GEOGRAPHY (Code-021)

M.A./M.Sc. पूर्व भूगोल में निम्नलिखित प्रश्न पत्र होंगे -

क्रमांक	प्रश्न पत्र	प्रश्न पत्र का नाम	कोड संख्या	पूर्णांक
1.	प्रथम	Geomorphology	(0399)	100
2.	द्वितीय	Climatology & Oceanography	(0400)	100
3.	तृतीय	Geographical Thought	(0401)	100
4.	चतुर्थ	Advanced Geography of India	(0402)	100
5.	पंचम	Population Geography	(0403)	100
6.	प्रायोगिक	Advanced cartography and surveying		100

The M.A./M.Sc. Previous examination in Geography shall consist of 600 marks.
There shall be five theory papers and one practical each of 100 marks as follows:

Paper I	Geomorphology
Paper II	Climatology & Oceanography
Paper III	Geographical Thought
Paper IV	Advanced Geography of India
Paper V	Population Geography
Practical	Advanced Cartography and Surveying

The theory papers shall be of three hours duration.
Candidates will be required to pass separately in theory and practical examinations.
Each theory paper in M.A./M.Sc. Previous Geography has been divided into four units.

(a) In the practical examination the following shall be the allotment of time and marks.

(i) Practical record	20%
(ii) Lab work (up to three hours)	50%
(iii) Field work (up to three hours)	25%
(iv) Viva on i. ii. & iii above	5%

(b) The external and internal examiners shall jointly submit marks.

(c) Candidates shall be examined in survey individually. They will however be allowed to take the help of a labourer each at their own expense.

(d) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

PAPER - I
GEOMORPHOLOGY
(Paper Code - 0399)

UNIT-1 Nature and Scope of Geomorphology; Fundamental concepts; Interior of the earth; Earth movements: epeirogenic and orogenic movements ; Forces of crustal instability, isostasy, plate tectonics, earthquakes, volcanic activities, faulting, mountain building.

UNIT-2 Exogenic processes ; concept of gradation; Agents and processes of gradationn : weathering, mass wasting and erosion, aggradation; soil formation;. Climatic Geomorphology and morphogenetic regions; slope evolution.

UNIT-3 Concept of geomorphic cycle and its controversy; Dynamics of fluvial, glacial, peri-glacial, aeolian and marine (coastal) processes and resulting landforms; Complications of fluvial geomorphic cycle.

UNIT-4 Geological structure and landforms: development of landscape and drainage on uniclinal, folded and domal structures and in Karst region; Erosion surfaces; Applied geomophology

SUGGESTED READINGS -

1. Ahmed, E. : Coastal Geomorphology of India.
2. Chorley, R.J. : Spatial Analysis in Geomorphology, Methuen, London, 1972
3. Cooke R.U. and Doornkamp, J.C.: Geomorphology in Environmental Management A introduction, Clarendon Press, Oxford, 1974
4. Dury, G. H. : The Face of the Earth, Penguin Harmondsworth 1959
5. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
6. Goudie, A.: The Nature of the Environment Oxford & Blackwell, London, 1993.
7. Garner, H.F. : The Origin of landscape- A Synthesis of Geomorphology, Oxford University Press, London, 1974.
8. Holms, A. : Principles of Physical Geology, Thomas Nelson, London.
9. Mitchell, C.W.: Terrain Evaluation, Longman, London, 1973.
10. Ollier, C.D.:Weathering, Longman, London, 1979.
11. Pitty, A.F.: Introduction to Geomorphology, Methuen, London, 1971.
12. Stoddart, D.R. (ed.): Process and Form in Geomorphology, Roulledge, New York, 1996.
13. Skinner, B.J. & Porter, S.C.: The Dynamic Earth John Wilely, New York, 1995.
14. Sparks, B.W. Geomorphology, Longman, London, 1960.
15. Sharma, H.S.(ed.): Perspectives in Geomorphology, Concept, New Delhi, 1980
16. Singh, S: Geomorphology, Prayag Publication, Allahabad, 1998.
17. Steers, J.A. : The Unstble Earth Methuen, London.
18. Thombury, W.D. Principles of Geomorphology, John Wiloy, Now York, 1960.
19. Strahler, A.N. : Physical Geography, Willey, New York.
20. कौशिक, एस.डी. : भू - आकृति विज्ञान
21. नेगी, बी.एस. : भू - आकृति विज्ञान
22. दयाल परमेश्वर : भू - आकृति विज्ञान
23. यादव तथा रामसुरेश : : भू - आकृति विज्ञान, ग्रन्थय, कानपुर
24. सिंह, सविन्द्र के. : : भू - आकृति विज्ञान, शारदा पुस्तक भवन, इलाहाबाद

PAPER - II

CLIMATOLOGY AND OCEANOGRAPHY

(Paper Code - 0400)

(A) CLIMATOLOGY

UNIT-1 Nature and scope of climatology and its relationship with meteorology; composition of the atmosphere; Insolation, heat balance of the earth, stability and instability, green house effect, vertical and horizonal distribution of temperature; Jet stream; General circulation in the atmosphere; Acid rain; concept of air masses and atmospheric disurbances. Ocean atmospheric interaction. EL Nino and La Nino. Monsoon winds and cyclones.

UNIT-2 The application of general principles of elementary physical and synoptic meteorology to the study and classification of climate. Climatic classification of Koppen and Thornthwaite. Major climates of the world- tropical, temperate, desert and mountain

climate. Climatic changes during geological and historical times. evidences. possible causes, global warming, environmental impacts and society's response. Applied climatology.

(B) OCEANOGRAPHY

T-3 Nature and scope of oceanography; Distribution of land and water; Major features of ocean basins; Marine sediments. Physical and chemical properties of sea water; Interlink between atmospheric circulation and circulation pattern in the oceans, surface currents, thermohaline, waves and tides.

T-4 Marine biological environment: Bio geochemical cycle in the ocean. biozones, types of organisms; plankton, nekton and benthos, food and mineral resources of the sea. Major marine environmetns; coastal: esturary, deltas, barrier island, rocky coasts: Open: reefs, continental shelf, continental slope and deep: Pelagic environment and floor of the ocean basins. Impact of Humans on the marine environment. Law of the sea; exclusive economic zone; marine deposits and formation of coral-reefs.

GGESTED READINGS :

Barry, R.G. and Chorley P.J.: Atmosphere, Weather and Climate, Roulledge, London and New York, 1998

Critchfiedld, J.H.: General Climatology, Prentico Hall, India, New Delhi, 1993.

Das, P.K.: Monsoons Natiional Book Trust, New Delhi, 1987.

Fein, J.S. and Slephens, P.N.: Monsons. Wiley Intersclence, 1987.

India Met. Deptt. : Climatological Tables of Observatories in india, Govt. of India 1968.

Lal, D.S.: Climatology, Chaitanaya Publications, Allahabad, 1986.

Lydolph, P.E. : The Climate of the Earth, Rowman, 1985.

Menon, P.A.: Our Weather, N.B.T., New Delhi, 1989.

pelerson, S.: Jontroduction to Meteorology, Mc Graw Hill Book, London, 1969.

Robinson, P.J. and Hendersón S.: Contemporary Climatology, Henlow, 1999.

Ihompson, R.D. and Perry, A (ed.): Applied Climatology, Principles and Practice, Routledge, London, 1997.

Davis Richard J.A.: "Oceanography- An Introduction to the Marine Environment". Wm. C. Brown Iowa. 1986.

Duxbury, C.A. and Duxbury B.: An Introduction tothe world's Oceans-C. Brown. Iowa 2nd ed. 1986.

Garrison, T.: "Oceanography - An Introduction to Marine Science" Books/Cole, Pacific Grove, USA, 2001

Gross, M. Grant: Oceanography, a View of the earth, prantice- Hall inc, New Jersy, 1987.

King C.A.M. Oceanography for Geographers 1962.

Sharma, R.C. "The Oceans" Rajesh N. Delhi. 1985.

Ummerkutty, A.N.P. Science ofthe Oceans and Human life, NBT, New Delhi 1985.

Trewartha, G.T. : An Introduction to weather and climates.

Ommany, F.D.: The Ocean

Sharma, R.C. & M. Vatal : Oceanography : A Brief Introduction kislaya Pub. New Delhi.

Siddartha, K. : Oceancgraphy : A Brief Itroduction, Kislya Pub. New Delhi.

तिवारी, अनिल कुमार : जलवायु विज्ञान, राजस्थान हिन्दी ग्रंथ अकादमी

नेगी, बी. एस. : जलवायु तथा समुद्र विज्ञान

PAPER-III

GEOGRAPHICAL THOUGHT

(Paper Code - 0401)

UNIT-1 The field of geography, its place in the classification of science; geography as a social science, and natural science. Definition, scope and functions of geography; Geography as science of relationship, as science of areal differentiation, as spatial science. Geography and environmentalism: forms of man-nature relationship and current view; Dualism in geography; Regional Concept.

UNIT-2 The growth of geographical knowledge from earliest times upto the 15th century. Contributions of Greek and Roman thinkers. Arab Geographers and their contributions. Geographical information in Ancient Indian literature. The dark age in Geography. The Great Age of Maritime Discovery and Exploration.

Contributions of various schools of thought in Modern Geography:

(i) German School. (ii) French School

(iii) British School (iv) American and Russian Schools.

UNIT-3 Scientific explanations: routes to scientific explanation (inductive/deductive); Types of explanation: cognitive description, cause and effect, temporal, functional/ ecological, systems; Laws, theories and models in geography; Quantitative revolution and philosophy of positivism.

UNIT-4 Responses to positivism, behaviouralsm and humanistic geography, relevance movement and radical geography; Changing paradigms; Status of indian Geography; Future of geography.

SUGGESTED READINGS :

1. Abler, Ronald; Adams, John S. Gold, Peler: Spatial Organization: The Geographer's view of the World, Prentice Hall, N.J., 1971.
2. All S.M.: The Geography of Puranas, Peoples Publishing House, Delhi, 1968.
3. Amedeo, Douglas: An Introduction to Scientific Reasonign in Geography, John Wiley, U.S.A.,1971.
4. Dikshit, R.D. (ed.): The Art & Science of Geography Rand Mc Nally & Co., 1959.
5. Hartshorne, R.: Perspectives on Nature of Geography Rand Mc Nally & Co., 1959.
6. Husain, M.: Evolution of geographic Thought, Rawat Pub. Jaipur, 1984.
7. Johnston, R.J.: Philosophy and Human Geogrpahy, Edward Arnold, London, 1983.
8. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
9. Minshull, R.: The Changing Nature of Geography, Hutchinson University Library, London, 1970.
10. Ali, S.M. : Arab Geography
11. Taylor, G. : Geography in the 20th Century.
12. Dikshit, R.D. : Geographical Thought : A Contexual History of Ideal, Prentice Hall of India, New Delhi.
13. Harvey D. : Explanation in Geography
14. सिंह उजागिर : भौगोलिक चिन्तन का विकास
15. त्रिपाठी एवं बिरले : भौगोलिक चिन्तन का विकास एवं विधितंत्र
16. कौशिक, एस.डी. : भौगोलिक विचारधाराओं का इतिहास एवं विधितंत्र
17. सिंह, जगदीश : भौगोलिक चिन्तन का मूलाधार

PAPER-IV
ADVANCED GEOGRAPHY OF INDIA
(Paper Code - 0402)

UNIT-1 Physical and Biological elements in the Geography of India : Geological structure, relief, climate, water resources, vegetation and soils.

UNIT-2 (a) Population: distribution, density and growth, problems and policies.

(b) Irrigation

(c) Agriculture : Major characteristics and problems, impact of infrastructural and institutional factors on agriculture. Important crops-wheat, rice, cotton, sugarcane, oil-seeds, tea and coffee, Agricultural reigons, Green revolution, Agro- climatic regions.

(d) Sources of power: Coal, Petroleum, Natural gas, Hydroelectricity and Atomic energy.

UNIT-3 (a) Mineral resources with specific reference to iron ore, manganese and bauxite.

(b) Industrial development with specific reference to iron and steel, cement, cotton, jute, sugar and paper industries; Industrial regions.

(c) Transport infrastructure: Road, rail, water and air.

(d) Trade: Internal and Foreign.

UNIT-4 (a) Regional division of India: Purpose and Methodology.

(b) Major schemes of regions of India: O.H.K. Spate and R.L. Singh.

(c) Detailed regional study of the following: Kashmir valley, Middle Ganga Plain, Narmada Basin, Marusthali and Kerala.

(d) Physical and cultur geography of Chhattisgarh State.

SUGGESTED READINGS :

1. Centre for Science & Environment (1988) State of India's Environment, New Delhi.
2. Desphande C.D. india: a Regional Interpreation ICSSR & Northern Book Centre 1992.
3. Dreze, Jean & Amartya Sen (ed.) India Economic Development and Social opportnity Oxford University Person, New Delhi, 1996.
4. Kundu A. Raza Moonis: Indian Economy: the Regional Dimension Speclaum Publishers, New Delhi, 1992.
5. Robinson, Francs: The Cambridge Encyclopaedia of India, pakistan.Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives Cambridge University Press, London, 1989.
6. Singh R.L. (ed.): India- A Regional Geography National Geographical Society, India Varanasi, 1971.
7. Spale OHK & ATA Learmont-India & Pakistan Methuen, London. 1967.
8. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur 1996.
9. Sharma T.C. and O. Coutinho : Economic and Commercial Geography of India.
10. अग्रवाल पी.सी. : भारत का भौतिक भूगोल, एशिया प्रकाशन कं., रायपुर 2003.
11. जोशी, यशवन्त गोविंद : नर्मदा बेसिन का कृषि भूगोल
12. देशबंधु प्रकाशन : संदर्भ छत्तीसगढ़

PAPER - V
POPULATION GEOGRAPHY
(Paper Code - 0403)

UNIT-1 Definition and scope of Population Geography. Relation of Population Geography with other subjects of social sciences. Historical development of Population Geography in western countries and in India. Sources of population data, Census and its history.

UNIT-2 Distribution of Population : The concept of population density and its types, Factors affecting population distribution. Distribution of population in the world with special reference to Europe and Asia. Distribution of population in India.

Growth of population: Measure of decennial and annual rates of population growth, prehistoric and modern trends of population growth in the world. Regional aspect of population growth in India.

Population theories, Demographic transition. Future growth of population.

UNIT-3 Population composition in terms of age and sex, rural-urban residence, educational status and occupational structure. Significance of these elements in population analysis, factors affecting their composition in population, broad world patterns and detailed spatial patterns in India.

Fertility and Mortality of population : Significance and factor, Indices and rates. World pattern and pattern in India.

UNIT-4 Migration of population: Causes, characteristics and types. Methods of estimating value of internal migration, Important international migrations of the world, internal migration in India.

Population and Resources: concept of optimum population, over population and under population, Population-Resource regions.

Populatiion Regions: Concept and methods, population regions of India, causes and consequences of population growth. population policies of India. Human Development Index and its components.

SUGGESTED READINGS :

1. Bilasborrow, Richard E and Daniel Hogan, Popopulation and Delorestation in the Humid Eropics, International Union for th Scientific Study of Population, Belgium 1999.
2. Bogua, D.J. Principles in Demography, john Wiley, New York 1969.
3. Bose, Ashish el at.: Population in India's Development (1947-2000); Vikas Publishing House, New Delhi 1974.
4. Census of India, India: A State Profile. 1991.
5. Chandna, R.C. Geography of Population; Concept, Determinants and Patterns. Kalyani Publishers, New York 2000.
6. Clarke, John I. Population Geography, Pergamon Press, Oxford 1973.
7. Crook, Nigel Principles of Population and Development. Pergmaon Press. New York 1997.
8. Daugherty, Helen Gin, Kenneth C.W. Kammeyir, An Introduction to Population (Second Edition)The Guilford Press, New York London 1998.
9. Garnier, B.J. Geography of Population Longman, London 1970.
10. Kochhar, Rajesh, The Vedic People: Their History and Geography Orient I ongman ltd., New Delhi 2000.
11. Mamoria, C.B. India's Population Problem, kitab Mahal New Delhi 1981.
12. Mitra, Ashok India's Population: Aspects of Quality and Control Vol I & II. Abhiman Publications, New Delhi 1978.

13. Premi, M.K.India's Population: Heading Towards a Billion, B.R., Publishing Corporation 1991.
14. Srinivasan, K. and M. Vlassoff. Population Development Nexus in India: Challenges for the New Millennium Lata Mc Graw- Hill, New Delhi 2001.
15. Srinivasn K. Basic Demographic Techniques and Applications Sage Publications, New Delhi 1998.
16. Sundaram K.V. and sudesh Nangia, (ed) Population Geography, Heritage Publications, Delhi 1986.
17. UNDP: Human Development Report, Oxford University Press, Oxford 2000.
18. United Nations, Methods for Projections of urban and Rural Population No VIII, New York 1974.
19. Woods R. Population Amalysis in Geography Longman, London 1979.
20. Zelinsky Wilbur, A Prologue to Population Geography, Preglic Hall, 1966
21. पंड्या, बी.पी. : जनसंख्या भूगोल
22. ओझा, रघुनाथ : जनसंख्या भूगोल
23. हीरालाल : जनसंख्या भूगोल
24. चन्दना, आर. सी. : जनसंख्या भूगोल
25. त्रिपाठी रामदेव : जनसंख्या भूगोल

PRACTICAL

ADVANCED CARTOGRAPHY AND SURVEYING.

SECTION A — Max. Marks 25

Graphs and Diagrams : Triangular graph. Logarithmic and semi logarithmic graphs, scatter graphs; climatograph. Proportional circles, spheres and cubes.

Thematic Maps: Choropleth maps, isolines; Flow maps, Isochrones and class intervals.

Morphometric Analysis : Profiles, Slope Analysis; Altimetric, and Clinographic curves; Block Diagrams.

SECTION B — Max. Marks 25

Map Projections: Mathematical construction of world projections.

Interpretation of Maps : Geological Maps.

SECTION C — Max. Marks 25

Principles and methods of topographical surveying involving the use of Theodolite and Dumpy level. Solution of Problems in Surveging.

SUGGESTED READING :

1. Davis, R.C. & E.S. Forte : Surveying : Theory and Practical
2. Knetkar, T.R. & S.V. Kulkarni : Surveying and levelling part I & II A.V.G. Prakashan, Poona.
3. Monk house F.J. & H.R. Wilkirson : Maps and Diagrams, Methuen; London.
4. Mahmood, Aslam : Statistical Methods in Geographical studies.
5. Gregory, S. : Statistical Methods and the Geographers.
6. Hmmond & Mc Gullagh : Quantitative Techniques in Geography.
7. Fitz Gerald, S.P. : Science in Geography & Data Description and Presentation by Petter Davis.
8. मौंक हाउस तथा विलकौन्सन (अनु. प्रो. प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिन्दी ग्रन्थ अकादमी
9. नेगी, बी.एस. : भूगोल में आधार भूत सांख्यिकी
10. हीरालाल : प्रायोगिक भूगोल

GEOGRAPHY

M.A./M.Sc. अंतिम भूगोल में निम्नलिखित प्रश्न पत्र होंगे –

क्रमांक	प्रश्न पत्र	प्रश्न पत्र का नाम	कोड संख्या	पूर्णांक
1	VI	Economic Geography and Natural Resource Management,	(0404)	100
2	VII	Settlement Geography	(0405)	100
3	VIII	Regional Development and Planning	(0406)	100
4	IX (A) Or	Remote Sensing Techniques and Geographical Information System	(0407)	100
5	IX (B)	Biogeography and Ecosystem	(0408)	100
6	X	Agricultural Geography	(0409)	100
		प्रायोगिक कार्य Quantitative Techniques, Remote Sensing and GIS		100
			कुल योग	**600**

The M.A./M.Sc. Final examination in Geography shall consist of 600 marks. There shall be five theory papers and one practical, each of 100 marks as follows.

Paper VI Economic Geography and Natural Resource Management,
Paper VII Settlement Geography
Paper VIII Regional Development and Planning
Paper IX (A) Remote Sensing Techniques and Geographical Information System
OR
Paper IX (B) Biogeography and Ecosystem
Paper X Agricultural Geography
Practical: Quantitative Techniques, Remote Sensing and GIS

1. The Theory papers shall be of three hours duration.
2. Candidates will be required to pass separately in theory and practical exam.
3. Each theory paper in M.A./M.Sc. Final Geography has been divided into four units.
4. (a) In the Practical examination the following shall be the allotment of time and marks.
   (i) Practical Record 20%
   (ii) Lab. Work (up to 4 hours) 70%
   (iii) Viva on (i) & (ii) above 10%
   (b) the external and internal examiners shall jointly submit marks.
   (c) All the candidates shall present at the time of the practical examination their practical record, regularly signed by the teachers concerned.

PAPER VI

ECONOMIC GEOGRAPHY AND NATURAL RESOURCE MANAGEMENT

(Paper Code - 0404)

UNIT-I Nature and scope of Economic Geography ; fundamental concepts in economic geography ; concept and classification of resources ; classification of economies, sectors of economy (primary, secondary and tertiary)

World distribution of population : Appraisal of quality and quantity of human resources, relation between population and resource, population resource regions of the world, natural resources and economic development, resource adequacy and scarcity, limits to growth.

UNIT-II World pattern of major natural resources : land and soils, biotic resources, water resources, mineral and energy resources, oceanic resources.

UNIT-III Concept and techniques of delimitation of agricultural regions and their features, Von Thunen's model of agricultural location and its modifications.

Classification of Industries, Theories of industrial location ; case studies of selected industries ; Iron & Steel ; Aluminium, Chemical, Textile.

Means of transport, International trade, trade blocks, globalisation and Indian economy.

UNIT-IV Conservation and management of resources ; evolution of the concept, principles, philosophy and approaches to conservation, resource conservation and management methods.

Resource appraisal and policy making : Use of GIS and remote sensing in resource appraisal ; policy making and resource management ; sustainable development of resources.

SUGGESTED READINGS :

1. Berry, J.I., Geography of Market Centres and Retail Distribution, Prentice Hall, New York, 1967.
2. Chatterjee, S.P. : Economic Geography of Asia, Allied Book Agency, Calcutta, 1984.
3. Chorley, R.J. and Haggett, P. (ed.) : Network Analysis in Geography, Arnold, 1969.
4. Dreze, J. and Sen, A. : India : Economic Development and Social Opportunity ; Oxford University Press, New Delhi, 1996.
5. Eckarsley, R. (ed.) : Markets, the state and the environment, McMillan, London, 1995.
6. Garnier, B.J. and Delobez, A.: Geography of Marketing, Longman, London, 1979.
7. Hamilton, F.E.I. : Spatial Perspectives on Industrial Organisation and Decision Making John Wiley, New York 1974.
8. Hamilton, I. (ed.) : Resources and Industry, Oxford University Press, New York, 1992.
9. Hurst E. : Transport Geography : Comments and Readings : McGraw Hill, New York, 1974.
10. Morgan, WB and Munton R.J.C. : Agricultural Geography, Methuen, London, 1977.
11. Pachuri, R.K. Energy and Economic Development in India, Praeger, New York, 1977.
12. Robertson, D. (ed.) : Globalization and Environment, E. Elgar Co., U.K. 2001.

13. Roslow, W.E. : The stages of economic growth : Cambridge University Press, London 1960.
14. Singh J. and Dhillon S.S. Agricultural Geography, McGraw Hill, India, New Delhi, 1984
15. Symons, L. : Agricultural Geography, Bell and Sons, London, 1972.
16. Wheeler, J.O. et.al. : Economic Geography, John Wiley, New York, 1995.
17. Adams, W.M. : Green Development : Environment and Sustainability in the third world Routledge & Chapman Hall, New York, 1990.
18. Granfelt, T.R. : Managing the globalized environment : J. & L. Composition Ltd., New York, 1999.
19. Holechek, J.L. et.al. : Natural Resources : Eulogy Economics & Policy, Prentice Hall, New Jersey, 2000.
20. Hooja, R. & Roshi, R. : Desert, Drought and Development, studies in Resource Management and sustainability ; Rawat Publication, Jaipur, 1994.
21. Howard, M.C. (ed.) : Asia's environmental crisis, Westview Press, Prouldar, 1993.
22. Kates, R.W. & Burton, I. (eds.) : Geography, Resources and Environment, Vol. I & II, University of Chicago Press, Chicago, 1986.
23. Mc. Laren, D.J. and Skinnet, B.J. (eds.) : Resources and World Development, John Wiley & Sons, New York, 1986.
24. Newson, M.D. : land, water & development, River, Basin systems & Management, Routledge, London, 1991.
25. Owen, S. & Owens, P.L. : Environment Resources & Conservation, Cambridge University Press, New York, 1991.
26. Peckford, John et.al. (ed.) 1994 : Water, sanitation, environment & development, IT Publication, London, 1994.
27. Rees, J. : Natural Resources : Allocation, Economics and Policy, Methuen, London, 1988.
28. Redclift, M. : Sustainable Development : Exploring the Contradiction : Methuen, London, 1987.
29. Simmons, I.G. : Earth, Air & Water : Resources and Environment in Late 20th Century Edward Arnold, New York, 1991.
30. Thoman, Alan et.al. : Environmental Politics & NGO Influence, Routledge, London 2001.
31. Zimmerman, E.W. : World Resources and Industries.
32. सिंह काशीनाथ एवं जगदीश सिंह : आर्थिक भूगोल के मूल तत्व
33. करन, एम.पी. : संसाधन भूगोल
34. शर्मा, राजीव लोचन : संसाधन संरक्षण
35. सिंह, अमर : संसाधन तथा संरक्षण
36. कुमार प्रमिला एवं श्रीकमल शर्मा : कृषि भूगोल

PAPER - VII
SETTLEMENT GEOGRAPHY
(Paper Code - 0405)

UNIT-I

1. Meaning, Objectives and Scope of Settlement Geography
2. Evolution, Distribution, Types and Patterns of Rural Settlements.
3. Rural House Types

4. Rural Service Centres

UNIT-II
1. Evolution and growth of urban settlements
2. The Geographical setting of Urban Centres : Site, Situation and Location
3. Rank-size-relationship
4. Cities as Central Places, Central Place Theory, Growth Centre Theory.
5. City-Country Relationship : Umland, Rural-Urban Fringe.

UNIT-III
1. General Nature of City Structure :
   (i) Internal structure : Morphology and landuse.
   (ii) Theories of Urban Structure : The Concentric Zone Theory, The Sector Theory, The Multiple Nuclei Theory.
2. The Central Business District (CBD)
3. Centrifugal and Centripetal forces in Urban Geography.
4. Economic Base of Towns : Basic/non-basic concept.

UNIT-IV
1. Urban Functions
2. Functional Classification of Towns.
3. Urban Planning (i) Types and Elements (ii) Urban Problems, Blight and renewal.
4. Urban Planning in India.

SUGGESTED READINGS :

1. Abercrombee, Sir P. : Town and Country planning 1961.
2. Alam, Shah Manzoor : Hyderabad Secundrabad (Twin Cities) A study in urban geography)
3. Alam, S.M. & V.V. : Urbanization in developing countries Pokshishevesky
4. Berry Brain J.L. : Geographic Prospectives on Urban Systems
5. Bresse, C. & D.F. : An approach to Urban Planning Whiteman
6. Dickinson, R.E. : City, Religion and Regionalism
7. Gallion and Fisher : The Urban Pattern
8. Grifitth, J.P. : A study of Urban constructions in India
9. Gibbs : Urban Research Methods
10. Mayor, H.M. & C.F. Kohn : Readings in Urban Geography
11. Morgan, F.W. : Ports and Harbours
12. Mumford L. : Culture of cities
13. Robson, W.A. : Great cities of world
14. Robson, B.T. : Urban Growth : An approach, methuen, London
15. Carter, Harold : Study of Urban Geography, London, Edward Arnold, 197
16. Singh R.L. & K.N. Singh : Readings in Rural Settlement Geography, NGSI Varana 1975,
17. सिंह, उजागिर : नगरीय भूगोल
18. करन, एम.पी. : नगरीय भूगोल
19. बंसल, सुरेश चन्द्र : नगरीय भूगोल
20. सिंह, ओमप्रकाश : नगरीय भूगोल
21. तिवारी आर.सी. : आधिवास भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद, 1997
22. करण एवं यादव : आधिवास भूगोल

PAPER - VIII

REGIONAL DEVELOPMENT AND PLANNING

(Paper Code - 0406)

UNIT-I Regional Planning : Definition, Scope, Evolution and Objectives. Region and Regionalism, Planning Regions : Concept and Delineation. Spatial organisation : Central Place Theory, Concept of core and periphery Friedmann's Model of Spatial Organisation and Economic Growth.

UNIT-II Regional Development Theories : Development Theories of Myrdal and Hirschman, Economic and Export Base model, Frank's Theory of Underdevelopment.

UNIT-III Approaches and Strategies of Regional Development. Growth Pole Theory. Agropolitan Development, Community Development, River Basin Planning, Metropolitan Planning (with reference to India).

UNIT-IV Regional Planning in India. Regional Imbalances and Inequalities, Indicators of Regional Development ; Regional Policies in Five Year Plans, Centre State Relations and Multilevel Planning, Planning for special problem Regions : Hill areas, Tribal areas, Drought prone areas, Command areas and River basins.

RECOMMENDED READING :

1. Daysch, C.H.J. & others : Studies in Regional Planning.
2. Deckinsonm R.E. : City Region and Regionalism
3. Freeman, E.W. : Geography and Planning
4. Golksin A. : Regional Planning and Development
5. Keeble, L. : Principle and Practice of Town and Country Planning.
6. Stamp L.D. : The Land of Britain : Its use and Misure.
7. Sdasyuk. Galina and Dengupta, P. : Economic Regionalization of India problems and Approches.
8. Desai, P.B. & others : Regional Perspective of Industrial and Urban Growth - the case of Kanpur, Bombay, 1969.
9. Prakash, Rao V.L., S.P. : Regional Planning
10. Censuts of India : Economic and Socic Cultural Dimensions of regionalisation (An Indo-USSR Colaborative Study)
11. Friedmann J. & Alonsow : Regional Development and Planning, M.I.T. Press
12. Misra R.P. (Ed.) : Regional Planning : Concept; Techniques, Policies and cade studies Mysore 1969.
13. Misra, R.P. & others : Regional Development and Planning in India.
14. Timbergen : Essays on World Regional Planning.
15. Isard, W. : Methods of Regional Analysis, M.I.T. 1960.
16. Zimmerman, E.W. : World Resources and Industries.
17. Burton & Kates : Reading in Resource Management Conservation.
18. Bhatt, L.S. : Regional Planning in India.
19. Ahamed, Enayet : Regional Planning with particular Reference to India. Vol. I and II New Delhi.
20. Bhatt L.S. and Others : Micro level planning - A Case Study of Karnal Area, Haryana (K.B. Publishing, New Delhi)

21. Chandna, R.C. : Regional Planning : A Comprehensive Texl-Kalyani Publishers.
22. श्रीवास्तव, व्ही. के. एवं अन्य : प्रादेशिक नियोजन एवं संतुलित विकास
23. ओझा, रघुनाथ : प्रादेशिक नियोजन का भूगोल
24. शर्मा, राजीवलोचन : प्रादेशिक एवं नगरीय नियोजन

PAPER - IX (A)

REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM

(Paper Code - 0407)

UNIT-I Historical development of remote sensing as a technology - Relevance of remote sensing in Geography - Concepts and basics : Energy source, energy and radiation priciples, energy interactions in the atmosphere and earth surface features, remote sensing systems : platforms, sensors and radiation records.

Applications : Air photo and image interpretations and mapping landuse and land cover, land evaluation, urban landuse, landform and its processes, weather studies and studies of water resources : integration of Remote Sensing and GIS, remote sensing and hazard management, remote sensing and environmental management.

UNIT-II Image Processing : types of imagery, techniques of visual interpretation, ground verification, transfer of interpreted thematic information to base maps-digital processing : rectification and restoration, image enhancement - contrast manipulation, classification : supervised and unsupervised, post-classification analysis and accuracy assessment, microwave sensing : interprecation of SLAR imageries, elements of passive microwave sensing.

UNIT-III Spatial Science : Geography as a spatial science, maps and spatial information. dynamics of spatial information, elements of information technology, geographic objects and their relations-definition and development of GIS, computer environment for GIS.

Spatial Data : Elements of spatial data : data sources : primary and secondary, census and sample-data; quality and error variations-raster and vector data structures, data conversion-comparison of raster and vector databases - methods of spatial interpolation-GIS data formats for the computer enviornment.

UNIT-IV GIS Techlology : Coordinate system - basic principles of cartography and computer assisted cartography for GIS-remote sensing data as a data source for GIS and integration of GIS and Remote Sensing-GPS and GIS : technology, data generation and limitations - visualization in GIS-Digital Elevation Models (DEM and TINS).

GIS Application : GIS as a Decision Support System-expert system for GIS-basic flow chart for GIS application - GIS standards, legal system and national GIS policy application of GIS in Land Information System, Urban Management, Environment Management and Emergency Response System.

SUGGESTED READINGS :

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church, V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretat on, Mcmillan, New York, 1992.

3. Compbell J. : Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing. Longman, London 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Data, Academic, New York, 1983.
6. Luder D, Aerial Photography Interpretation : Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D.P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicisl, Hyderabad, 1998.
9. Thomas M.Lollesand and Ralph w. Kefer, Remote Sensing and Image Intepretation, John Wiley & sons, New York, 1994.
10. Aronoff S, Geograghic Information Systems : A Management Perspective, DDL Publication Offawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Resource, Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1991.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information Systems : Principles and Application. Taylor & Francis, Washington. 1991.
14. Mark S. Monmonier. Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey. 1982.
15. Peuquet D.J. and D.F. Marble, Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington. 1990.
16. Star J. and J. Estes, Geographic Information Systems : An Introduction, Prentice Hall, Englewood Cliff, New Jersey. 1994.
17. दत्त, निताल देव : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली

PAPER - IX (B)
BIOGEOGRAPHY AND ECOSYSTEM
(Paper Code - 0408)

UNIT-I Definition and scope of Biogeography. Environment, Habitat and Plant-animal association, Biome types.

UNIT-II Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed land forms.

Zoogeography and its Environmental Relationship.

Paleobotanical and Palaeo climatological records of environmental change.

UNIT-III Ecosystems : concept and components, Ecosystem-form and function : trophic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, foodchains and foodwebs.

Major terrestrial ecosystems of the world : agriculture, forests, grassland and desert.

Population growth and environment.

UNIT-IV Biodiversity and its conservation. Preservation and conservation of the ecosystem through resource management. Environmental legislation.

The Stockholm conference, the Earth summit, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

SUGGESTED READINGS :

1. Agrawal D.P. : Man and Enviroment in India Through Ages, Book & Books, 1992.
2. Bradshaw, M.J. : Earth and Living Planet, ELBS. London, 1979.
3. Cox, C.D. and Moore, P.D. : Biogeography : An Ecological and Evolutionary Approach 5th edn. Blackwell, 1993.
4. Gaur, R. : Environment and Ecology of Early Man in Northern India R.b. Publication Corporation 1987.
5. Hoyt, J.B. : Man and the Earth, Prentice Hall, U.S.A. 1992.
6. Huggett. R.J. : Fundamentals of Biogeography., Routledge, U.S.A. 1998.
7. Illies, J. : Introduction to Zoogeography, Mcmillan, London, 1974.
8. Khoshoo, T.N. and Sharma, M. (eds.) : Indian Geosphere-Biosphere Har-Anand Publication, Delhi 1991.
9. Lapedes, D.N. (ed.) : Encyclopedia of Environmental Science, McGraw Hill, 1974.
10. Mathur H.S. : Essentials of Biogeography, Anuj Printers, Jaipur, 1998.
11. Pears, N. : Basic Biogeography, 2nd edn. Longman, London, 1985.
12. Simmon, I.G. : Biogeography, Natural and Cultural, Longman, London 1974.
13. Tivy J. : Biogeography : A study of Plants in Ecosphere 3rd edn. Oliver and Boyd, U.S.A., 1992..
14. Ackerman, E.A. : Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958.
15. Agarwal, A. and Narain, S. : The Citizens Fifth Report. Centre for Science and Environmental New Delhi 1999.
16. Bertalanffy, L. : General Systems Theory, George Bragiller New York, 1958.
17. Bodkin, E. : Environmental Studies, Charles E. Merril Pub. Co., Columbus, Ohio, 1982.
18. Chandna, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1998.
19. Chorley, R.J. : Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
20. Eyre, S.R. and Jones, G.R.J. (eds.) Geography as Human Ecology, Edward Arnold, London, 1966.
21. Kormondy, E.J. : Concepts of Ecology, Prentice Hall, 1989.
22. Manners, I.R. and Mikesell, M.W. (eds.) Perspectives on Environment, Commission on College Geography, Publ. No. 13, Washington, D.C., 1974.
23. Nobel and Wright : Environmental Science, Prentice Hall, New York 1996.
24. Odum, E.P. : Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
25. Russwurm, L.H. and Sommerville, E. (eds.) : Man's Natural Environment-A systems Approach, Duxbury, Massachuselts, 1985.
26. Sharma, H.S. : Ranthambhore Sanctuary - Dilemma of Eco-development, Concept, New Delhi, 2000.
27. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
28. Singh S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
29. Smith, R.L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
30. U.N.E.P. : Global Environmental Outlook, U.N. Pub., New York, 1998.
31. World Resources Institute : World Resources, (Latest Report) Washington.
32. कुल श्रेष्ठ, कामता प्रसाद : जैव भूगोल

PAPER X
AGRICULTURAL GEOGRAPHY
(Paper Code - 0409)

Unit I: Nature, scope, significance arid development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional systems. Origin and dispersal of agriculture. Sources of agricultural data.

Unit II: Determinants of agricultural land use - Physical, economic, social, and technological Land holding and land tenure systems, Land reforms, land use Agriculture policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions and agricultural development.

Unit III: Theories of agricultural location based on several multi-dimensioned factors:- Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; land use and land capability.

Unit IV: Agricultural in India- Land use and shifting cropping pattern. Regional pattern of productivity in India. Green Revolution, White Revolution. Food deficit and food surplus regions; nutritional index. Specific problems in Indian agriculture and their management and planning. Agricultural Policy in India. Contemporary Issues: Food, nutrition and hunger, food security, drought and food-security, .food aid Programmes; role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless labourers, woman, children: occupational and agricultural activities.

SUGGESTED READINGS:

1. Bayliss Smith, IP.: The Ecology of Agricultural Systems. Cambridge University London, 1987.
2. Berry, BJ.L et. al. : The Geography of economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond, World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Furure Prospects. Routledgle. London, 1996.
5 Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change. John Wiley. London, 1995.
9. Morgan W.B. and Norton , R.J.C. : Agricultural Geography. Mathuen, London, 1971.

10. Morgan, W.B.:Agriculture in the Third World - A Spatial Analysis. Westview Boulder, 1978.
11. Sauer, C.O. : Agricultural Origins and Dispersals,. M.I.T. Press, Mass, U.S.A., 1988.
12. Singh, J. and Dhillon, S.S. : Agricultural Geography. Tata McGraw Hill' Pub.; Delhi, 1988.
13. Tarrant, J.R. : Agricultural Geography. Wiley, New York, 1974.

PRACTICAL

QUANTITATIVE TECHNIQUES, REMOTE SENSING AND GIS

Section (A) : Quantitative Techniques **Marks 35**

(i) Product Moment and Rank Correlation Coefficients, Linear Regression.

(ii) Hypothesis Testing ; Chi-square and 't' tests, Analysis of variance and test; Sampling

(iii) Running mean, Mean centre, Nearest Neighbour Analysis ; Lorenz Curve,

(iv) Normal distribution curve, probability.

Section (B) : Remote Sensing and GIS **Marks 35**

(i) Air-Photos and Photogrammetry : Elements of photographic system : types, scales and ground coverage resolution, films, filters, aerial Cameras vertical photographs, relief displacement, airphoto interpertation.

(ii) Image Processing : types of imagery, techniques of visual interpretation, ground verification, transfer of interpreted thematic information to base maps-digital processing rectification & Restoration image enhancement. Application : Air photo and image interputations and mapping landuse and studies of water resources.

(iii) Spatial Data : Elements of spatial data : quality and error variations raster and vector data structures data conversion.

(iv) Elements of GIS : Data capute-verification and preprocessing-data storage and maintenance of database-Database Management Systems : types and merits and demerits-data manipulation, analysis intergrated analysis of spatial and attribute data.

SUGGESTED READINGS:

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church, V.A. 1983.
2. Barrett and L.F. Curtis : Fundamentals of Remote Sonsing and Air Photo Interpretation, Mcmillan, New Work, 1992.
3. Compbell J. : Introduction of Remote Sensing, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing, Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Data, Academic, New York, 198...
6. Luder D. : Aerial Photography Interpretation : Principles and Application, McGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing, Wiley, New York, 1978.
8. Rao D.P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hyderabad, 1998.
9. Thomas M. Lillosand and Ralph W. Keler, Remote Sensing and Image interpretation, John Wiley & sons, New York, 1994.
10. Aronoff S. Geographic Information Systems : A. Management Perspective, DDI, Publication Ottawa, 1980.
11. Burrough, P.A. : Principles of Geographic Information Systems for Land Resource

Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic Information Systems. Pergamon Press, Oxford 1991.
13. Maqurie D.J. M.F. Goodchild and D.W. Rhind (eds.) Geographic information Systems : Principles and Application. Taylor & Francis, Washington, 1991.
14. Mark S. Monmonier : Computer-assisted Cartography, Prentice-Hall, Englewood Cliff, New Jersey, 1982.
15. Peuquel D.J. and D.F. Marble : Introductory Reading in Geographic Infomation Systems : Taylor & Francis : Washington 1990.
16. Star J and J. Estes : Geographic Information Systems : An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.
17. Singh, R.L. & P.K. Dutt : Elements of Practical Geography Students friends.
18. Monkhouse, F.J. & H.R. Wilkinson : Maps and Diagrams Mathuen, London.
19. Mahmood, Aslam 1971 : Statistical Methods in Geographical studies Rajesh Pub., New Delhi.
20. Gregory, S. : Statistical Methods and The Geographer.
21. Hammond & Mcculiah 1977 : Quantitative Techniques in Geography, Clarendon Press, Oxford.
22. Fitz, Gomid, B.P. : Sciene in Geography, Developments in Geographical Method, Oxford University Press.
23. Yeates, M. ; An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
24. मौकहाउस तथा विलकिंसन 1976 - "मानचित्र तथा आरेख" मध्यप्रदेश केदारनाथ रामनाथ, मेरठ
25. नेगी, डी.एस. - "भूगोल में आधारभूत" साहपकी केदारनाथ रामनाथ, मेरठ
26. हीरालाल - "प्रायोगिक भूगोल" किताबघर, कानपुर