 10 marks for internal Assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time: 4 hours

Unit 1 : Remote Sensing Techniques (30 classes) **27**
(2 questions, 1 carrying 14 marks and another carrying 13 marks)

- Visual interpretation techniques/keys
- Visual interpretation of aerial photograph: Identification and mapping of physical/cultural features from the aerial photograph using stereoscope, determination of scale from aerial photographs
- Visual interpretation of satellite imagery: delineation and mapping of physiographic units from satellite images
- Identification and drawing of physical/cultural features from satellite imagery

Unit 2 : Computer application, GIS and GPS (30 classes) **28**
(2 questions, each carrying 14 marks)

- Geographical (spatial and non-spatial) data entry, tabulation, and charting bar graph, pie graph) etc. using MS Excel or any Spreadsheet/Graphic programme
- Spatial Data input for GIS application : map and satellite image scanning and editing
- Georeferencing (geocoding) of maps and satellite image, digitization and data layer creation
- Data transformation: Raster to Vector and Vector to Raster model using appropriate software (ILWIS/Arc GIS)
- Mapping of various geographic features (point, line, area/polygon) from the image using Arc GIS/ERDAS imagine/ ILWIS
- Surveying and mapping of an area/plot of land with physical/cultural features using GPS, GPS acquired data and field records

Unit 3: **Practical Note-Book and Viva-voce** **10**

- Practical Note-Book Evaluation & Viva-voce (5+5 marks)

Books Suggested :

1. Lilesand, T.M. and Kiefer, R.W., 1987: Remote Sensing and Image Interpretation, John Wiley
2. Patel, A.N. and Sing, S., 1999: Principles of Remote Sensing, Scientific Publishers, Jodhpur
3. Mc Coy. R.M. 2006: Field Method in Remote Sensing, Rawat Publications, Jaipur
4. Crampton, J.W. 2010: Mapping: A Critical Introduction to Cartography and GIS, Wiley Blackwell
5. Wilson, J.P. and Fotheringham, S. (ed), 2008: The Handbook of Geographic Information Science, Blackwell Publishing
6. Bhatia, S.C., 2008: Fundamentals of Remote Sensing, Atlantic Publishers & Distributors (P) Ltd.
7. Max Eachren, A.M., 2008: How Maps Work: Presentation, Visualization, and Design, Rawat Publications
8. Trivedi, P.R., Chairanjeev, A. and Jamwal, A.K., 2006: Encyclopaedia of Geo-Informatics: Incorporating GIS and Remote Sensing, Jnanada Prakashan
9. Jensen, J.R., 2005: Remote Sensing of the Environment: An Earth Resource Perspectives, Pearson Education

SIXTH SEMESTER
PAPER 606: PROJECT WORK

Total Marks: 75
(Including 10 marks for internal assessment)
Total Credit: 6 (Total Number of Classes: 60)
Time : 3 hours

- A project work shall be assigned to each student by the respective teacher in the Department for preparation of a project report. It should be prepared scientifically with statement of the problem, significance of the problem for study, objectives and methodology including appropriate data collection, processing and analysis methods and chapter plan.
- Evaluation of the project report shall be done as follows:
  Internal Assessment: 10 marks
  Evaluation of the content and quality of the Report : 25 marks
  (Jointly by the external and internal)
  Viva-voce on the Report : 15 marks (by external)
- Theory examination on Methodology: 25 marks
  (to be examined by the external)

Course content :

(i) Problem selection for Project work and development of objectives
(ii) Collection of data : Secondary and primary data and questionnaire preparation
(iii) Developing Sample design
(iv) Data Processing and Analysis Techniques
(v) Data representation techniques in the form of graphs and maps

Books Suggested :

1. Kothari, C.R., 1993: Research Methodology: Methods and Techniques, 2nd Eastern Ltd., New Delhi
2. Mishra, R.P., 1989: Research Methodology: A Hand Book, Concept Publishing, New Delhi
3. Misra, H,N. and Singh, V.P., 1998: Research Methodology in Geography, Concept Publishing, New Delhi.