PONDICHERRY UNIVERSITY
PUDUCHERRY 605 014

B.Sc(BRANCH VIII) GEOGRAPHY

REGULATIONS

Aim of the Course:

The Degree of Bachelor of Science in **Geography** aims to introduce the students to **advances in Geography**. At the end of the course, the students are expected to have good working knowledge in the **subject of Geography and mapping skills.**

Eligibility for Admission:

Candidates for admission to **B.Sc Geography** shall be required to have passed Higher Secondary Examination conducted by the Government of Tamil Nadu with **Geography** as one of the subjects of study or an examination accepted as equivalent thereto, subject to such conditions as may be prescribed therefore.

Duration of the Course:

The Course shall be of three years duration spread over six semesters. The maximum duration to complete the course shall be 5 years.

Eligibility for admission to Examination:

75 per cent with 15% condonation (i.e., % of attendance required prescribed if any).

Medium:

The medium of instruction shall be **English and Hindi.**

Passing Minimum:

Passing eligibility & classification for the award of the Degree is as follows:

40 percent in each of the prescribed papers.

PONDICHERRY UNIVERSITY

B.Sc(BRANCH VIII) GEOGRAPHY MAIN

(Revised Syllabus and Scheme of Papers/Examinations (Semesters I to VI)
(For the candidates admitted from the academic year 2009-10)

Semester	Paper	Exam Hours	Marks	Code
I	Paper I G eography of Natural Resources	3	100	MT1
	Paper II Geography of Human Resources	3	100	MT2
	Practical I Thematic Mapping	3	75	MP1
II	Paper III Geography of Resource Utilization	3	100	MT3
	Paper IV Geography of Industries	3	100	MT4
	Practical II Surveying I	3	75	MP2
III	Paper V Natural and Human Resources of Asia	3	100	MT5
	Paper VI Natural and Human Resources of India	3	100	MT6
	Practical III Thematic Mapping and Interpretations	3	75	MP3
IV	Paper VII Economic Geography of Asia	3	100	MT7
	Paper VIII Economic Geography of India	3	100	MT8
	Practical IV Surveying II	3	75	MP4
V	Paper IX Basics of Geoscience	3	100	MT9
	Paper X Climatology	3	100	MT10
	Paper XI Geographic Thought	3	100	MT11
	Paper XII Human Geography	3	100	MT12
	Paper XIII Agricultural Geography	3	100	MT13
	Practical V Mapping Terrain and Climatic Data	3	75	MP5
VI	Paper XIV Geomorphology	3	100	MT14
	Paper XV Oceanography	3	100	MT15
	Paper XVI Methods in Geography	3	100	MT16
	Paper XVII Political Geography	3	100	MT17
	Paper XVIII Environmental Studies	3	100	MT18
	Practical VI Map Projections	3	75	MP6

NOTE

1. Practical examinations will be held at the end of even semesters.

2. The practical marks of 75 include 50 marks for the practical work in the Practical Examination and 25 marks for the Record which includes 15 marks for the Record and 10 marks for the viva.

3. There is no change in the pattern of question paper in the case of theory papers. Section **A** will contain **FIVE** questions out of which the candidates have to answer (not exceeding 1000 words) **THREE** questions (3X20=60 marks). Section **B** will contain **TWELVE** questions out of which the candidates have to answer (not exceeding 100 words) **TEN** questions (10X4=40 marks).

4. The question papers for the Practical papers will be set by the Practical Examiners concerned. There will be no Question Bank.

B.Sc (BRANCH VIII) GEOGRAPHY MAIN
SEMESTER I

PAPER I : GEOGRAPHY OF NATURAL RESOURCES

1. Nature, scope and significance of Geography of Resources. Meaning and classification of resources: Renewable and nonrenewable resources. Biotic and abiotic resources. Technology and resources. Resource evaluation. Conservation of resources.

2. Types and distribution of major soils. Soils and agriculture. Problems of soil erosion and soil conservation.

3. Distribution, utility and conservation of water resources.

4. Biodiversity. Types of forests and their uses. Fishery resources. Livestock resources.

5. Distribution, production and problems of conservation of major mineral and energy resources: Iron ore, copper ore, manganese ore, tin ore and bauxite ore, coal, petroleum and natural gas.

REFERENCES

1. Coh Cheng Leong et al (1995) Human and Economic Geography. Oxford University Press, New Delhi.
2. Gautam,A(2007)Sansadhan evam Paryavaran Bhoogol. Sharda PustakBhawan, , Allahabad.
3. Gautam, G(2007) Arthik Bhoogol ki Multhathva. Sharda Pustak Bhawan, Allahabad.
4. Kaushik,S.D and Gautham,A(2008)Sansadhan Bhoogol. Rastogi Publications, Meerut.
5. Kaushik,S.D (2008) Arthik Bhoogol ki Saral Siddhanth. Rastogi Publications, Meerut
6. Maurya, S.D(2008)Sansadhan Bhoogol. Prayag Pustak Bhawan, Allahabad.
7. Maurya,S.D(2008)Sansadhan evam Paryavaran. Prayag Pustak Bhawan, Allahabad.
8. Negi, B.S (2002) Geography of Resources, Kedar Nath Ram Nath, Meerut.
9. Negi B.S. (2002) Sansadhan Bhoogol. Kedar Nath Ram Nath, Meerut.

PAPER II: GEOGRAPHY OF HUMAN RESOURCES

1. Human resource: Meaning, qualitative and quantitative aspects of population.

2. Population: Determinants and world pattern of number, distribution, density and growth of population.

3. Age and sex structure, literacy, occupational structure, birth and death rate. Religion and race. Rural and urban population.

4. Population of India: Number, distribution, density, growth, age and sex structure, literacy and rural and urban population. Migration. Population problems.

5. Population and resource relationship. Future resources. The dilemma of limited reserves of resources and increasing population and utilization of resources. Human resource regions of the world.

REFERENCES

1. Chandna, R.C (2007) Geography of Population. Kalyani Publishers, New Delhi.
2. Coh Cheng Leong (1995) Human and Economic Geography. Oxford University Press, New Delhi.
3. Dubey evam Singh(2006) Jansankya Bhoogol. Rawat Publications, Jaipur.
4. Kaushik,S.D and Gautam,A(2008) Sansadhan Bhoogol. Rastogi Publications, Meerut.
5. Gautam,A(2007) Sansadhan evam Paryavaran. Sharda Pustak Bhawan, Allahabad.
6. Hassan M.I. (2005) Population Geography. Rawat Publications, Jaipur.
7. Kaushik,S.D and Gautham,A(2008) Sansadhan Bhoogol. Rastogi Publications, Meerut.
8. Maurya, S.D(2008) Sansadhan Bhoogol. Prayag Pustak Bhawan, Allahabad.
9. D (2007) Jansankya Bhoogol. Sharda Pustak Bhawan, Allahabad.
10. Negi, B.S (2002) Geography of Resources, Kedar Nath Ram Nath, Meerut.
11. Negi B.S. (2002) Sansadhan Bhoogol. Kedar Nath Ram Nath, Meerut.

PRACTICAL I: THEMATIC MAPPING

1. Maps and scales: Meaning and types of maps. Construction of map scales: R.F., statement, plain, comparative and diagonal scale.

2. Cartographic symbols: Point symbols (Dots, circles and spheres). Line symbols(Isopleths and flowlines). Area symbols(Choropleth). Qualitative and quantitative symbols. Line graphs and bar graphs. (atleast one exercise for each).

3. Representation of Industrial data: Distribution of Industries. Production and trade. Trends in production and trade. Employment in industry.

4. Representation of Transport Data: Traffic and commodity flows.

NOTE: Representation of the above data has to be done employing suitable methods and cartographic symbols.

REFERENCES

1. Khan,M.Z.A (1998) Text Book of Practical Geography. Concept Publishing House, New Delhi.
2 Misra R.P and A Ramesh (2002) Fundamentals of Cartography. Concept Publishing House, New Delhi.
3. Negi B.S (1996) Practical Geography. Kedar Nath Ram Nath, Meerut.
4. Negi B.S (1996) Prayogik Bhoogol. Kedar Nath Ram Nath, Meerut.
5. Sharma J.P (2008) Prayogik Bhoogol. Rastogi Publications, Meerut.
6. Singh, G (2005) Mapwork and Practical Geography. Vikas Publishing House, New Delhi.
7. Singh, L.R (2006) Fundamentals of Practical Geography. Sharda Pustak Bhawan, Allahabad.
8 Singh R.L and R.B.P Singh (2000) Elements of Practical Geography. Kalyani Publishers, New Delhi.
9. Shukla, R.S (2008)Prayothmak Bhoogol. Sharda Pustak Bhawan,Allahabad.
10. Tiwari,R.C evam Tripati, S (2007)Abhinav Prayothmak Bhoogol. Prayag Pustak Bhawan, Allahabad.

SEMESTER II

PAPER III: GEOGRAPHY OF RESOURCE UTILIZATION

1. Resource utilization and human wellbeing. Major factors associated with resource utilization: Levels of socioeconomic development, technology and quality of population. Infrastructural facilities: Transport and communication facilities.

2. Natural and human determinants, distribution, production and consumption of cereal crops: Rice, wheat, corn, barley, millets and pulses.

3. Natural and human determinants, distribution, production, and consumption of non-cereal crops: Cotton, jute, sugarcane, sugarbeet, tea, coffee and rubber.

4. Livestock: Distribution, production and consumption of livestock products.

5. Internal and international trade of the above agricultural products.

REFERENCES

1. Hartshorn and Alexander (2004) Economic Geography. Prentice Hall of India Ltd., New Delhi.
2. Coh Cheng Leong(1995) Human and Economic Geography. Oxford University Press, New Delhi.
3. Gautam,A(2007) Sansadhan evam Paryavaran. Sharda Pustak Bhawan, Allahabad
4. Gautam,A(2007) Arthik Bhoogol ki Multhathva. Sharda Pustak Bhawan, Allahabad.
5. Kaushik,S.D and Gautham,A (2008) Sansadhan Bhoogol. Rastogi Publications, Meerut.
6. Kaushik,S.D (2008)Arthik Bhoogol ki Saral Sinddhanth. Rastogi Publications, Meerut.
7. Negi, B.S (2002) Geography of Resources, Kedar Nath Ram Nath, Meerut.
8. Negi B.S. (2002) Sansadhan Bhoogol. Kedar Nath Ram Nath, Meerut.
9. Maurya, S.D(2008)Sansadhan Bhoogol. Prayag Pustak Bhawan, Allahabad.
10. Maurya,S.D(2008)Sansadhan evam Paryavaran. Prayag Pustak Bhawan, Allahabad.

PAPER IV: GEOGRAPHY OF INDUSTRIES

1. Meaning and types of industries. Factors influencing the location of industries. Industrial development and environmental pollution.

2. Distribution and production of industries: Iron and steel, aluminium, sugar, cement and chemical industries.

3. Distribution and production of industries: Automobile, ship building, aircraft and paper industries.

4. Distribution and production of industries: Dairy and forest-based industries. Internal and international trade of the above products.

5. Major industrial regions of the world: Industrial regions of U.S.A., Russia, Europe and India.

REFERENCES

1. Hartshorn,T.A and J.W.Alexander (2004) Economic Geography. Prentice Hall of India Ltd., New Delhi.
2. Coh Cheng Leong (1995) Human and Economic Geography. Oxford University Press, New Delhi.
3. Gautam,A(2007) Sansadhan evam Paryavaran. Sharda Pustak Bhawan, Allahabad
4. Gautam,A(2007) Arthik bhoogol ki Multhathva. Sharda Pustak Bhawan, Allahabad.
5. Kaushik,S.D and Gautham,A(2008)Sansadhan Bhoogol. Rastogi Publications, Meerut.
6. Kaushik,S.D (2008)Arthik Bhoogol ki Saral Sinddhanth. Rastogi Publications, Meerut.
7. Negi, B.S (2002) Geography of Resources, Kedar Nath Ram Nath, Meerut.
8. Negi B.S. (2002) Sansadhan Bhoogol. Kedar Nath Ram Nath, Meerut.
9. Maurya, S.D(2008)Sansadhan Bhoogol. Prayag Pustak Bhawan, Allahabad.
10. Maurya,S.D(2008)Sansadhan evam Paryavaran. Prayag Pustak Bhawan, Allahabad.

PRACTICAL II: SURVEYING I

1. Surveying: Meaning, history, types and principles.

2. Chain and tape surveying: Open and closed traverses

3. Prismatic compass surveying:
   i. Open traverse radiation method
   ii .Open traverse intersection method
   iii. Closed traverse radiation method
   iv. Closed traverse intersection method
   v. Bowditch method of closing error

4. Indian Clinometer: Finding out the height of accessible and inaccessible points.

REFERENCES

1. Khan,M.Z.A (1998) Text Book of Practical Geography. Concept Publishing House, New Delhi
2. Misra, R.P and A. Ramesh (2002) Fundamentals Cartography. Concept Publishing House, New Delhi.
3. Sharma, J.P (2008) Prayogik Bhoogol. Rastogi Publications, Meerut.
4. Singh, L.R (2006) Practical Geography. Sharda Pustak Bhawan, Allahabad.
5. Singh, R.L. and R.B.P. Singh(1999) Elements of Practical Geography. Kalyani Publishers, New Delhi.
6. Singh, G (2005) Mapwork and Practical Geography. Vikas Publishing House, New Delhi.
7. Shukla, R.S (2008) Prayothmak Bhoogol. Sharda PustakBhawan,Allahabad.
8. Tiwari,R.C evam Tripati, S (2007)Abhinav Prayothmak Bhoogol. Prayag Pustak Bhawan, Allahabad.

SEMESTER III

PAPER V: NATURAL AND HUMAN RESOURCES OF ASIA

1. Asia in the context of the world. Relief, climate, soils and natural vegetation.

2. Major river systems. Major multipurpose river projects. Marine food resources.

3. Metallic mineral resources: Iron, bauxite, copper, manganese and tin.

4. Power resources: Coal, petroleum and natural gas. Hydrothermal and atomic power.

5. Population: Distribution, density and growth. Occupational structure, literacy and age and sex structure. Migration. Urbanisation.

REFERENCES

1. Chandna R.C(2007) A Geography of Population. Kalyani Publishers, New Delhi.
2. ChauhanV.S(2000) Asia evam Bharath Ka Bhoogol. Rastogi Publications, Meerut.
3. Dubey and Singh (2006) Jansankya Bhoogol. Rawat Publications, Jaipur.
4. Hassan,M.I (2005) Population Geography. Rawat Publications, Jaipur.
5. Maurya,S.D(2007)Jansankya Bhoogol. Sharda Pustak Bhawan, Allahabad.
6. Swaroop, Shanthi. Geography of Asia. King Books, New Delhi.
7. Tirtha,R (2005) Geography of Asia. Rawat Publications, Jaipur.
8. Tiwari S.K (1995) Geography of Asia. Kedar Nath Ram Nath, Meerut.
9. Tiwari S.K (1995) Asia: Saral Adhyayan. Kedar Nath Ram Nath, Meerut.

PAPER VI: NATURAL AND HUMAN RESOURCES OF INDIA

1. India in the context of the world and Asia. Relief, climate, drainage, soil and natural vegetation. Marine resources.

2. Mineral resources: Iron, copper, bauxite, manganese and mica. Coal, petroleum and natural gas.

3. Human resources: Distribution, density and growth. Socioeconomic implications.

4. Population Dynamics: Age and sex structure, Religious structure. Literacy and occupational structure. Migration. Urbanization.

5. Andaman and Nicobar Islands: Relief, climate, soils and natural vegetation. Population: Distribution, density and growth.

REFERENCES

1. Chandna R.C (2004) A Geography of Population. Kalyani Publishers, New Delhi.
2. Dubey and Singh (2006) Jansankya Bhoogol. Rawat Publications, Jaipur.
3. Gautam,A (2006) Advanced Geography of India. Sharda Pustak Bhawan, Allahabad.
4. Hiralal (2000) Jansankhya Bhoogol. Radha Publications, New Delhi.
5. Hassan, M.I (2005) Population Geography. Rawat Publications, Jaipur.
6. Mamoria,C.B(2003) Economic Geography of India. Sahitya Bhawan Publishing Co.,Agra.
7. Maurya,S.D(2007) Jansankya Bhoogol. Sharda Pustak Bhawan, Allahabad.
8. Sharma T.C (2007) Economic and Commercial Geography of India. Vikas Publishing House., New Delhi.
9. Swaroop, Shanthi. Geography of India. King Books, New Delhi.
10. Tirtha, R (2004) Geography of India. Rawat Publications, Jaipur.
11. Tiwari,R.C(2008) Bharath Ka Bhruhat Bhoogol. Prayag Pustak Bhawan, Allahabad.

PRACTICAL III: THEMATIC MAPPING AND INTERPRETATIONS

1. Representation of population data: Distribution, density, growth, age and sex structure and sex ratio.

2. Representation of agricultural data: Land use, distribution of crops. Area and production of crops. Trends in area and production of crops.

3. Weather Maps and Interpretation: Weather signs and symbols. Weather station model. Study and interpretation of Indian weather maps of all seasons.

4. Map Interpretation: Conventional signs and symbols used in the Indian Topographical maps. Marginal Information. Study and interpretation of Indian Topographical maps of hilly, plain, desert and coastal areas.

NOTE: Representation of the above data has to be done employing suitable methods and cartographic symbols.

REFERENCES

1. Khan,M.Z.A (1998) Text Book of Practical Geography. Concept Publishing House, New Delhi
2. Misra R.P and A Ramesh (2002) Fundamentals of Cartography. Concept Publishing House, New Delhi.
3. Negi B.S (1996) Practical Geography. Kedar Nath Ram Nath, Meerut.
4. Negi B.S (1996) Prayogik Bhoogol. Kedar Nath Ram Nath, Meerut
5. Sharma J.P (2008) Prayogik Bhoogol. Rastogi Publications, Meerut.
6. Singh, G (2005) Mapwork and Practical Geography. Vikas Publishing House, New Delhi.
7. Singh, L.R (2006) Fundamental of Practical Geography. Sharda Pustak Bhawan, Allahabad
8 Singh R.L and R.B.P Singh (1999) Elements of Practical Geography. Kalyani Publishers, New Delhi.
9. Shukla, R.S (2008) Prayothmak Bhoogol. Sharda Pustak Bhawan, Allahabad.
10. Tiwari,R.C evam Tripati, S (2007)Abhinav Prayothmak Bhoogol. Prayag Pustak Bhawan, Allahabad.

SEMESTER IV

PAPER VII: ECONOMIC GEOGRAPHY OF ASIA

1. Agriculture: Characteristics of Asian agriculture. Land use pattern. Cropping pattern. Irrigation. Marine food production.

2. Area and production of crops: Rice, wheat, maize and millets. Oil seeds (Mustard, castor, groundnut and palm oil).

3. Area and production of crops: Sugarcane, cotton, tea, coffee and rubber.

4. Distribution, factors of location and production of major industries: Iron and steel, cement, cotton textiles, sugar, chemicals and engineering. Food processing. Energy resources and industrial development.

5. Transport and trade: Roads, railways and waterways. Major ports. Internal and international trade.

REFERENCES

1. Chauhan V.S (2000) Asia evam Bharath Ka Bhoogol. Rastogi Publications, Meerut..
2. Swaroop, Shanthi. Gography of Asia, King Books, New Delhi.
3. Stamp, Dudley(1991) Asia. B.I. Publications, New Delhi.
4. Tirtha,R (2005) Geography of Asia. Rawat Publications, Jaipur.
5. Tiwari S.K (1995) Geography of Asia. Kedar Nath Ram Nath, Meerut.
6. Tiwari S.K (1995) Asia: Saral Adhyayan. Kedar Nath Ram Nath, Meerut.

PAPER VIII: ECONOMIC GEOGRAPHY OF INDIA

1. Agriculture: Characteristics of Indian agriculture. Land use pattern. Cropping pattern. Irrigation. Marine food production.

2. Area and production of crops: Rice, wheat, jowar, maize and bajra. Oilseeds(Mustard, castor and groundnut).

3. Area and production of crops: Sugarcane, cotton, jute, tea, coffee and rubber.

4. Distribution, factors of location and production of major industries: Iron and steel, cement, cotton textiles, sugar, fertilizer, chemicals and engineering. Food processing. Energy resources and industrial development.

5. Transport and trade: Roads, railways, waterways and airways. Major ports. Internal and international trade.

REFERENCES

1. Chauhan,B.S and Gautam,A(2007) Bharath. Rastogi Publications,Meerut.
2. Gautam,A(2006)Advanced Geography of India. Sharda Pustak Bhawan, Allahabad.
3. Gautam,A(2006) Bharath ka Bhruhath Bhoogol. Sharda Pustak Bhawan, Alahabad.
4. Khullar, D.R (2004) India: A Comprehensive Geography. Kalyani Publishers, New Delhi.
5. Mamoria C.B (2003) Economic Geography of India. Sahithya Bhawan Publishing Co., Agra.
6. Negi B.S (1991) Geography of India. Kedar Nath Ram Nath, Meerut.
7. Sharma T. (2007) Economic and Commercial Geography of India. Vikas Publishing House., New Delhi.
8. Swaroop, Shanthi. Geography of India. King Books, New Delhi.
9. Tirtha,R (2004) Geograsphy of India. Rawat Publications,Jaipur.
10. Tiwari,R.C evam Tripati, S (2007)Abhinav Prayothmak Bhoogol. Prayag Pustak Bhawan, Allahabad.
11. Tiwari,R.C(2008) Bharath Ka Bhruhat Bhoogol. Prayag Pustak Bhawan, Allahabad

PRACTICAL IV: SURVEYING II

1. Plane Table Surveying:
   a. Open traverse radiation method
   b. Open traverse intersection method
   c. Closed traverse radiation method
   d. Closed traverse intersection method
   e. Resection method: Mechanical method(Tracing paper method) and Graphical method (Llano's method and Bessele's method)

2. Dumpy Level Surveying: Levelling.

REFERENCES

1. Khan,M.Z.A (1998) Text Book of Practical Geography. Concept Publishing House, New Delhi
2. Misra, R.P and A. Ramesh (2002) Fundamentals Cartography. Concept Publishing House, New Delhi.
3. Sharma, J.P (2008) Prayogik Bhoogol. Rastogi Publications, Meerut.
4. Singh,L.R(2008) Fundamentals of PracticalGeography. Sharda Pustak Bhawan, Allahabad.
5. Singh, G (2005) Mapwork and Practical Geography. Vikas Publishing House, New Delhi.
6. Singh, R.L. and R.B.P. Singh(1999) Elements of Practical Geography. Kalyani Publishers, New Delhi.
7. Shukla, R.S (2008) Prayothmak Bhoogol. Sharda Pustak Bhawan,Allahabad.
8. Tiwari,R.C evam Tripati, S (2007)Abhinav Prayothmak Bhoogol. Prayag Pustak Bhawan, Allahabad.

SEMESTER V

PAPER IX: BASICS OF GEOSCIENCE

1. Geoscience: Nature and scope. Solar system. Origin of the Earth: Theories of Kant, Laplace, Jeans and Jeffreys, Chamberlain, Russell, Otto Schmidt, Hoyle and Big bang theory.

2. Interior of the earth. Age of the earth. Rocks: Origin, main types and their main characteristics.

3. Orogenic and epeirogenic movements. Continental drift theory, Sea floor spreading and Plate tectonics. Folds and faults: Causes and types.

4. Mountain Building: Theories of Kober, Jeffreys, Daly, Holmes, Joly and Plate tectonics. Isostasy: Theories of Airy, Pratt, Hayford and Bowie, Joly and Holmes. Earthquakes and Volcanoes: Causes, types and effects.

5. Weathering and Mass Wasting: Definition, causes and significance.

REFERENCES

1. Chauhan B.S and Gautam,(2006)A Bhauthik Bhoogol. Rastogi publications, Meerut.
2. Gautam, A (2008) Geomorphology. Sharda Pustak Bhawan, Allahabad.
3. Gautam,A(2005) Bhoo-Akhrithi Vignan ki Saral Siddhanth. Rastogi Publications, Meerut.
4. Husain, M (2004) Fudamentals of Physical Geography. Rawat Publications, Jaipur.
5. Jat, B.C (2004) BhuAkrithi Vigyan. Rawat Publications, Jaipur
6. Lal, D.S (2006) Physical Geography. Sharda Pustak Bhawan, Allahabad.
7. Negi, B.S (2003) Physical Geography. Kedar Nath Ram Nath, Meerut.
8. Negi, B.S (2003) Bhauthic Bhoogol. Kedar Nath Ram Nath, Meerut.
9. Prasad, G (2008) Bhoo-Akrithi Vigyan. Sharda Pustak Bhawan, Allahabad.
10. Sharma, J.P(2008) Bhoo-Akhrithi Vigyan. Rastogi Publications, Meerut.
11. Singh, Savindra (2004) Physical Geography. Prayag Pusthakh Bhawan, Allahabad.
12. Singh, Savindra (2004) Bhauthic Bhoogol. Vasundhara Prakashan, Gorakhpur
13. Strahler, A.H and Strahler,A.N (2002) Physical Geography. John Wiley and Sons Inc, New York.

PAPER X: CLIMATOLOGY

1. Climatology: Definition, nature, scope and significance. Atmosphere: Origin, composition and structure. Weather and climate. Elements and controls of weather and climate.

2. Insolation and temperature. Factors affecting receipt of insolation on the earth surface. Factors affecting horizontal distribution of temperature. Differential heating and cooling of land and water. Heat Budget. Horizontal distribution of temperature (January and July). Inversion of temperature.

3. Horizontal distribution of pressure (January and July). Pressure belts. Factors affecting wind velocity and direction. General circulation of the atmosphere. Primary, Secondary and Tertiary winds.

4. Humidity: Definition and types. Condensation: Ideal conditions, process and forms. Clouds and Fogs: Definition and main types. Fronts: Definition, types and associated weather phenomena.

5. Tropical and temperate cyclones: Definition, origin and associated weather phenomena. Bjerkenes'model. Anticyclones. Koeppen's climatic classification.

REFERENCES

1. Chauhan, B.S and Gautam,A (2006) Bhauthik Bhoogol. Rastogi Publications, Meerut.
2. Gautam, A (2005) Jalvayu evam Samudra Vigyan. Rastogi Publications Meerut.
3. Lal, D.S (2007) Climatology. Chaitanya Publishing House, Allahabad.
4. Lal, D.S (2008) Jalvayu Vigyan. Sharda Pustak Bhawan, Allahabad.
5. Negi, B.S (2003) Climatology and oceanography. Kedar Nath Ram Nath, Meerut.
6. Negi, B.S (2003) Jalvayu Vigyan thatha Samudra Vigyan. Kedar Nath Ram Nath, Meerut.
7. Singh, Savindra (2004) Physical Geography. Prayag Pusthakh Bhawan, Allahabad.
8. Singh, Savindra (2004) Bhauthik Bhoogol. Prayag Pustak Bhawan, Allahabad.
9. Singh, Savindra (2008) Climatology. Prayag Pustak Bhawaqn, Allahabad.
10. Singh, Savindra (2007) Jalvayu Vigyan. Prayag Pustak Bhawan, Allahabad.
11. Upadhyayay D.P and Singh , R.C (2001) Jalvayu Vigyan evam Samudra Vigyan. Vasundhara Prakashan , Gorakhpur .

PAPER XI: GEOGRAPHIC THOUGHT

1. Geography: Definition, nature, scope, content and main aims and objectives. Geography as a science of: Man-Environment relationship, Distribution, Areal differentiation, Spatial organization, Synthesis and Human ecology.

2. Dualisms/Dichotomies in geography: Physical and human, Environmentalism and possibilism, Systematic and regional, Ideographic and nomothetic, Formal and functional and Historical and contemporary.

3. Brief study of Schools of Geography: German, French, British, American, Arabic and Russian.

4. Contribution of Geographers: Humboldt, Ritter, Ratzel, la Blache, Mackinder and Davis.

5. Quantitative and Behavioural Geography. Geography: A new synthesis.

REFERENCES

1. Athikari, S (2006) Fundamental of Geographic Thought. Chaitanya Publishing House, Allahabad.
2. Arid Holt-Jensen (1998) Geography: Its History and Concepts. Harper and Row Publishers, London.
3. Dikshit,R.D(2007)Geographic Thought. Tata McGraw Hill Publishing Co.Ltd., New Delhi.
4. Husain,M(2007)Evolution of Geographic Thought. Rawat Publications, New Delhi.
5. Husain, M(2007) Bhaugolik Chinthan ka Ithihas. Rawat Publications, New Delhi.
6. Husain, M(2006) Human Geography. Rawat Publications, New Delhi.
7. Kaushik, S.D(2004) Bhaugolik Chinthan. Rastogi Publications, Meerut.
8. Kaushik, S.D(2007) Bhaukolik Vichardharayen Evam Vithi Thantra. Rastogi Publications, Meerut.
9. Maurya, S.D (2007) Bhaugolik Chinthan Ka Ithihas. Prayag Pustak Bhawan, Allahabad.
10. Negi, B.S (2003) Geographic Thought. Kedar Nath Ram Nath , Meerut.
11. Singh, D.P (2007)Bhaugolik Chinthan Ka Samiksha. Sharda Pustak Bhawan, Allahabad.
12. Srivatsav(2007) Bhaugolik Vichardharayen evam Vidhithantra. Rastogi Publications, Meerut.

PAPER XII: HUMAN GEOGRAPHY

1. Human Geography: Nature, scope and content. Concepts of Determinism, possibilism and probabilism.

2. Evolution of Man. Races of mankind: Types, characteristics and distribution.

3. Modes of life of selected primitive societies: Eskimos, Pygmies, Bushmen, Khirghiz and Masai (House types, dress, food habits and rhythm of life).

4. Settlements: Types (rural and urban). Rural Settlements: Types, characteristics and distribution. Rural Houses: Types and characteristics. Urban land use, morphology and problems.

5. World Population: Distribution, growth and density. Demographic transition. Migration: Types, causes, effects and problems.

REFERENCES

1. Bansal, S.C (2005) Manav Bhoogol. Kedar Nath Ram Nath, Meerut.
2. Kaushik, S.D (2005) Manav Bhoogol. Rastogi Publications, Meerut.
3. Husain, M (2007) Human Geography. Rawat Publications, Jaipur.
4. Husain, M (2006) Manav Bhoogol. Rawat Publications, Jaipur.
5. Maurya, M.D (2007) Manav Bhoogol. Sharda Pustak Bhawan, Allahabad.
6. Singh, B.N (2007) Manav Bhoogol. Prayag Pustak Bhawan, Allahabad.
7. Singh, D.P (2004) Manav Bhoogol ki Moolthathva. Sharda Pustak Bhawan, Allahabad.
8. Singh,L.R (2008) Fundamentals of Human Geography. Sharda Pustak Bhawan, Allahabad.
9. Singh, K.N and Singh, J(1985) Manav aur Arthic Bhoogol. Vasundhara Prakashan, Gorakhpur.

PAPER XIII: AGRICULTURAL GEOGRAPHY

1. Agricultural Geography: Definition, nature, scope and significance. Approaches to Agricultural Geography: Systematic, regional, commodity and systems approach.

2. Determinants of agricultural land use: Physical, economic, social, behavioural and technological determinants.

3. Selected agricultural concepts: Cropping pattern, crop intensity, degree of commercialization, crop diversification and specialization. Crop combination and regions (without methods). Crop efficiency and productivity.

4. Von Thunen's Theory of Agricultural location and its recent modifications. Types and systems of agriculture. Whittlesey's classification of agricultural systems.

5. Agriculture in India: Cropping pattern. Green revolution,White revolution and Blue revolution. Problems. Agricultural regions.

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1. Negi, B.S (2004) Agricultural Geography. Kedar Nath Ram Nath, Meerut.
2. Husain, M (2004) Krishi Bhoogol. Rawat Publications, Jaipur.
3. Husain, M (2004) Agricultural Geography. Rawat Publications, Jaipur.
4. Pandey, K.N and S.R. Kamlesh (2005) Krishi Bhoogol. Vasundhara Prakashan, Gorakhpur.
5. Singh, J and S.S. Dhillon (2005) Agricultural Geography. Tata McGraw Hill Publishing Co. Ltd., New Delhi.
6. Symons (2003) Agricultural Geography. Ben Hyman Ltd, London.
7. Tiwari, R.C and Singh, B.N (2008) Krishi Bhoogol. Prayag Pusthak Bhawan, Allahabad.

PRACTICAL V: MAPPING TERRAIN AND CLIMATIC DATA

1. Construction of profiles: Serial, superimposed, projected and composite profile. Intervisibility.

2. Contour Diagrams: Representation of various landforms using contours.

3. Construction of climatic diagrams: Climatic graph, climograph, hythergraph, climatograph and ergograph.

4. Construction of Isopleths: Isotherm, isobar and isohyet. Construction of Wind roses (simple and compound).

FIELD TRIP : To places of geographical importance.

REFERENCES

1. Khan,M.Z.A (1998) Text Book of Practical Geography. Concept Publishing House, New Delhi
2. Misra R.P and A Ramesh (2002) Fundamentals of Cartography. Concept Publishing House, New Delhi.
3. Negi B.S (1996) Practical Geography. Kedar Nath Ram Nath, Meerut.
4. Negi B.S (1996) Prayogik Bhoogol. Kedar Nath Ram Nath, Meerut.
5. Sharma J.P (2008) Prayogik Bhoogol. Rastogi Publications, Meerut.
6. Singh,G (2005) Mapwork and Practical Geography. Vikas Publishing House, New Delhi.
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9. Tiwari,R.C evam Tripati, S (2007)Abhinav Prayothmak Bhoogol. Prayag Pustak Bhawan, Allahabad.

SEMESTER VI

PAPER XIV: GEOMORPHOLOGY

1. Geomorphic agents and processes. Work and landforms associated with fluvial process.

2. Work and landforms associated with glacial process. Underground water and karst topography.

3. Work and landforms associated with aeolian process.

4. Work and landforms associated with coastal process.

5. Cycle of erosion: Theories of Davis, Penck and King. Peneplain. Rejuvenation and polycyclic landforms.

REFERENCES

1. Chauhan B.S and Gautam,A Bhauthik Bhoogol. Rastogi publications, Meerut.
2. Gautam, A (2008) Geomorphology. Sharda Pustak Bhawan, Allahabad.
3. Gautam,A(2005) Bhoo-Akhrithi Vigyan ki Saral Siddhanth. Rastogi Publications, Meerut.
4. Husain, M (2003) Fudamentals of Physical Geography. Rawat Publications, Rawat.
5. Jat, B.C (2004) BhuAkrithi Vigyan. Rawat Publications, Jaipur.
6. Lal, D.S (2008) Physical Geography. Sharda Pustak Bhawan, Allahabad.
7. Negi, B.S (2003) Physical Geography. Kedar Nath Ram Nath, Meerut.
8. Negi, B.S (2003) Bhauthic Bhoogol. Kedar Nath Ram Nath, New Delhi.
9. Prasad, G (2008) Bhoo-Akrithi Vigyan. Sharda Pustak Bhawan, Allahabad.
10. Sharma, J.P(2008) Bhoo-Akhrithi Vigyan. Rastogi Publications, Meerut.
11. Singh, Savindra (2004) Physical Geography. Prayag Pustakh Bhawan, Allahabad.
12. Singh, Savindra (2004) Bhauthik Bhoogol. Vasundhara Prakashan,Gorakhpur.
13. Strahler, A.H and Strahler,A.N (2002) Physical Geography. John Wiley and Sons Inc, New York.

PAPER XV: OCEANOGRAPHY

1. Oceanography : Nature, scope and significance. Hypsometric curve. Relief of ocean floor: Continental shelf, continental slope, deep sea plains and ocean deeps. Sea mounts and guyots. Submarine canyons (without theories)

2. Major relief features of the Atlantic, Pacific and Indian ocean floor.

3. Sea water temperature: Horizontal and vertical distribution. Salinity: Sources, controlling factors and horizontal and vertical distribution.

4. Dynamics of ocean water: Waves and tides: Definition, types and causes. Currents: Types, factors and modifications. Currents in the Atlantic, Pacific and Indian ocean.

5. Ocean deposits: Sources and main types. Coral reefs: Conditions for growth and types. Theories: Darwin, Murray, Daly and Davis. Deep sea deposits.

REFERENCES

1. Chauhan,B.S evam Gautam,A(2006) Bhauthik Bhoogl. Rastogi Publications, Meerut.
2. Gautam, A(2005) Jalvayu evam Samudra Vigyan. Rastogi Publications, Meerut.
3. Lal, D.S (2007) Oceanography. Sharda Pustak Bhawan, Allahabad.
4. Lal,D.S (2008) Jalvayu evam Samudra Vigyan. Sharda Pustak Bhawan, Allahabad.
5. Negi, B.S (2003) Climatology and Oceanography. Kedar Nath Ram Nath, Meerut.
6. Negi, B.S (2003) Jalvayu Vigyan thatha Samudra Vigyan. Kedar Nath Ram Nath, Meerut.
7. Singh, Savindra(2004) Physical Geography. Prayag Pustakh Bhawan,Allahabad
8. Singh, Savindra (2004) Bhauthik Bhoogol. Vasundhara Prakashan, Gorakhpur.
9. Singh, Savindra (2007) Jalvayu Vigyan. Prayag Pustak Bhawan, Allahabad.
10. Singh, Savindra (2008) Climatology. Prayag Pustak Bhawan, Allahabad.
11. Sharma, T.C and Vatal (2006) Oceanography for Geographers. Chaitanya Publishing House, Allahabad.

PAPER XVI: METHODS IN GEOGRAPHY

1. Methods and approaches in Geography: Systematic, regional, systems, empirical/ inductive and theoretical/ deductive.

2. Role of Field work in geography. Scale of study. Scale of measurement. Types and sources of data: Primary and Secondary data. Sampling methods: Random, systematic, stratified, purposive, point, line and area sampling.

3. Collection of primary data:: Observation method. Interview method. Construction, merits and demerits of Questionnaire and Schedule. Pilot study.

4. Remote Sensing: Definition and types. Remote sensing products as sources of secondary data in geographical study. Electromagnetic radiation. Types of aerial photographs. Principles of aerial photo interpretation. Stereovision. Photo Mosaic.

5. Uses of computers in Geography. Geographical Information Systems: Definition and components. Spatial data models: Vector and Raster.

REFERENCES

1. Siddiqui,M.A (2006) Introduction to Geographical Information Systems. Sharda Pustak Bhawan, Allahabad.
2. Anji Reddy, M (2006) Remote Sensing and Geographical Information Systems. B.S. Publications, Hyderabad.
3. Kothari, C.R (2004) Research Methodology. Wishwa Prakashan, New Delhi.
4. Jain, B.M Shodh Pravidhi evam Kshetriya Thaknik. Research Publications, Jaipur.
5. Pandey,G and Pandey, A (2005) Shodh Pravidhi. Radha Pubications, New Delhi.
6. Sharma, J.P (2008) Prayogik Bhoogol. Rastogi Publications, Meerut.
7. Singh, J and S.S. Dhillon (2004) Agricultural Geography. Tata McGraw Hill Publishing Co.Ltd., New Delhi.
8. Thakur, D (2005) Research Methodology in Social sciences. Deep and Deep Publications Pvt. Ltd., New Delhi.
9. Wilkinson and Bhandarkar (2002) Methodology and Techniques of SocialSciences. Himalayan Publishing House, Mumbai.

PAPER XVII: POLITICAL GEOGRAPHY

1. Political Geography: Nature, scope and content. Political Geography and Geopolitics. Approaches to Political Geography: Morphological, functional and unified field theory.

2. Geostrategic Ideas: Ratzel, Mackinder, Spykeman, de Seversky and Mahan.

3. Role of physical elements in Geopolitics (Location, shape, size, relief and climate). Role of demographic, economic and socio-cultural elements in geopolitics (Foodstuff, power resources, strategic minerals, population, language and religion).

4. Special Themes in Political Geography: State and nation. Boundaries and frontiers. World powers.

5. Geographic interpretation of Geopolitical affairs: Palestine, Gulf Region, Tibet and Indo- Pak, SAARC and ASEAN. River water Disputes: Indus, Yamuna, Ganges, Cauvery and Godavary.

REFERENCES

1. Adhikari, S (2004) Political Geography. Rawat Publications, Jaipur.
2. Adhikari, S (2007) Rajneethik Bhoogol. Sharda Pustak Bhawan, Allahabad.
3. Agnew, J (1997) Political Geography. Arnold, London.
4. Dikshit, R.D (1999) Political Geography. Tata McGraw Hill Publishing Co. Ltd., New Delhi.
5. Dikshit, R.D (2007) Rajneethik Bhoogol. Prentice Hall of India, New Delhi.
6. Dwivedi (2004) Fundamentals Political Geography. Chaitanya Publishibg House, Allahabad.
7. Pounds, N.G (1972) Political geography McGraw Hill Inc., New York.
8. Prescott, J.R.V (1972) Political Geography. Methuen and Co., London.
9. Saxena, H.M (2005) Rajneethik Bhoogol. Rastogi Publications, Meerut.
10. Sinha, M (1995) Political Geography. Horizon Publishers., Allahabad.
11. Taylor, P (1985) Political Geography. Longman, London.

PAPER XVIII: ENVIRONMENTAL STUDIES
(U.G.C SYLLABUS)

Objectives: 1. To know about the environment
2. To understand the surrounding
3. To know about biotic interaction

45 Lecture Hours **Maximum: 100 marks**

1. The multidisciplinary nature of environmental studies. Definition, scope and importance. Need for public awareness.

   Renewable and nonrenewable resources:

   a. Forest resources: Use and overexploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

   b.Water resources: Use and over utilization of surface and ground water. Floods drought, conflicts over water, dams- benefits and problems.

   c. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Case studies.

   d. Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer- pesticide problems, water logging, salinity. Case studies.

   e . Energy resources: Growing energy needs. Renewable and nonrenewable energy resources. Uses of alternative energy sources. Case studies.

   f. Land resources: Land as a resource. Land degradation. Man induced landslides Soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles**. (10 Hours)**

2**. Ecosystems**: Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystems:
   a.Forest ecosystem b.Grassland ecosystem c.Desert ecosystem d. Aquatic ecosystems(ponds, streams, lakes, rivers, ocean estuaries) **(6 hours)**

3**. Biodiversity and its conservation:** Introduction, Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, national and local levels. India as a mega-diversity nation. Hotspots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. **(8 hours)**

4. **Environmental pollution:** Definition, causes effects and control measures of:
a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution
e. Noise pollution f. Thermal pollution and g. Nuclear pollution

Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management: floods, earthquake, cyclone and landslides. **(8 hours)**

5. **Social Issues and the Environment:** From unsustainable to sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Case studies. Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

Wasteland reclamation. Consumerism and waste products. Environmental Protection Act. Air(Prevention and Control of Pollution) Act. Water(Prevention and Control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.

Human Population and the Environment: Population growth, variation among nations. Population explosion. Family welfare programmes. Environment and human health. Human rights. Value education. HIV/AIDS. Women and child welfare. Role of Information Technology in Environment and Human Health. Case Studies. **(13 hours)**

Text Books:

1. Agarwal, K.C (2001) Environmental Science, Nidi Publishers.
2. Bharucha, E (2001) The Biodiversity of India. Mapin Publications.
3. Brunner,R.C (1989) Hazarduous waste incineration. McGraw Hill Publishers.
4. Jadav, H (2000) Environmental Protection and Laws. Himalaya Publications.
5. Odum, E.P (1971) Fundamentals of Ecology. W.B.Saunders Publications.

Suggessted Books:

1. Clarke, G. Elements of ecology. John Wliey and Sons, New York.
2. Verma, P.S and Agarwal V.K. Principles of Ecology. S.Chand and Co., New Delhi.
3. Sharma B.K and Kaur. An Introduction to Environmental Pollution. Good Pub.,Meerut.
4. Cunningham et al. Environmental Encyclopaedia. Jaico Publications, Mumbai.
5. Miller, T.G Jr. Environmental Science. Wadsworth Publishers.
6. Sharma, B.K (2001) Environmental Chemistry. Goel Publications, Meerut.

Field Work **(5 hours)**

- Visit to a local area to document environmental assets: river/forest/ grassland/hill/mountain
- Visit to a local polluted site: Urban/Rural/Industrial/ Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems: pond, river, hill slopes, etc

PRACTICAL VI: MAP PROJECTIONS

1. Map Projection: Definition, significance, problems and types. Choices of map projections.

2. Construction, properties, merits, demerits and uses of Conical Projections: Conical Projection with One Standard Parallel, Conical Projection with Two Standard Parallels, Polyconic Projection and Bonne's Projection.

3. Construction, properties, merits, demerits and uses of Zenithal Projections: Gnomonic, Stereographic, Orthographic, Equidistant and Equal Area Projection.

4. Construction, properties, merits, demerits and uses of Cylindrical Projections: Simple Cylindrical Projection, Cylindrical Equal Area Projection and Mercator's Projection.
   Conventional Projections: Sinusoidal Projection and Mollweide's projection

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3. Negi B.S (1996) Practical Geography. Kedar Nath Ram Nath, Meerut.
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