

B.A./B.Sc. Geography

Courses for B.A./B.Sc. Part I, Part II and Part III Degree examinations in Geography shall be effective from the examinations of 2008, 2009 and 2010 respectively.

The three-year undergraduate examinations in Geography will be conducted in three parts as under:

- Part I : B.A./B.Sc. Part I Examination,
- Part II : B.A./B.Sc. Part II Examination, and
- Part III : B.A./B.Sc. Part III Examination

The B.A./B.Sc. Part I and Part II examinations in Geography will comprise two theory papers each and one practical examination each and B.A./B.Sc. Part III will comprise three theory papers and one practical examination. Each theory paper will be of three hours duration and will carry 50 marks as the maximum marks. The practical examination will be of six hours duration (in two parts of three hours duration) and will carry 50 marks as the maximum marks for B.A./B.Sc. Part I and Part II and 75 marks for B.A./B.Sc. Part III. The practical examination will be conducted by two internal and one external examiners. It is obligatory to pass in the aggregate marks of the theory examination and in the practical examinations separately.

The details of theory papers and practical examination courses are given below:

B.A./B.Sc. Part I

- Paper I : Physical Geography, 50 marks (3 hours duration)
- Paper II : Human Geography, 50 marks (3 hours duration)
- Practical: 50 marks (6 hours duration in two parts)

B.A./B.Sc. Part II

- Paper I: Regional Geography of World, 50 marks (3 hours duration)
- Paper II: Geography of India, 50 marks (3 hours duration)
- Practical: 50 marks (6 hours duration in two parts)

B.A./B.Sc. Part III

- Paper I: History of Geographical Thought, 50 marks (3 hours duration)
- Paper II: Earths Dynamic System, 50 marks (3 hours duration)
- Paper III: Geography of Population and Settlements, 50 marks (3 hours duration)
- Practical: 75 marks

B.A./B.Sc. Part I Geography

The examination shall comprise two theory papers and one practical examination. The division of marks shall be as follows:

- Paper I: 50 marks (3 hours duration)
- Paper II: 50 marks (3 hours duration)
- Practical: 50 marks (6 hours duration in two parts)

Candidates are required to pass separately both in theory and in practical examinations. Practical examination shall be conducted by two internal and one external examiners.

Paper 1: PHYSICAL GEOGRAPHY

(Time: 3 hours, MM 50)

The question paper will consist of 9 questions. The candidate will be required to attempt five questions in all. Question nos. 1 will be compulsory and short note type consisting of two topics from each units of which only five are to attempted. The remaining eight questions will be from the four units- two from each unit. The candidate will be required to attempt one question from each unit.

UNIT I

Meaning, scope and development of physical geography; origin of the earth – Theories of Kant, Laplace, Chamberlin, James Jeans; geological history of earth; interior of the earth; rocks; isostasy, earth's movements - endogenetic and exogenetic, volcanic and earthquakes; weathering; drainage pattern; landforms formed by running water, wind and glacier.

UNIT II

Structure and composition of the atmosphere; insolation; temperature; pressure belts and winds; planetary and local winds; monsoons; humidity and rainfall; Koeppen & Thonhwaite classification of world climates; Major climatic types - equatorial, monsoon, Mediterranean, west European and Savanna types.

UNIT III

Depth zones of the oceans continental shelf, continental slope, deep sea plains and ocean deeps; bottom relief of Atlantic and Indian Oceans; salinity; tides; ocean currents; coral reefs.

UNIT IV

Abiotic and biotic components of the biosphere; characteristics and types of ecosystem; biosphere as an ecosystem; biotic succession; Man and biosphere, distribution and dispersal of plants; biome types -equatorial rainforest, monsoon, savanna and temperate grassland biomes.

BOOKS RECOMMENDED:

1. A.Holmes and D.L.Holmes: Principles of Physical Geology, ELBS.
2. A.N.Strahler and A.H.Strahler: Modern Physical Geography,
3. John Wiley and Sons, New York.
4. F.Press and R.Siever: The Earth, W. H. Freeman and Co., San Francisco.
5. M.J.Bradshaw et.al.: The Earth's Changing Surface, ELBS.
6. J.S.Gardner: Physical Geography, Harper Row and Co.
7. R.H.Bryant: Physical Geography, W.H.Allen and Co.
8. Savindra Singh: Physical Geography, Prayag Pustak Bhawan, Allahabad.
9. Savindra Singh: Bhautik Bhoogol, Vasundhara Prakashan ,Gorakhpur
10. G.T.Trewartha and L.A.Horn: An Introduction to Climate, McGraw Hill and Co.
11. H.J.Critchfield: General Climatology, Prentice Hall of India, New Delhi.
12. D.S. Lal: Climatology, Sharda Pustak Bhawan, Allahabad.
13. Savindra Singh: Climatology, Prayag Pustak Bhawan, Allahabad
14. M.G.Gross: Oceanography, A View of the Earth, McGraw Hill and Co.
15. R.C.Sharma and M.Vatal: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
16. Healey Cox and Moors: Biogeography, Blackwell and Co.
17. Wytt: Principles of Biogeography, McGraw Hill & Co.
18. Savindra Singh: Environmental Geography, Prayag Pustak Bhawan, Allahabad.
19. Savindra Singh: Paryavarana Bhoogol , Prayag Pustak Bhawan, Allahabad
20. Savindra Singh: Jalvayu Vigyan , Prayag Pustak Bhawan, Allahabad
21. Daya Shankar Lal: Jalvayu Vigyan avam Samudra Vigyan, Sharda Pustak Bhawan, Allahabad

PAPER II: HUMAN GEOGRAPHY

Time: 3 hours

MM: 50

The question paper will consist of 9 questions .The candidate will be required to attempt five questions in all. Question nos. 1 will be compulsory and short note type consisting of two topics from each unit of which only five are to attempt. The remaining eight questions will be from the four units- two from each unit. The candidate will be required to attempt one question from each unit.

UNIT I

Nature, scope and development of human geography; Branches of human geography; man and environment relationship - determinism, possibilism Human ecology of Mts & Neodetermina deserts and probalism; approaches - ecological, spatial, behavioural and welfare.

UNIT II

Human adaptation to the environment; Population growth, distribution, migration problems and planning; races and tribes; rural and urban settlements –functional types, patterns and morphology.

UNIT III

Types of farming; agricultural regions of the world; distribution and production of iron ore, coal, petroleum and hydroelectricity; location and development of iron and steel, cotton textile and chemical industry; fishing; major oceanic and rail routes; pattern of world trade.

UNIT IV

Cultural and social processes - social interactions, social groups and organization; diffusion of cultures; cultural hearths; major cultural realms, major religions of the world.

Books Recommended:

1. C.W.Hammond : Elements of Human Geography, Allen and Unwin.
2. G.J.Fielding : Geography as a Social Science, Harper and Row, New York.
3. Majid, Hussain : Human Geography, Rawat Publications, Jaipur.
4. M.Chisolm : Human Geography : Evolution or Revolution, Penguin Series in Geography.
5. R.Knowles and J.Wareing : Economic and Social Geography, W.H.Allen and Co.
6. P.Hagget : Geography : A modern Synthesis, Harper Row and Co.
7. Kashinath Singh evm Jagdish Singh : Arthik Bhoogol ke Mool Tatwa,Gyanodaya Prakashan ,Gorakhpur.
8. B.P.Rao evm V.K.Srivastava : Arthik Bhoogol ke Mool Tatwa,Vasundhara Prakashan , Gorakhpur.
9. Majid Husain :Manav Bhoogol , Rawat Prakashan ,Jaipur.
10. B.P.Rao evm V.K.Srivastava : Arthik Bhoogol avam Manav Bhoogol,Vasundhara Prakashan ,Gorakhpur.
11. Wegner and Mikel : Readings in Cultural Geography.
12. Ram Chandra Tiwari: Adhivas Bhoogol ,Prayag Pustak Bhawan,Allahabad
13. Edward E.Bergman: Human Geography; Culture Connections and Landscape, Prentice Hall, N.J.1995.
14. J.L.Fellman: Human Geography-Landscape of Human Activities, Brown and Benchman Pub.U.S.A.1997.
15. B.M.Mishra: Agricultural Management & Planning in India Policy Issues,Chug Publications,Allahabad
16. B.N.Mishra: Agricultural Management & Planning in India-Problems,Chug Publication , Allahabad.
17. Can Michael: New Patterns: Process and Change in Human Geography, Nelson, 1997.

PRACTICALS:

The division of marks in the practicals shall be as follows:

Test in cartographic techniques (Section A and B): 30 marks

Test in field work (Section C): 10 marks.

Evaluation of sessional record work: 05 marks.

Viva-voce test: 05marks

Note: Test in Cartographic techniques will be of three hours duration. The candidate has to attempt 3 questions selecting atleast one question from each section. Fieldwork will be of three hours duration.

Section A: Analysis of Geographical Data - 10 marks

1. Classification of spatial data; geographical data matrices; concept of measurement scales -- nominal, ordinal, interval and ratio; concept & Types of variable independent deepens discrete continents map scales - representative fraction (RF)
2. Statistical methods: (i) frequency distribution - class intervals, frequency, frequency density, cumulative and relative frequency; (ii) measure of central tendencies; mean, weighted mean, median, mode; (iii) measure of dispersion -- range, quartile, mean deviation, standard deviation, variance and coefficient of variation.

3. Transformation and combination of data; linear scale, standard score ,Z score rank order, Range, standardization.

Section B: Graphical Representation - 10 marks

1. Scales and coordinate systems: arithmetic and logarithmic scale, Cartesian coordinates, polar coordinates.
2. Line graphs, circular graph, logarithmic graphs and scatter graphs; compound line and bar graphs, divided circles, divided rectangles and triangular graphs.
3. Histograms, frequency curves, pyramids, block piles, hythergraph and climograph.

Section C: Field Work --- Surveying and Mapping - 10 marks

1. Plane Table Survey:
 - (i) Preparation of map by radial and intersection methods
 - (ii) Resection (Three-point problem)
 - (a) Tracing paper or mechanical method, (b) Geometrical method, (c) Trial and error method (inside and outside the triangle)
2. Map Scales –RF, construction of plain, comparative diagonal scale
3. Prismatic Compass Survey:
 - (i) Preparation of map by open traverse (field book)
 - (ii) Preparation of map by closed traverse (field book, correction of bearing and removal of closing error)

Books Recommended:

1. S. Gregory: Statistical Methods and Geographer, Longmans and Co.London
2. M.R. Spingel: Theory and Problems of Statistics, McGraw Hill International.
3. N.M. Downie and R.W.Heath: Basic Statistical Methods, Harper Row and Co.
4. F.F. Goxton and L.J.Cowden: Applied General Statistics, Prentice Hall of India.
5. T.P. Kanitkar and S.V.Kulkarni: Surveying and Levelling, Part I, Ava Prakashan.
6. B.C. Punamia: Surveying, Standard Book House.
7. R.L. Singh: Prayogatmak Bhoogol ke Tatwa ,Tara Publications,Varanasi.
8. R.C. Tiwari evm S.Tripathi: Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad
9. R.L. Singh: Elements of Practical Geography, Kalyani Publication, New Delhi
10. A.K. Sarkar: Practical Geography-A Systematic Approach, Orient Longman, Kolkata 1997.
11. G.R.P. Lawrence: Cartographic Methods, Methuen, London, 1968.

B.A./B.Sc. Part II Geography

The courses shall be effective from the examination of 2009.

The examination shall comprise two theory papers and one practical examinations. The division of marks shall be as follows:

Paper I: Regional Geography of world: 50 marks (3 hours duration)

Paper II: Geography of India (3 hours duration): 50 marks.

Practical: 50 marks (6 hours duration in two parts)

Candidates are required to pass separately both in theory and in practical examinations.

Practical examination shall be conducted by two internal and one external examiners.

Paper I: Regional Geography of World

(Time 3 hours, Maximum Marks 50)

The question paper will consist of 9 questions. The candidate will be required to attempt five questions in all. Question nos. 1 will be compulsory and short note type consisting of two topics from each unit of which only five are to attempt. The remaining eight questions will be from the four units- two from each unit. The candidate will be required to attempt one question from each unit.

UNIT I

Concept of region in geography; systematic vs regional geography, types and classification of regions (formal and functional), criteria of delimitation and characteristics of natural, cultural, economic and political regions.

UNIT II

Asia in the context of world; structure; relief; drainage; climate; natural vegetation and soils; spatial distribution of population; economic base; Regional studies of south, south –east, east and west Asia.

UNIT III

Europe: Physical, economic and demographic characteristics; Regional studies of British Isles, Eastern, Western and Mediterranean realm.

UNIT IV

North /South America and Australia: Physical, economic and demographic set up; Regional studies of USA, Canada, Brazil and Australia.

Books Recommended:

1. R.Hartshorne : Perspective on Nature of Geography.
2. R.Minshull : Regional Geography - Theory and Practice.
3. G.B.Cressey : Asia's Land and People.
4. W.G.Lant, O.H.K.Spate and C.Fisher : Changing map of Asia.
5. N.Ginsberg (ed.) : The Pattern of Asia.
6. J Kole:A Geography of the World's Major Regions,Routledge,London,1996..
7. H.J.Debljij: Geography:Regions and Concepts,John Wiley,New York ,1994
8. R.H.Jakson & L.E.Hudman:World Regional Geography :Issues for Today,John Wiley New York,1991.
9. G.H.Minshull: Western Europe, odd ard & Stoughton,NY.1984.
10. J.H.Patterson: Geography of Canada and the United States, Oxford University Press, 1985.
11. J.P.Kole: Latin America-Economic and Social Geography, Poutterworth, USA,1975
12. S.P.Dickonson et al: The Geography of the Third World, Routledge, London, 1996

13. P.Gourow: The Terrified World: Longman, London,1980
14. P.W.Ward & A Miller World Regional Geography: A Question of Place John Willey, NY,1989

Paper II: Geography of India

(Time 3 hours, Maximum Marks 50)

The question paper will consist of 9 questions .The candidate will be required to attempt five questions in all. Question nos. 1 will be compulsory and short note type consisting of two topics from each unit of which only five are to attempt. The remaining eight questions will be from the four units- two from each unit. The candidate will be required to attempt one question from each unit.

UNIT I

Structure, relief and drainage; climate, origin of monsoon, droughts and floods, climatic classification by Koppen and Thornthwaite; soil types and distribution; soil erosion and conservation; forests - types and their economic utilization.

UNIT II

Major minerals (iron ore, mica, Copper, manganese, bauxite and atomic minerals) - distribution, production and utilization; distribution and production of coal, mineral oil and hydel power; irrigation, agriculture - trends and problems, dry land agriculture, agricultural regions, green and white revolution and agro-climatic regions.

UNIT III

Industrial growth and development; industrial localization with reference to iron and steel, cotton textile, sugar, cement and chemical, and paper industries, Industrial regions; population - density, distribution and growth trends and problems; road, rail and air transport; inland waterways, foreign trade.

UNIT IV

Trends of Urbanization, urban problems, urban slums, urban policy, regional disparities in economic development, planning regions, multi-level planning bases of India federalism, Environmental pollution in India, Geography of Uttar Pradesh.

Books Recommended:

1. R.L.Singh (ed.) : India : A Regional Geography, NGSI, B.H.U., Varanasi 1971.
2. T.C.Sharma and O.Coutinho: Economic and Commercial Geography of India.
3. B.N.Sinha : Industrial Geography of India.
4. O.H.K.Spate and A.T.A.Learmonth : India and Pakistan.
5. D.N.Wadia : Geology of India.
6. R.C.Tiwari,Geography of India,Prayag Pustak Bhawan,Allahabad.
7. D.R.Khullar : India : A Comprehensive Geography, Kalyani Publishers, Ludhiana.
8. India Reference Annual 2006,Publication Division ,Govt. of India,New Delhi
9. Ram Chandra Tiwari:Bharat Ka Bhoogol ,Prayag Pustak Bhawan,Allahabad
10. C.B.Mamoria:Bharat ka Bhoogol ,Sahitya Bhawan,Agra
11. Alka Gautam:Bharat Ka Bhoogol Sharda Pustak Bhawan,Allahabad
12. Bharat 2006:Publication Division, Bharat Sarkar,New Delhi

PRACTICALS

Division of marks in practicals are as follows:

Cartographic and laboratory work	30 marks
Field Work (Surveying)	10 marks

Viva-Voce Test

05 marks

Sessional Record Work

05 marks

Note: Cartographic laboratory work and field work examinations will be of 3 hours duration in each case.

The courses of practicals are arranged in three sections (A, B and C). The candidate has to attempt 3 questions from sections A and B of cartographic laboratory work selecting atleast one question from each section.

Valuation of sessional exercises presented by the candidates.

Books Recommended:

1. R.P.Misra and A.Ramesh : Fundamentals of Cartography, Mc Millan & Co. New Delhi.
2. F.J.Monkhouse and H.R.Wilkinson : Maps and Diagrams, Methuen and Co.
3. A.W.Robinson et.al. : Elements of Cartography, John Wiley and Sons,U.S.A.
4. T.P.Kanitker and S.V.Kulkarni : Surveying and Levelling, Part I, AVA Prakashan.
5. J.P.Sharma:Prayogatmak Bhoogol ,Rastogi & Co.,Meerut
6. R.L.Singh:Prayogatmak Bhoogol ke Tatwa,Tara Prakashan,Varanasi
7. L.R.Singh:Manchitra Kala Tatha Prayogatmak Bhoogol,Central Book Depot,Allahabad
8. R.C.Tiwari evm Sudhaker Tripathi:Abhinav Prayogatmak Bhoogol,Prayag Pustak Bhawan,Allahabad.
9. S.K.Pal: Statistics for Geoscientists-Techniques and Applications, Concept,New Delhi,1998
10. L.R.Singh:Practical Geography,Sharda Pustak Bhawan,Allahabad.
11. R.L.Singh: Elements of Practical Geography, Kalyani Publishers, New Delhi.

B.A./B.Sc. Part III Geography

The courses shall be effective from the examinations of 2010.

The examination shall comprise three theory papers and one practical examination. The division of marks shall be as follows:

Paper I	:History of Geographical Thought (50 marks)
Paper II	:Earth's Dynamic System (50 marks)
Paper III	: Geography of Population and Settlement (50 marks)
Practicals	:75 marks

Candidates are required to pass separately both in theory and practical examinations. Each theory paper shall be of three hours duration and the practical examination will be of four hours duration and will be conducted by two internal and one external examiners.

Paper I: History of Geographical Thought (Time 3 hours, Maximum marks 50)

The question paper will consist of 9 questions. The candidate will be required to attempt five questions in all. Question nos. 1 will be compulsory and short note type consisting of two topics from each unit of which only five are to attempt. The remaining eight questions will be from the four units- two from each unit. The candidate will be required to attempt one question from each unit.

UNIT I

Meaning and scope of geography; Changing philosophy of geography; Geography as an interdisciplinary science; Geography as social science; Geography as a synthesizing science; Explanations in Geography

UNIT II

Development of Geography in the ancient classical period; Contributions of Greek, Roman, Indian and Chinese scholars; Geography in the dark ages –contributions of Arab geographers; Period of renaissance age of explorations and discoveries and their impacts.

UNIT III

Development of Geography in the modern classical period; Rise of philosophical and scientific analysis in geography; Contributions of German, French, British, American and Russian schools of thought

UNIT IV

Dichotomies in geography: physical vs human, systematic vs regional etc. Different approaches to the study of geography – areal differentiation, landscape, ecological and locational. Development of geography in the first half of the 20th century; fundamental concepts in physical, human, economic and settlement geography.

Books Recommended:

1. Minshull: The Changing Nature of Geography
2. Dickinson: The Makers of Modern Geography.
3. Chisholm: Human Geography-Evolution and Revolution
4. D.Harvey: Explanations in Geography, Edward Arnold.
5. East and Wooldridge: The Spirit and Purpose of Geography.
6. P.Haggett: Geography: A Modern Synthesis
7. M.Hussain:Evolution of Geographical Thought,Rawat Publication,Jaipur.
8. R.D.Dixit:Geographical Thought,Prentice Hall of India Pvt .Ltd.New Delhi.
9. R.Hartshorne:Perspective on the Nature of Geography,Rawat Publication,Jaipur.

10. R.J.Chorley & P.Haggett:Models in Geography
11. Majid Hussain:Bhaugolik Vichardharaon ka Itihas,Rawat Pub.,Jaipur
12. R.D.Dixit:Bhaugolik Vichardhara,Prentice Hall of India,Pvt .Ltd.New Delhi.

B.A.Part III

Paper II: Earths Dynamic System

Time: 3 Hours, MM: 50

The courses in the paper are arranged in 4 units and the question paper shall comprise 3 sections (A, B and C) having short answer questions of 50 words each, medium answer questions of 200 words each and long answer questions of 600 words each respectively. All the questions of section A and B shall be compulsory and the candidates have to answer 2 questions from section C. There shall be 8 questions in section A comprising 2 questions from each unit, 4 questions with internal choice in section B comprising one question with internal choice from each unit, and four questions in section C comprising one question from each unit. Each short, medium and long answer questions shall carry 2, 4 and 9 marks respectively.

UNIT –I

Diastrophism; Origin of Continents, Ocean, Basins; Theories of Lothian Green, F.B.Taylor, A.G.Wegenen; Plate Tectonic Theory;Isostasy; Volcanism and associated landforms.

UNIT-II

Folding and faulting; Formation of folded mountains; Theories of mountain building-geosynclinal theory of Kober, Thermal convection theory of Teffreys, Convection current theory of Holmes, sliding continent theory of Daly, Plate Tectonic Theory; Earthquakes and Tsunamis

UNIT-III

Concept of cycle of erosion by W.M.Davis and W.Penck;Interruption in normal cycle of erosion and polycyclic relief; Mass movement of rock wastes; Mecharism of coastal, ground water and periglacial processes and resultant landforms.

UNIT-V

Atmospheric dynamics global radiation and global warming; General atmospheric circulation; Walker circulation and southern oscillation; El Nino phenomena-Jet Stream and Monsoon; Tropical and temperate cyclones; hurricanes; tornadoes; thurderstorm; Precipitation dynamics-processes and theories of precipitation.

Books Recommended:

1. A.L.Bloom: Geomorphology, Prentice Hall, New Delhi.
2. B.W.Sparks Geomorphology Longmans,London
3. C.Embleton and C.A.M.King:Glacial and Preiglacial Geomorphology,Edward Arnold Publishers,London
4. M.J.Bradshaw et. al:The Earths Changing Suface,ELBS,U.K.
5. R.J.Chorley,et.al.G geomorphology, Methuen, London.
6. R.J.Small:The Study of Landforms, Cambridge University Press, Cambridge.
7. Savindra Sin gh:Geomorphology,Prayag Pustak Bhawan,Allahabad
8. V.S.Kale and A.Gupta:Introduction to Geomorphology, Orient Longman Ltd.Hyderabad.
9. Savindra Singh Bhuakriti Vigyan,Vasundhara Prakashan,Gorakhpur.
10. D.S.Lal:Climatology,Sharda Pustak Bhawan,Allahabad

11. G.T.Trewartha and L.A.Horn: An Introduction to Climate, International Studies.
12. H.J.Critchfield: General Climatology, Prentice Hall of India, New Delhi.
13. P.K.Das: Monsoons, National BookTrust, New Delhi
14. R.J.Chorley and R.G.Barry: Atmosphere, Weather and Climate, Mathuen & Co. Ltd.London.
15. Savindra Singh : Climatology, Prayag Pustak Bhawan,Allahabad.
16. Savindra Singh :Jalvayu Vigyan, Prayag Pustak Bhawan,Allahabad.

Paper III: Geography of Population and Settlement

(Time 3 hours, Maximum marks 50)

The courses in the paper are arranged in 4 units and the question paper shall comprise 3 sections (A, B and C) having short answer questions of 50 words each, medium answer questions of 200 words each and long answer questions of 600 words each respectively. All the questions of section A and B shall be compulsory and the candidates have to answer 2 questions from section C. There shall be 8 questions in section A comprising 2 questions from each unit, 4 questions with internal choice in section B comprising one question with internal choice from each unit, four questions in section C comprising one question from each unit. Each short, medium and long answer questions shall carry 2, 4 and 9 marks respectively.

UNIT I

Meaning and scope of population geography; population processes -- growth and demographic transition; distribution and density pattern of population; structure and composition of population with special reference to India; migration of population -- causes and types; distribution and migration of population in India; Population policy in India.

UNIT II

Population problems - over population, under population; optimum population; population and resources; population -- resource regions; population problems in India; population planning and control -- theories of Malthus, Marx and Rostov; measures of population control in India.

UNIT III

Meaning and scope of settlement geography; evolution and types of settlements; rural settlements - types and patterns, size, spacing and morphology; distribution of rural settlements in Ganga plain; urban settlements -- types and patterns, size, spacing and morphology, classification of towns.

UNIT IV

Hierarchy of towns, central place theory; urbanization processes; trends of urbanization in the world and in India; problems of urbanization in India; Urban slums and Urban pollution in India; urban fields, suburbs and small towns; rural-urban fringe; problems and planning of urban settlements; Urban policy in India.

Books Recommended:

(Population)

1. Baljit Singh : Population and Food Planning in India.
2. B.Bhattacharya : Population Geography of India, Jain Book Depot, Hathras.
3. B.N.Ghosh : Fundamentals of Population Geography, Sterling Publisher Pvt. Ltd., New Delhi.
4. Chandana and Mehta : Population Geography.
5. J.I.Clark : Population Geography.
6. W.Thompson : Population Problems, McGraw Hill, New Delhi.

7. Heera Lal :Jansansankhya Bhoogol,Vasundhara Prakashan
8. S.D.Maurya: Jansansankhya Bhoogol ,Sharda Pustak Bhawan,Allahabad

(Settlement)

1. B.Garnier and G.Chabot : Urban Geography, Longman, London.
2. H.Carter : Study of Urban Geography, Hutchinson, London.
3. J.H.Hudson : Geography of Settlements, McDonald and Evans, Plymouth, U.K.
4. J.H.Johnson : Urban Geography, Pergman, Oxford.
5. J.A.Everson and B.P.Fitzerald : Settlement Patterns, Longman, London.
6. R.L.Singh (Ed): Geographic Dimensions of Rural Settlements,N.G.S.I.Varanasi
7. M.Northam Ray : Urban Geography, John Wiley and Sons, London.
8. Om Prakash Singh: Nagariya Bhoogol,Tara Prakashan,Varanasi
9. R.L.Singh (Ed) Rural Settlements in Monsoon Asia,N.G.S.I.Varanasi.
10. L.N.Verma:Adhivas Bhoogol , Rajasthan Hindi Granth Academy,Jaipur.
11. Ram Chandra Tiwari:Adhivas Bhoogol,Prayag Pustak Bhawan,Allahabad
12. S.C.Bansal: Nagariya Bhoogol,Minakshi Prakashan,Meerut.
13. S.D.Maurya: Adhivas bhoogol,Sharda Pustak Bhawan,Allahabad

PRACTICALS

Division of marks in practicals shall be as follows:

Cartographic laboratory work	:	50 marks
Sessional Record Work	:	15 marks
Viva-Voce Test	:	10 marks

Note: Cartographic laboratory work examination shall be of 3 hours duration. Five questions will be set selecting at least one question from each section. The candidate has to attempt 3 questions selecting at least one question from each section. The courses of practicals are arranged in three sections (A, B & C)).

Section A: Primary and Special Purpose Maps

20 marks

1. Topographical maps

- (a) Scales of different topographical maps
- (b) Representation of reliefs: contours - types, intervals, slopes, characteristics and Patterns representation of important landforms by contours and their cross-sections.
- (c) Representation of physical and man-made features by conventional symbols. Description of topographical maps of different physical regions of India.

2. Weather Maps

- (a) Representation of weather elements
- (b) Reading of weather maps
- © Preparation of weather map through given weather summaries.

3. Geological Map

- (a) Representation of rock outcrops, bedding planes, dips and strikes, unconformity and faults.
- (b) Drawing of cross sections and determination of dip angles and bed thickness.
- © Interpretation of Geological Features.

Section B: Processing of mapped information

MM:30 marks

1. Analysis of Settlement- mean centre, standard distance, quadrate count method nearest neighbour method.

2. Analysis of Transport and Drainage network- measurement of length, Transport network-cyclometric number, B Indias and connectivity, matrix. Drainage network ordering, bifurcation ratio and length ratio, drainage density and drainage district.
3. Analysis of Areas-Slope Indices and contract number measurement of area,
4. Analysis relief, profiles, areas height diagram, relative relief, slope analysis, altimetric and hypsometric analysis.
5. Inferential statistics-parametric and non parametric lists-population and sample, the null hypothesis, level of significance, one and two tailed tests, by type I and Type II errors procedure for conducting a statistical test , chi-square test ,student's T test, variance test (F test)

Section C: Basics of Computer System

Starting word, creating, serving and inserting files; formatting pages, paragraphs and sections; Editing texts; Tabs and tables; Working with charts and graphs; Printing; Application in geographical mapping.

Sessional Record Work: Valuation of sessional exercises presented by the candidate: 15 marks

Viva-Voce Test

MM:10 marks

Books Recommended:

1. A.H.Robinson et.al. : Elements of Cartography, John Wiley.
2. G.M.Bennison : An Introduction to Geological Structures and Maps, Edward Arnold, London.
3. G.C.Dickinson : Maps and Air Photographs, Edward Arnold, London.
4. J.S.Keates : Cartographic Design and Production, Longman, London.
5. M.S.David : Patterns in Human Geography, David Charles, Penguin.
6. N.M.Downie and R.W.Heath : Basic Statistical Methods, Harper Row and Co.
7. S.Gregory : Statistical Methods and Geographer, Longman, London.
8. T.W.Birch : Maps - Topographical and Statistical, Oxford University Press.
9. J.P.Sharma :Prayogatmak Bhoogol,Rastogi & Co. Meerut.
10. J.Singh,V.K.Srivastava & B.P.Rao: Baumikiya Manchitron ki Ruprekha, Vasundhara Prakashan,Gorakhpur .
11. R.C.Tiwari and Sudhaker Tripathi: Abhinav Prayogatmak Bhoogol, Pryag Pustak Bhawan,Allahabad.
12. R.L.Singh: Prayogatmak Bhoogol ke Mool Tatwa,Tara Publication,Varanasi.
13. Russel A.Stulz: Learn Microsoft Word 6.0 for Windows in a day BPB Publications, New Delhi.