

Department of Geography

Faculty of Natural Sciences

JAMIA MILLIA ISLAMIA NEW DELHI – 110 025

(A Central University by an Act of Parliament)



B.A./B.Sc. (Hons) Geography

Syllabus (w.e.f. 2002)

OS 24042002

DEPARTMENT OF GEOGRAPHY, JAMIA MILLIA ISLAMIA
B.A./B.Sc. (Hons.) Geography, Annual System
Course Outline

Class/Course Paper/Practical	Title of the Paper/ Practical	Max. Marks Allotted
I year		
Theory Paper I	Physical Geography - I (Geomorphology)	90
Theory Paper II	Physical Geography - II (Climatology and Oceanography)	90
Practical I	Cartographic Methods and Representation of Physical Data	60
II year		
Theory Paper III	Man and Environment	90
Theory Paper IV	Geography of Resources & Environment	90
Practical II	Statistical Methods & Representation of Socio-economic Data	60
III year		
Theory Paper V	Systematic Geography of India	90
Theory Paper VI	World Regional Geography	90
Theory Paper VII	Regional Development and Planning	90
Theory Paper VIII	History of Geographical Thought	90
Practical III	Surveying	60
Practical IV	Photo and Image Interpretation	60
	General Viva Voce	40
Total Marks		1000

B.A./B.Sc.(HONS) I YEAR

Paper - I

**PHYSICAL GEOGRAPHY - I
(Geomorphology)**

Max Marks 90

UNIT I : BACGROUND TO GEOMORPHOLOGY

The nature and scope of geomorphology; Place of geomorphology in geography; Introduction to the solar system; Origin of the earth : Nebular hypothesis; Super nova hypothesis ; Otto Schmidt's gas and dust cloud hypothesis; Constitution of earth's interior; Geological time scale;Origin of continents and ocean basins : Wegner's theory of continental drift, Plate tectonics.

UNIT II : GEOMORPHIC STRUCTURE AND PROCESSES

Forces of the earth crust & earth movements; Folds and faults; Rocks: types, mode of formation, and properties; Volcanoes and Earthquakes; Major landform; Sub-aerial denudation: Weathering and mass wasting ; Normal cycle of erosion : Davis and Penck, Interruptions of the cycle of erosion.

UNIT III : GEOMORPHIC AGENTS PROCESSES AND LANDFORMS

Works of the agents of gradation; Types of streams, evolution and development of river valleys, Drainage pattern, Drainage density, Drainage texture; Evolution of landscape: Fluvial, Glacial, Aeolian, Coastal, and Karst.

UNIT IV : APPLIED GEOMORPHOLOGY

Geomorphology and Environment; Geomorphological knowledge and its relevance to settlements (rural & urban), agriculture, mining, industries and surface transport.

Books Recommended

1. Ahmad, E., 1985. Geomorphology, Kalyani Pub., New Delhi.
2. Chauhan, V.S. and Gautam, A., 1994. Bhoutik Bhoogol, Rastogi & Co., Meerut.

3. Dasgupta, A. and Kapoor, A.N., 1955. Principles of Physical Geography, S.Chand & Co., Delhi.
4. Dayal, P., 1990. Text-Book of Geomorphology, Shukla Book Depot., Patna.
5. Ernst,W.G.,2000. Earth Systems - Processes and Issues, Cambridge University Press, London.
6. Hails,J.R., 1977. Applied Geomorphology, Elsevier,Amsterdam.
7. Husain, M., 1976. Arziyat Ke Buniyadi Tasawurat (Urdu), Translation of Fundamentals of Geology, V.Obrochey, Taraqqi Urdu Board, New Delhi..
8. Kale,V. and Gupta,A.,2001.Elements of Geomorphology,Oxford University Press, Calcutta.
9. Monkhouse,F.J.,1960. Principles of Physical Geography, Hodder & Stoughton, London.
10. Singh, S., 1976, Bhu-Akriti Vigyan, Tara Publishers, Varanasi.
11. Strahler, A.N., and Strahler, A.H.,1992. Modern Physical Geography; John Wiley & Sons, New York.
12. Summerfield,M.A., 1991. GlobalGeomorphology; Longman,London.
13. Thornbury, W.D., 1991. Principles of Geomorphology, Wiley Eastern Ltd., New Delhi.
14. Wooldridge, S.W. and Morgan, R.S., 1952. Principles of Geomorphology, Longman Green & Co.,London.
15. Worcester, P.C., 1969, Text-Book of Geomorphology, East-West Press, New Delhi.

**B.A./B.Sc. (Hons) I Year
Paper - II
PHYSICAL GEOGRAPHY - II
(Climatology and Oceanography)**

Max. Marks 90

UNIT I : ELEMENTS OF WEATHER AND CLIMATE - I

Nature significance and scope of climatology; Elements of weather and climate; Composition and structure of atmosphere; Insolation and heat budget; Temperature : horizontal and vertical distribution; Range of temperature, Atmospheric pressure and winds.

UNIT II : ELEMENTS OF WEATHER AND CLIMATE - II

Hydrological cycle; Humidity; Condensation; Forms of precipitation and types of rain fall; World patterns of rainfall; Airmasses and fronts : concept, classification and properties; Tropical and temperate cyclones; Anti-cyclones; Koppen's classification of climates.

UNIT III : ELEMENTS OF OCEANOGRAPHY

Nature significance and scope of oceanography; Surface configuration of the ocean floor; Sub-marine relief of Atlantic, Pacific and Indian oceans; Distribution of temperature; Origin and distribution of salinity; Ocean dynamics : waves, tides (origin and types), Currents of Atlantic, Pacific and Indian Oceans; ocean deposits; Coral reefs and attols.

UNIT IV : APPLIED CLIMATOLOGY AND OCEANOGRAPHY

Impact of climate on agriculture, industries, transport and human settlements; Atmospheric pollution: causes, consequences, measures and control; Marine resources, their conservation and management.

Books Recommended

1. Banerjee, R.C. and Upadhyaya, D.S., 1978. Mosam Vigyan, Rajasthan Hindi Granth Academy, Jaipur.
2. Berry, R.G. and Chorley, R.J., 1998. Atmosphere, Weather and Climate, Routledge, London.

3. Critchfield, H.T., 1966. General Climatology, Prentice Hall, New York.
4. Garrison, T., 1998. Oceanography; Wadsworth.com. USA.
5. Gerald, S., 1980. General Oceanography : An Introduction, John Wiley & Sons, New York.
6. King, C.A.H., 1968. Oceanography for Geographers, Arnold, London.
7. Lydolph, P.E., 1985. The Climates of the Earth, Rowman and Allanheld, New Jersey.
8. Sharma, R.C. and Vatal, M., 1980. Oceanography for Geographers, Chaitnya Pub., Allahabad.
9. Treewartha, G.T. and Horn, L.A., 1980. Introduction to Climate, International Studies.
10. Thruman, H. B., 1981. Introductory Oceanography, Charles Webber (Ed.) Merrill Pub. Co.

**B.A./B.Sc. (Hons.) I Year
Practical - I**

**CARTOGRAPHIC TECHNIQUES AND
REPRESENTATION OF PHYSICAL DATA**

Max. Marks 60

UNIT I : MAPS AND SCALES

Maps : Definition and classification ; Scales : methods of scale representation; Techniques of drawing plain, diagonal, comparative and vernier scales; Enlargement and reduction of maps: instrumental and graphical methods.

UNIT II : MAP PROJECTION

Map Projections : definition, general principles, and classification; Graphical construction of Cylindrical equal area and Mercator's projection; Conical with one standard and two standard parallels, Bonne's and Polyconic projections; Zenithal: gnomonic, stereographic, orthographic, equal area and equidistant projections; Conventional map projections : Sanson Flamsteed and Mollweid.

UNIT III : REPRESENTATION OF RELIEF AND DRAINAGE

Methods of depiction of relief : hachures, hill shading, contours, and layer tinting; Contours and their profiles for slopes, valleys, waterfall, spur, knoll, saddle, escarpment, dissected plateau and overhanging cliff; Determination of slope, gradient, intervisibility and dead grounds; Stream order, Drainage density, Drainage texture, Drainage basin. Interpretation of topographic sheets of hilly, plateau and plain regions.

UNIT IV : REPRESENTATION OF CLIMATIC DATA

Representation of climatic data using line and bar graphs, isotherms, isobars and isohyets; Climographs and hythergraphs; Windroses Interpretation of Weather Charts of India for January and July.

Books Recommended

1. Garnett, A., 1981. Geographical Interpretation of Topographical Maps, George Harrap Co., London.
2. Indrapal and Mathur, H., 1987. Manchitra Avam Prakchep, Rajasthan Hindi Granth Academy, Jaipur.
3. Ishtiaq, M., 1994. Practical Geography, Jawahar Pub., New Delhi.
4. Monkhouse, F.J. and Wilkinson, H., 1963. Maps and Diagrams, Methuen & Co., London.
5. Pal, S.K., 1998. Statistics for Geoscientists-Techniques and Applications, Concept, New Delhi.
6. Richards, J.P., 1988. Manchitra Prakchepon Ka Parichayatmak Adhyan, Madhya Pradesh Hindi Granth Academy.
7. Sarkar, A.K., 1997. Practical Geography: A Systematic Approach, Orient Longman, Calcutta.
8. Sharma, J.P., 1994. Prayogatmak Bhoogol, Rastogi & Co., Meerut.
9. Singh, R.L. and Dutt, P.K., 1970. Elements of Practical Geography, Students Friends, Allahabad.
10. Singh, R.L., 1977. Prayogatmak Bhoogol Ke Mool Tatva, Tara Publications, Varanasi.

B.A./B.Sc.(HONS) II YEAR

Paper - III

MAN AND ENVIRONMENT

Max. Marks 90

UNIT II : MAN AND ENVIRONMENT

Man-environment relationship and its social relevance; Elements of physical and cultural environment and their relationship with man; Approaches to man - environment relationship : environmental determinism, possibilism and modern environmentalism.

UNIT II : POPULATION AND HUMAN SETTLEMENT

World patterns of growth, distribution and density of population; Determinants of population distribution; Human migration: past and present; Population problems of developed and developing societies; Types and patterns of rural settlements; Patterns of urbanisation in the world.

UNIT III : FORMS OF ADAPTATION TO ENVIRONMENT

Man in the eco-system; Ecological adaptation; Bio-climatic regions of the World : human life in Tundra, Hot deserts, Equatorial, Monsoon and Mediterranean regions.

UNIT IV : ENVIRONMENTAL CRISES AND MANAGAMENT

Environment as resource system; Technology and resources; Environmental crisis : nature and management of deforestation, desertification, floods and droughts, soil erosion and land degradation; Water pollution.

Books Recommended

1. Ahmad, Q.S., 1963. Major Natural Regions, S. Chand., Delhi.
2. Ehrlich, P.R. and Ehrlich, A.H., 1970. Population, Resources and Environment, W.H. Freeman & Co., San Francisco.
3. Fellmann, J., 1985. Human Geography, W.M. Brown Pub., U.S.A.
4. Hoyt, J. B., 1973. Man and the Earth, Prentice Hall , New Jersey
5. Husain, M., 1994. Human Geography, Rawat Pub. Hosue, Jaipur.

6. Husain, M., 1996. Manav Bhoogol, Rawat Publication, Jaipur.
7. Kaushik, S.D., 1970. Manav Bhoogol, Rastogi & Co., Meerut.
8. Mannion, A.M., 1991. Global Environmental Change, Longman,
New york.
9. Perpillon, A.V., 1977. Human Geography, Longman, London.
10. Smith, D.M., 1977. Human Geography, Edward Arnold, London.
11. Singh, R., 1994. Parayavaran Bhoogol, Pustak Bhavan, Allahabad.

**B.A./B.Sc. (Hons.) II Year
Paper - IV
GEOGRAPHY OF RESOURCES & ENVIRONMENT
Max. Marks 90**

UNIT I : INTRODUCTION TO RESOURCES

Meaning, nature and components of resources and environment; Resources, environment and technology interface; Classification of resources.

UNIT II : DISTRIBUTION AND UTILISATION OF NATURAL RESOURCES

Distribution, utilization, economic and environmental Significance and conservation of water, iron ore, coal, petroleum, forest and fisheries; Production and distribution of wheat, rice and tea.

UNIT III : ENVIRONMENT

Exploitation of natural resources and environmental hazards : flood, droughts; problem of land degradation and desertification; conservation and management of soil resources.

UNIT IV : EMERGING ENVIRONMENTAL ISSUES

Population explosion; Food security; Deforestation; Global warming; Conservation of bio-diversity; sustainable development.

Books Recommended

1. Agarwal, A. et al, 1999. The Citizen's Fifth Report, Centre for Science & Environment, New Delhi.
2. Alexander, J.W., 1988. Economic Geography, Prentice Hall, New Delhi.
3. Allen, J.L., 1997. Students Atlas Of Environmental Issues, Dushkin Publications.
4. Cutter, L., Renwick, H.L., 1985. Exploitation, Conservation and Preservation : A Geographic Perspective and Natural Resources Use, Rowman and Allanheld, Totowa, N.J.
5. Dubey, R.M., 1993. Economic and Commercial Geography, Kitab Mahal, Allahabad.
6. Ehrlich, P.R. and Ehrlich, A.H. Population, Resources and Environment Freeman Co., San Francisco.
7. Global Environment Outlook, 2000. Earthscan., London.
8. Guha, J. L., and Chattroj, P. R., 1992. A New Approach to Economic Geography, Word Press, Calcutta.
9. Janaki, V.A., 1985. Economic Geography, Concept Publishing Co., New Delhi.

10. Lion G.C. and Norgen, G.C., 1982. Human & Economic Geography, Oxford University Press, London.
11. Reid, D., 1995. Sustainable Development, Earthscan Pub., London.
12. Sharma H.S. and Chattopadhyay, S.K. 2000. Sustainable Developments - Concepts and Issues, Concept Pub. Co., New Delhi.
13. Simmons, I.G., 1974. The Ecology of Natural Resources Edward Arnold, London.
14. UNESCO, 1970. Use and Conservation of the Biosphere, Paris.

**B.A./B.Sc. (Hons.) II Year
Practical - II
STATISTICAL METHODS AND
REPRESENTATION OF SOCIO-ECONOMIC DATA
Max. Marks 60**

UNIT I : ELEMENTARY STATISTICAL METHODS

Measures of central tendency : Mean, Median and Mode; Measures of dispersion: range, quartile deviation, mean deviation, standard deviation and co-efficient of variation.

UNIT II : MEASURES OF RELATIONSHIP

Measures of association : Rank correlation -Kendall's method; Product-moment correlate co-efficient; Measures of functional relationship : Simple regression.

UNIT III : REPRESENTATION OF POPULATION AND SOCIAL DATA

Population distribution : Rural (dots) Urban (spheres); Population density (Choropleth - Nested means and Quartile method); Population growth (line graph); Age and sex pyramid; Literacy (Choropleth - Standard deviation method); Distribution of tribal population (polybar diagram).

UNIT IV : REPRESENTATION OF ECONOMIC AND TRANSPORT DATA

Land utilization (proportional divided circles); Distribution of crops (polybar diagram); Distribution of major industries (geometric symbols); Traffic flow diagram.

Books Recommended

1. Alvi,Z.,1995. Statistical Geography, Rawat Publishers, Jaipur.
2. Mahmood, A., 1986. Statistical Methods in Geographical Studies, Rajesh Pub., New Delhi.
3. Monkhouse, F. J. and Wilkinson, H.R., 1963. Maps and Diagrams, Methuen, London.
4. Singh, R.L. and Dutt, P.K., 1970. Elements of Practical Geography, Students' Friends, Allahabad.
5. Singh, L.R. and Singh, R., 1973. Manchitra avam Prayogatmak Bhoogol, Central Book Depot, Allahabad.

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B.A./B.Sc. HONS III YEAR

Paper - V

SYSTEMATIC GEOGRAPHY OF INDIA

Max. Marks 90

UNIT I : PHYSICAL GEOGRAPHY

Structure; Physiographic divisions; Drainage system and its evolution; Climate: Origin and mechanism of Indian monsoon; Seasons of India, Classification of climate of India (Koppen's), Soils: types and distribution; Natural vegetation : types and distribution.

UNIT II : POPULATION GEOGRAPHY

Distribution of major linguistic and religious groups; Factors of Population growth and distribution; Demographic attributes : literacy, age and sex, occupational structure, religious and linguistic composition. Patterns of urbanization in India; Population problems and policies.

UNIT III : ECONOMIC GEOGRAPHY - I

Production and distribution of minerals (iron ore, manganese and mica) and energy (coal, petroleum and hydro-electricity) resources; Irrigation; Production and distribution of rice, wheat, cotton, sugarcane and tea; Green revolution and problems of Indian agriculture.

UNIT IV : ECONOMIC GEOGRAPHY - II

Location, production and distribution of sugar, cotton textile, iron and steel, chemicals and electronic industries; Industrial regions of India; Transport networks: Roads and Railways; Internal and foreign trade.

Books Recommended

1. Cole, J., 1996. A Geography of the World's Major Regions, Routledge, London.
2. DeBlij, H.J. 1994. Geography: Regions and Concepts, John, Wiley, New York.
3. Deshpande, C. D., 1992. India - A Regional Interpretation, Northern Book Centre, New Delhi.

4. Dickenson, J.P. et al, 1996. The Geography of the Third World, Routledge, London.
5. Farmer, B.H., 1983. An Introduction to South Asia, Methuen, London.
6. Gopalkrishnan, R., 1996. Geography of India, Jawahar Pub. & Dist., New Delhi.
7. Kotsabade and Wheeler, 1999. World Regional Geography, John Wiley, New York.
8. Nag, P. and S. Sen Gupta, 1992. Geography of India, Concept Pub. Co., New Delhi.
9. Sharma, J.P., et.al., 1994. Bharat ka Bhoogl, Hindi Granth Academy, Bhopal.
10. Sharma, T.C. and Coutinho, O., 1992. Economic Geography of India, Vikas Pub., New Delhi.
11. Singh, Gopal, 1988. Geography of India, Atma Ram, Delhi.
12. Singh, R. L., 1971. India - Regional Studies, Geographical Society Of India, Varanasi.
13. Songquiao, Z., 1994. Geography of China, John Wiley, New York.
14. Spate, O.H.K. and Learmonth, A.T.A., 1962. India and Pakistan, Methuen & Co., London.
15. Tirth, Ram, 1996. Geography of India, Rawat Pub., Jaipur.

**B.A./B.Sc.(HONS.) III YEAR
Paper - VI
WORLD REGIONAL GEOGRAPHY
Max. Marks 90**

UNIT I : ASIA

Terrain pattern, drainage, climate, natural vegetation, soils, population and economic base of the continent in general. Regional study of south-east and south-west Asia.

UNIT II : EUROPE

Terrain pattern, drainage, climate, natural vegetation, soils, population and economic base of the continent in general ; Regional study of British Isles or France or Germany.

UNIT III : NORTH AND SOUTH AMERICA

Terrain pattern, drainage, climate, natural vegetation, soils, population and economic base of the continent in general; Regional study of New England and Brazil.

UNIT IV : AUSTRALIA AND NEW ZEALAND

Terrain pattern, drainage, climate, natural vegetation, soils, population and economic base of Australia and New Zealand in general.

Books Recommended

1. Cole, J., 1996. A Geography of the World's Major Regions, Routledge, London.
2. Deblij, H.J., 1994, Geography : Regions and Concepts, John Wiley, New York.
3. Dickenson, J.P. et al, 1996. The Geography of the Third World, Routledge, London.
4. Gourou, P., 1980. The Tropical World, Longman, London.
5. Jackson, R.H. and Hudman, L.E., 1991. World Regional Geography : Issues for Today, John Wiley, New York.
6. Kolb, A., 1977. East Asia - Geography of a Cultural Region, Methuen, London.
7. Minshull, G.N., 1984 Western Europe, Hodder & Stoughton, New York.
8. Patterson, J.H., 1985. Geography of Canada and the United States, Oxford University Press.
9. Songquiao, Z., 1994. Geography of China, John Wiley, New York.
10. Ward, P.W. and Miller, A. 1989. World Regional Geography : A Question of Place, John Wiley, New York.

**B.A./B.Sc. (HONS.) III YEAR
Paper – VII**

**REGIONAL DEVELOPMENT AND PLANNING
Max. Marks 90**

UNIT I

Region : Concept & types, forms and functions; Concept of spatial and sectoral development; Planning : concept, levels, types, need and scope; Delineation of regions: weighted index, flow analysis and gravitational analysis methods; Significance of regional and city planning.

UNIT II

Regional Development : concepts, indicators and levels; Regional Planning Concept, purpose and approaches; types : Inter and Intra regional planning; levels of regional planning; local, regional and national.

UNIT III

Theories of regional development : Rostow's model, Hirschman's model, Perouxs Growth Pole theory and Core-periphery model.

UNIT IV

Planning in India : Five year plans; goals and achievements. Regional imbalances and inequalities in India. Problem Regions : drought and floods; Growth Centres, District and Metropolitan planning. Regional Plan of Nagpur and City Plan of Chandigarh.

Books Recommended

1. Batra, Madan, Mohan, 1987. Planning in India Development Perspective towards the 21st Century, V.K.Publishing House, Barielly.
2. Bhat, L.S., 1973. Regional Planning in India, Statistical Publishing Society, Calcutta.
3. Chand, M. and V. K. Puri, 1983. Regional Planning in India, Allied Publishers, New Delhi.
4. Misra, R. P., 1969. Regional Planning : Concept, Techniques and Policies, University of Mysore, Mysore.
5. Misra, R.P., Urs, D.V., Nalraj, V.K. (eds.) 1978. Regional Planning and National Development, Vikas Publishing House, New Delhi.
6. Rao, Prakash, V.L.S., 1960. Regional Planning, Indian Statistical Institute, Asia Publishing House, Calcutta.

7. Singh, Hanuman, Planning, Regional Development & Disparities in India, Criterion Publishing, New Delhi.
8. Sundaram, K.V., (ed), 1985. Geography and Planning : Essays in Honour of V.L.S. Prakasa Rao, Concept Pub. Co., New Delhi.

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**B.A./B.Sc. HONS III YEAR
Paper – VIII**

**HISTORY OF GEOGRAPHICAL THOUGHT
Max. Marks 90**

UNIT I

The place of geography in the classification of sciences; The beginning of geography in the classical age : Contribution of Greeks and Romans with special reference to the works of Hecateus, Herodotus, Eratosthenese, and Ptolemy; Indian contributions during the classical age.

UNIT II

Geography during the Dark Age in Europe. factors responsible for the development of geography in the Arab World;Contribution of Arab Geographers with special reference to Al-Masudi, Al-Biruni, Al-Idrisi, Ibn-e-Batuta and Ibn-e-Khaldun.

UNIT III

The revival of scientific geography with special reference to the work of Varenius; Contribution of Kant, Humboldt and Ritter. Shifting view points of geography during the second half of nineteenth century.

UNIT IV

Contributions of Ratzel, Vidal de la Blache, Richtofen, Hettner, Schluter, Sauer and Hartshorne; The quantitative and conceptual revolution in geography.

Books Recommended

1. Ali, S. M., 1960. Reinand : Arab Geography, (Translated) Institute of Islamic Studies, Aligarh.
2. Alvi, S.M.Z., 1965. Arab Geography in the Ninth & Tenth Centuries, Department of Geography, Aligarh.
3. Broke, J. M., 1965. Geography - its Scope and Spirit, Ohio, Charles Nerrill, Columbus.
4. Dickinsons, R. E., 1969. The Makers of Modern Geography, Routledge and Kegan Paul, London.
5. Hartshorne, R., 1958. Perspective on the Nature of Geography, Rand Mac Nolly, Chicago.

6. Husain, M., 2002. Bhaugolik Vichardaharayaon Ka Itihas, Rawat Publication, New Delhi.
7. Husain M., 2002. Evolution of Geographical Thought, Rawat Publication Co. Jaipur.
8. James, P.E. and Martin, 1972. All Possible Worlds - A Geographical Ideas, The Odyssey Press, New York. History of
9. Kaushik, S. D., 1982. Bhaugolic Vichardharayen avam Vidhi Tantra, Rastogi & Co., Meerut
10. Tozer, H. P., 1951. History of Ancient Geography, Cambridge University Press, London.

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**B.A./B.Sc. HONS III YEAR
PRACTICAL – III**

**SURVEYING
Max. Marks 60**

UNIT I : FUNDAMENTALS OF SURVEYING

Surveying: Definition, principles, purpose, methods and classification; Survey instruments.

UNIT II : PLANE TABLE SURVEYING AND TRAVERSING

Methods of Plane table surveying : radiation, intersection and resection; Prismatic compass Survey: open and closed traverse, correction of bearings.

UNIT III : LEVELLING AND CONTOURING

Levels : Definition and types; Levelling by Dumpy level, Contouring by Indian Pattern Clinometer.

UNIT IV : MEASUREMENT OF VERTICAL AND HORIZONTAL ANGLES

Sextant : Height determination; Theodolite : Measurement of Horizontal Angles.

Books Recommended

1. Alvi, Z., 1994. Text Book of Surveying, Vikas Publishers, New Delhi.
2. Ayyar, N.P. 1979 Sarvekshana, Madhya Pradesh Hindi Granth Academy, Bhopal.
3. Kanetkar, T.P. and Kulkarni, S.V. 1985, Surveying and Levelling, Poona Vidhyarthi Griha Prakashan, Poona.
4. Singh, R.L. and Dutt, P.K., 1970. Elements of Practical Geography, Students Friends, Allahabad.
5. Sharma, J.P. 1984. Pravogik Bhogol , Rastogi and Co. Meerut.

**B.A./B.Sc. (HONS.) III YEAR
PRACTICAL – IV**

**PHOTO AND IMAGE INTERPRETATION
Max. Marks 60**

UNIT I : BASICS OF REMOTE SENSING

EMR; Remote Sensing : stages and principles; Aerial photographs : types, border information and geometry; Difference between maps and aerial photographs; Visual interpretation instruments : Pocket stereoscope and Mirror stereoscope, Zeiss test.

UNIT II : PHOTOGRAMMETRY

Numerical problems on aerial photogrammetry; Construction of instrument base and photo base. Determination of photo scale; Determination of height of the objects using single vertical aerial photographs; Preparation of photo index.

UNIT III : INTERPRETATION OF AERIAL PHOTOGRAPHS

Elements of image interpretation; Detection of defined objects; Preparation of image interpretation keys; Interpretation of stereograms for fluvial, coastal and industrial landscape; Orientation of stereopairs and interpretation of general landuse.

UNIT IV : INTERPRETATION OF SATELLITE IMAGERIES

Satellite Imageries : referencing, types; Object/feature identification from multiband imageries; Interpretation of FCC for landcover/ landuse mapping; Interpretation of salt affected and ravine lands from FCC; Landuse mapping of Varanasi/ Bangalore/Chandigarh/Delhi.

Books Recommended

1. Dickinson, G. C., 1979. Maps and Air Photographs, Arnold - Heinemann, New Delhi.
2. Lillesand, T. and R. Kiefer, 1979. Remote Sensing and Image Interpretation, John Wiley, New York.

3. NRSA, 1995. IRS-1C, Data Users Handbook, National Remote Sensing Agency, Hyderabad.
4. NRSA, 1988. IRS-1A, Data User Handbook, National Remote Sensing Agency, Hyderabad.
5. Patel, A.N. and Singh, S., 1992. Remote Sensing : Principles and Applications, Scientific Publishers, Jodhpur.

GENERAL VIVA-VOCE

Max. Marks 40

General Viva Voce will take place at the end of all practical and theory papers and will be based on the FINAL YEAR year papers