

Suggested Readings:

1. American Society of Photogrammetry: Manual of Remote Sensing, ASP, Falls Church, VA, 1983.
2. Avery, T.E., Interpretation of Aerial Photographs, Burges.
3. Barrett, E.C. and L.F. Curtis, Fundamentals of Remote Sensing and Air Photo Interpretation, Macmillan, New York, 1992.
4. Compbell, J., Principles of Remote Sensing, Longman, London, 1985.
5. Hord, R.M., Digital Image Processing of Remotely Sensed Data, Academic, New York, 1989.
6. Robert, G. Reeves et al, Manual of Remote Sensing, Vol. I and II.
7. Smith, H.T.V., Aerial Photographs and their Applications, Appleton Century Crofts.
8. Talbutt, A., Essentials of Aerial Surveying and Photo Interpretation
9. Tomar, M.S. and A.R. Maslekar, Aerial Photographs in Land use and Forest Surveys Kishore and Co. Dehradun

M.A. / M.Sc. (Final) Geography Paper - I: Agricultural Geography

Unit - I

- a) The nature and scope of agricultural geography.
- b) Approaches in agricultural geography: recent trends.
- c) Origin and dispersal of agriculture.
- d) Development of agricultural geography.
- e) Sources of agricultural data.

Unit - II

- a) Physical factors affecting agriculture: terrain, climate, soils and water.
- b) Non-physical factors affecting agriculture: Institutional (including social and economic) and technological.
- c) Agricultural systems of the world: critical review of classification of agricultural types.
- d) Major agricultural types of the world and their characteristics and world distribution.
- e) Detailed study of intensive subsistence, commercial grain farming, Mediteranean agriculture and tropical plantation agriculture.

Unit - III

- a) Land use classification; landuse pattern in India; and land capability classification.
- b) Von Thunen's agricultural model of agricultural land use and recent modification in it.
- c) Cropping pattern; changing cropping pattern in India.
- d) Measures of carrying capacity of land; nutrition and food balance sheet; food surplus and food deficient regions of India.
- e) Diffusion model.

Unit - IV

- a) Concept and techniques of delimitation of agricultural regions; agricultural regions of India and their characteristics.
- b) Measures of agricultural productivity and efficiency levels and other characteristics.
- c) Regional pattern of agricultural productivity in India.
- d) Crop combination methods: Weaver's Doi's and Rafiullah's methods and their applications.
- e) Agricultural typology: concept and methodology; patterns with special reference to the world and Rajasthan.

Unit - V

- a) Sustainable development in agriculture.
- b) Green revolution: Its components, impact and consequences.
- c) White revolution: Its components, impact and consequences.
- d) Specific problems in Indian agriculture and their management and planning.
- e) Agricultural policy in India.

Suggested Readings:

1. Bayliss Smith, T.P., The Ecology of Agricultural Systems, Cambridge University Press, London, 1987.
2. Berry, B.J.L. et al, The Geography of Economic Systems, Prentice Hall, New York, 1976.
3. Weber, Alfred, Alfred Weber's Theory of Location of Industries, Chicago University Press, Chicago, 1929.
4. Yaseen, Leonard, Plant Location, American Research Council, New York.
5. कुमार, प्रमिला एवं शर्मा, श्रीकमल: औद्योगिक भूगोल, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी
6. लोढा, राजमल: औद्योगिक भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी

M.A. / M.Sc. (Final) Geography Paper - II: Political Geography

Unit – I

- a) Nature, scope and subject matter of political geography.
- b) Geopolitics: meaning and contributions of Emmanuel Kant, Karl Ritter, Friedrich Ratzel, H.V. Tritischke, Rudolf Kjellen and Karl Haushofer.
- c) Development of political geography. Concepts and contributions of:
- d) Alfred Thayer Mahan, H.J. Mackinder and Alexander-de-Seversky.
- e) D.W. Meinig, N.J. Spykman and Hooson.

Unit - II

- a) Recent trends in political geography.
- b) The functional approach in political geography.
- c) The unified field theory of political geography.
- d) Nature of administrative areas.
- e) Geography of public policy and finance.

Unit – III

- a) Concept of nation, state and nation state.
- b) The state as a politico-geographical region: location, shape, size.
- c) Resources of state: natural, cultural and human.
- d) Population: growth, quality and problems.
- e) Frontiers and boundaries: types and functions, boundary making and boundary problems.

Unit - IV

- a) Core areas and capitals.
- b) Unitary and federal states.
- c) The impress of government on landscape.
- d) Politics of world resources.
- e) Politics of globalization and WTO.

Unit – V

- a) Electoral studies in political geography.
- b) Conceptual model of voting decision.
- c) Gerrymandering: gerrymandering in relation to India.
- d) Geographical influence on voting behaviour of the electors in India.
- e) Spatial pattern of voting behaviour in Rajasthan.

Suggested Readings:

1. Boggs, S.W., International Boundaries: A Study of Boundary Function and Problems, Columbia University Press, New York.
2. Dikshit, R.D., Political Geography: A Contemporary Perspective, Tata McGraw Hill, New Delhi, 1996.

3. Fawcett, C.B., Frontiers: A Study in Political Geography, Oxford University Press, London.
4. Fisher Charles A., Essays in Political Geography, Methuen, London, 1968.
5. John R. Short, An introduction to Political Geography, Routledge, London, 1982.
6. Moodie, A.E., Geography Behind Politics, Hutchinson University Press, London.
7. Percy, G.E. and R.H. Fifield, World Political Geography, Thomas Y. Crowell Co., London.
8. Pounds N.J.G., Political Geography, McGraw Hill, New York, 1972.
9. Prescott, J.R.V., Political Geography, Methuen & Co., London.
10. Sukhwai, B.L., Modern Political Geography of India, Sterling Publishers, New Delhi, 1986.
11. Taylor, Peter; Political Geography Longman, London, 1985.
12. Wigert, H.W. et al, Principles of Political Geography, Appleton Century-Crofts Inc. New York.
13. चौहान, पी.आर.: राजनीतिक भूगोल (वसुन्धरा प्रकाशन, गोरखपुर)
14. भट्टाचार्य, ए.एन. एवं एस.एल.: राजनीतिक भूगोल (राजस्थान आच्छा हिन्दी ग्रन्थ अकादमी, जयपुर)
15. दीक्षित, आर.डी.: राजनीतिक भूगोल – समसामयिक परिदृष्टि (प्रेन्टिस हॉल ऑफ इण्डिया)
16. सक्सेना, एच.एम.: राजनीतिक भूगोल (रस्तोगी पब्लिकेशन्स, मेरठ)
17. कपूर कालीदास: भारतीय भू-नीति (हिन्दी समिति सूचना विभाग)
18. कोलोशोव, वी.: राजनीतिक भूगोल (प्रगति प्रकाशन, मास्को)
19. दीक्षित श्रीकान्त : राजनीतिक भूगोल (ज्ञानोदय प्रकाशन, गोरखपुर)

M.A. / M.Sc. (Final) Geography
Paper - III (A): Regional Development and Planning

Unit - I

- a) Development: concept, process and indicators; planning: concept, need and levels.
- b) Region: concept, types and delimitation; planning regions: characteristics, hierarchy, need, demarcation - principles, criteria and methods.
- c) Regional planning: nature and rationale.
- d) Development of regional planning and associated factors.
- e) Problems of depressed areas, economic growth, physical city, efficiency in administration, equality, autonomy and self fulfillment.

Unit - II

- a) Regional planning theory: society and supra urban space, economic activity and supra urban space and the systems of cities and economic development.
 - b) Social and political activity and supra urban space.
- Analytical techniques for regional planning:**
- c) Information needs, forecasting techniques, industrial location analysis.
 - d) Economic base analysis, regional multiplier analysis, input output analysis.
 - e) Social accounting, gravity model, social area analysis.

Unit - III

Evaluation techniques for regional planning:

- a) Requirements of an evaluation techniques.
- b) Checklist of criteria.
- c) Cost minimization: comparative cost analysis and threshold analysis.
- d) Cost effective analysis: goal achievement matrix.
- e) Cost benefit analysis and planning balance sheet.

Unit - IV

- a) Regional planning in India and multi-level planning in India.
- b) Regional planning legislation in India.
- c) Planning regions of India: review and typologies.
- d) Surveys for planning: concepts and functions.
- e) Regional surveys, diagnostic surveys, techno-economic surveys.

Unit - V

Regional planning case studies:

- a) India: national capital region.
- b) Great Britain: Lancashire.

- c) France: Paris region.
- d) USA: Tennessee valley authority.
- e) Israel: Jazrell valley.

Suggested Readings:

1. Abler, R., et al, Spatial Organization, The Geographer's View of the World, Prentice Hall, Englewood Cliffs, N.J., 1971.
2. Alden, Jeremy and Robert Morgan, Regional Planning: A Comprehensive View, Leonard Hill Books, Beds, 1974.
3. Bhat, L.S. et al., Micro-Local Planning: A Case Study of Karnal Area, Haryana, K.B. Publications, New Delhi, 1976.
4. Bhat, L.S., Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
5. Chandna, R.C., Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana, 2000.
6. Christaller, W., Central Places in Southern Germany, Translated by C.W. Baskin, Prentice Hall, Englewood Cliffs, New Jersey, 1966.
7. Glasson, John, An Introduction to Regional Planning - Concepts, Theory, and Practice, Hutchinson Educational Ltd., London, 1974.
8. Gosal, G.S. and Krishan, G., Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.
9. Government of India, Planning Commission, Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi, 1961.

M.A. / M.Sc. (Final) Geography Paper - III (B): Urban Geography

Unit - I

- a) Nature and scope of urban geography, urban concept.
- b) Development of urban geography.
- c) Traditional and contemporary conceptual bases of urban geography.
- d) Origin and growth of urban centres.
- e) Process of urbanisation: meaning, measurement, facts, causes and problems.

Unit – II

- a) Classification of urban centres according to size and function: comparative assessment.
- b) Theories of urban system: the law of primate city and the rank-size rule.
- c) Central place theory: Christaller's central place system.
- d) Losch's central place theory and the derivation of Losch's economic landscape.
- e) Ranking of towns and delimitation of sphere of influence: definitions and methods.

Unit - III

- a) Urban systems in the modern world: stages of urban systems development.
- b) Typology of 'urbanised' regions.
- c) Urbanised regions and theories of regional development.
- d) Urban land use: human ecology and urban land use models of Burgess, Harris-Ullman and Hoyt; land economics and urban land use.
- e) Central business district (CBD): criteria and methods of areal definition, historical process and CBD; the zone in transition.

Unit - IV

- a) The residential areas of the city: structures-the analysis of house types.
- b) Social characteristics of residential areas.
- c) Housing markets and institutional influences.
- d) The city as a social world: environment and behaviour.
- e) Local social interaction in the city; territory, locality and neighbourhood.

Unit - V

- a) Manufacturing areas in city.
- b) Urban transport system; transport problems and strategies.
- c) Rural-urban fringe.
- d) Intra-urban and inter-urban inequalities.
- e) The city in the developing world with special reference to the India: colonial origin of towns, city plan, over urbanisation and squatter settlements.

Suggested Readings:

1. Bansal, S.C., Urban Geography, Minakshi Publication, Meeruth, 2000, (Hindi).
2. Chapin, F. Stuart, Urban Land Use Planning, University of Illinois Press.
3. Davis, Kingsley and Hertz, Patterns of World Urbanisation, Columbia University Press.
4. Herbert, David T. and Colin J. Thomas, Urban Geography: A First Approach, John Wiley and Sons, New York, 1982.
5. Johnson, J.H., Urban Geography: An Introductory Analysis, Pergamon Press, London, 1968.
6. Kundu, A., Urban Development and Urban Research in India, Khanna Publication, 1992.
7. Meyor, H.M. and C.F. Kohn, (eds.), Readings in Urban Geography, University of Chicago Press, Chicago, 1955.
8. Mumford, L., The City in History, Secker and Warburg, Longon, 1961.
9. Singh, K. and F. Steinburg, (eds.), Urban India in Crisis, New Age Interns, New Delhi, 1998.
10. Singh, O.P., Urban Geography, Tara Book Agency, Varanasi, 1987, (Hindi).
11. Singh, R.L., Banaras, Nandkishore, Varanasi.

M.A. / M.Sc. (Final) Geography Paper - III (C): Population & Settlement Geography

Unit - I

- a) Meaning, scope and development of population geography.
- b) Population geography and demography.
- c) Sources of data: population counts and census; sample data.
- d) Reliability of data and problems of mapping population data.
- e) Data errors and their detection and correction.

Unit - II

Population distribution:

- a) Theoretical issues of population distribution.
- b) Measures of population distribution.
- c) World pattern of population distribution.
- d) Determinants of population distribution.
- e) Population distribution in India; patterns and determinants

Unit - III

Population growth:

- a) Population growth since prehistoric period.
- b) Demographic transition theory and population growth models.
- c) Fertility analysis, fertility patterns and its determinants.
- d) Mortality analysis, patterns and its determinants.
- e) Growth of population in India: patterns, components and determinants.

Unit - IV

Population structure and characteristics:

- a) Age structure and sex composition.
- b) Educational composition.
- c) Urbanisation.
- d) Economic characteristics and occupational structure.

- e) Population composition of India: characteristics and problems.

Unit - V

- a) Evolution, size and spatial distribution pattern of human settlement and related theories and models.
- b) Physical structure of settlements; internal characteristics and external forms.
- c) Functional structures of settlements; functional classification of towns and functional typology of villages; functional landscape of settlements.
- d) Settlement hierarchy : concept and contributing factors.

Suggested Readings:

1. Bhende, Asha A. and Tara Kanitkar, Principles of Population Studies, Himalaya Publishing House.
2. Bilasborrow, Richard E. and Daniel Hogan, Population and Deforestation in the Humid Tropics, International Union for the Scientific Study of Population, Belgium, 1999.
3. Bogue, D.J., Principles in Demography, John Wiley and Sons, New York, 1969.
4. Bose, Ashish et al, Population in India's Development: 1947-2000, Vikas Publishing House, New Delhi, 1974.
5. Census of India, India: A State Profile, 1991.
6. Clarke, John I., Population Geography and the Developing Countries, Pergamon Press Inc., Oxford, 1971.
7. Clarke, John I., Population Geography, Pergamon Press Inc., Oxford, 1973.
8. Crook, Nigel, Principles of Population and Development, Pergamon Press, New York, 1997.
9. Garnier, Beaujeu J., Geography of Population, Longman, London, 1970.
10. Kochhar, Rajesh, The Vedic People: Their History and Geography, Orient Longman Ltd., New Delhi, 2000.
11. Mamoria, C.B., India's Population Problems, Kitab Mahal, New Delhi, 1981.
12. Mitra, Asok, India's Population: Aspects of Quality and Control, Vol. I & II, Abhinav Publications, New Delhi, 1978.
13. Premi, M.K., India's Population: Heading Towards a Billion, S.R. Publishing Corporation, New Delhi, 1991.
14. Shryock, Honry, S. et al, The Methods and Materials of Demography, Vol. I & II, U.S. Bureau of the Census.

M.A. / M.Sc. (Final) Geography Paper - IV (A): Industrial Geography

Unit - I

- a) Nature and scope of industrial geography, recent development in industrial geography.
- b) Classification of industries: bases and characteristics.
- c) Elements and factors of industrial localisation.
- d) Centralisation and decentralisation of industrial enterprises.
- e) Horizontal, vertical and diagonal linkages of industries.

Unit - II

Basic economic concepts:

- a) Demand, supply and price; marginal cost and average cost.
- b) Economies of scale and agglomeration and related concepts.

Critical review of theories and models of industrial location:

- c) Weber, E.M. Hoover, August Losch and A. Fetter.
- d) Schooler, G.T. Renner, A. Pred and Palander Tord.
- e) D.M. Smith, E.M. Rawstron, Bos H.C. & Hamilton.

Unit - III

Geographical analysis of selected industries in the world with reference to India.

- a) Copper, aluminium and iron and steel.

- b) Pulp and paper, textile.
- c) Oil refining and shipbuilding.
- d) Software industries.
- e) Locational analysis of zinc and cement industry of Rajasthan.

Unit - IV

- a) Industrial location and spatial distribution analysis and measures: coefficients of localisation, specialisation, geographic association and index of diversification.
- b) Delimitation of industrial regions: indices and methods.
- c) Study of major industrial regions of the world:
- d) Ruhr region and Great Lakes region.
- e) Industrial belt of Japan, Ukraine region and Lancashire region.

Unit - V

- a) Environmental degradation caused by manufacturing industries.
- b) Industrial hazards and health.
- c) Impact of industries on economic development.
- d) Role of globalisation on manufacturing sector in less developed countries.
- e) Shifting of industries and its impact on the urban fringe.

Suggested Readings:

1. Adam, Watter, Structure of American Industry, Macmillan & Co., New York.
2. Alexander, J.W., Economic Geography, Prentice Hall, New York.
3. Bengston, N.A. and V.L. Royen, Fundamental of Economic Geography, Prentice Hall, New York.
4. Boesch, H., A Geography of World Economy, D. Van-Nostrand Co., New York, 1964.
5. Britton, John N.H., Regional Analysis and Economic Geography, G. Bell & Sons.
6. Eastall, R.C. and R.O. Buchanan, Industrial Activity and Economic Geography, Hutchinson, London.
7. Hoover, E.M., The Location of Economic Activity, McGraw Hill, New York, 1948.
8. Joshi, Hemlata, Industrial Geography of India: A Case History of Fertiliser Industry, Rawat Publishers, Jaipur.
9. Losch, August, The Economics of Location, Yale University Press, London, 1973.
10. Miller, E.W., A Geography of Manufacturing, Prentice Hall, New York, 1962.
11. Riley, R.C., Industrial Geography, Chatto and Windus, London, 1973.
12. Saushkin, Yu G., Economic Geography: Theory and methods, Progress Publishers, Moscow, 1980.

M.A. / M.Sc. (Final) Geography Paper - IV (B) : Transportation Geography

Unit - I

- a) Meaning, scope and development of transportation geography.
- b) Factors associated with the development of transport system: historical, technological, physical, economic, political and social.
- c) Spatial interaction: ideas of Edward Ullman; functional approach of M.E. Hurst.
- d) Concepts of distance: point to point distance and distance in a group of points.
- e) Measures of distance: physical, time, economic and perceptual.

Unit - II

- a) The functional region, linkages and nodes, diagrammatic representation of hinterlands and hierarchies.
- b) Transportation and spatial processes: regional specialisation and agglomeration economies.
- c) Cost of overcoming distance: transportation cost, price and rate structure.
- d) Transport costs as factor of production.
- e) An idealised process of transport development.

Unit - III

- a) Graph theoretic concepts.
- b) Networks as models.
- c) Types of connectivity: concept and indices of connectivity.
- d) Measures of nodal accessibility: the network as a matrix; degree of connectivity: direct and indirect connectivity.
- e) Indices of accessibility: accessibility matrix, matrix T, shortest path matrix and valued matrix; sinuosity.

Unit - IV

- a) Spatial patterns of flow.
- b) Gravity model: basic model and modifications.
- c) Gravity model and the traffic and commodity flow.
- d) Allocation model: transportation problem and optimum solution.
- e) Flow in a capacitated network.

Unit - V

- a) Negative impacts of transportation: social, accidents and other impairments.
- b) Economic and environmental aspects of urban transport problems and their control.
- c) Alternative transport system in mega cities.
- d) Transport systems in the developing countries.
- e) Development of the Indian surface transport system.

Suggested Readings:

1. Abler, Adams and Gould, Spatial Organisation: The Geographer's View of the World, Prentice Hall, New York.
2. Buchannan, C.D., Traffic in Towns, Buchannan Report, HMSO, London.
3. Hagget, P. et al, Locational Analysis in Human Geography, Edward Arnold, London, 1977.
4. Haggett, P. and R.J. Chorley, Network Analysis in Geography, Arnold, London, 1968.
5. Hay, A. Transport Economy, Macmillan, London, 1973.
6. Hoyle, B.S. (ed.) Transport and Development, Macmillan, London, 1973.
7. Hoyle, B.S. and R. Knowles, Modern Transport Geography, Wiley Europe.
8. Hurst, M.E.E., Transportation Geography: Comments and Readings, McGraw Hill, New York, 1974.
9. Kansky, K.J., Structure of Transportation Network, Research Paper No. 48, Department of Geography, University of Chicago.
10. Knowles, R. and J. Wareing, Economic and Social Geography, Heinemann.
11. Lowe, J.C. and S Moriyadas, The Geography of Movement, Houghton Mifflin Co., Boston.
12. Munby, D., Transport, Penguin.
13. Patankar, P.G., Urban Transport in Distress, Central Institute of Road Transport, Pune.
14. Robinson, H. and C.G. Bamford, Geography of Transportation, McDonald and Evans, London, 1978.
15. Taaffe, E.J. and et al, Geography, Prentice Hall Inc.

M.A. / M.Sc. (Final) Geography Paper - IV (C) : Environmental Geography

Unit - I

- a) Environmental geography: definition scope and concepts.
- b) Ecology: meaning, scope and concepts.
- c) Environment: meaning, elements, and types.
- d) Principles of environmental geography.
- e) Man-environment relationship: review of different perspectives.

Unit - II

- a) Ecosystem: concept, definitions, characteristics and types.
- b) Components and functioning of ecosystem.

- c) Trophic level, food chain and ecological pyramids.
- d) Energy flow in ecosystem.
- e) Geo-chemical cycles and circulation of element in the ecosystem: carbon cycle, nitrogen cycle and oxygen cycle.

Unit - III

- a) Fresh water ecosystems: meaning, types and their properties.
- b) Marine ecosystems: meaning, types and their properties.
- c) Terrestrial ecosystems: meaning, types and their properties.
- d) Biomes: concept, types, characteristics and distribution.
- e) Detail study of alpine and tropical desert biomes.

Unit - IV

- a) Environmental hazards and disasters: meaning, types and impacts.
- b) Environmental degradation: meaning, process, causes, types and impacts.
- c) Environmental pollution: meaning, causes, types and impact.
- d) Environmental planning and management: concept, objectives and strategies.
- e) Sustainable development: concept, need, problems and strategies.

Unit - V

Case studies of man induced environmental and ecological changes:

- a) Ecology of tropical farming systems.
- b) Mountain ecosystem with special reference to Aravalli hills.
- c) Big dams with reference to Sardar Sarovar. Environmental legislation:
- d) The Stockholm Conference and the Earth Summit.
- e) Environmental laws in India related to: wild life, water, forest and environment.

Suggested Readings:

1. Ackerman, E.A., Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958.
2. Agarwal, A. and S. Sen, The Citizens Fifth Report, Centre for Science and Environment, New Delhi, 1999.
3. Bertalanffy, L., General Systems Theory, George Bragiller, New York, 1958.
4. Bodkin, E., Environmental Studies, Charles E. Merrill Publishing Co., Columbus, Ohio, 1982.
5. Chandna, R.C., Environmental Awareness, Kalyani Publishers, New Delhi, 1998.
6. Chorley, R.J., Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500 B, 1962.
7. Eyre, S.R. and G.R.J. Jones (eds.), Geography as Human Ecology, Edward Arnold, London, 1966.
8. Haggett, R.J., Geo-ecology: An Evolutionary Approach, Routledge, London, 1995.
9. Kormondy, E.J., Concepts of Ecology, Prentice Hall, 1989.
10. Moore, R., Man in the Environment, McGraw Hill.
11. Murphy, E.F., Man and His Environment, Harper & Row.
12. Odum-Fugene, P., Fundamentals of Ecology, W.B. Saunders Co.

M.A. / M.Sc. (Final) Geography Paper - IV (D) : Social Geography

Unit - I

- a) Nature and Development of social geography.
- b) Scope and significance of social geography.
- c) Philosophical bases of social geography.
- d) Positivity, structuralist and radical.
- e) Humanist, post-modern, and post structuralist.
- f) Social geography in the realm of social science.

Unit – II

- a) Space and society.
- b) Understanding society and its structure and processes.
- c) Geographical bases of social formations.
- d) Contribution of social geography to social theory.
- e) Power relations and space.

Unit - III

- a) Towards a social geography of India: nature and problems of social geographical data.
- b) Social differentiation and region formation; evolution of socio-cultural regions in India.
- c) Bases of social region formation, role of caste, ethnicity, religion, dialect and languages.
- d) Indian unity and diversity.
- e) Social transformation and change in India.

Unit - IV

- a) Concepts of social well-being and physical quality of life.
- b) Human development concept, components, indices and measurement.
- c) Rural-urban deprivation with respect to shelter, health and education.
- d) Deprivation and discrimination issues relating to women and underprivileged groups.
- e) Patterns and bases of rural and urban society.

Unit - V

- a) Spatial distribution of social groups: tribes, castes, religious and language groups.
- b) Social groups and power relations in India.
- c) Review of five year plans and area plans towards social policy in India.
- d) Strategies to improve social well being in tribal, hill and drought prone areas.
- e) Social and environmental impact assessment of development projects.

Suggested Readings:

1. Ahmad, Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2. de Blij, H.J., Human Geography, John Wiley and Sons, New York.
3. Dubey, S.C. Indian Society, National Book Trust, New Delhi, 1991.
4. Gregory, D. and J. Larry, (eds.) Social Relations and Spatial Structures, McMillan, 1985.
5. Guha, B.S., Racial Elements in India's Population, Oxford University Press, London.
6. Singh K.S., Tribal Situation in India, IIAS, Shimla.

M.A. / M.Sc. (Final) Geography Practical - I : Surveying & Leveling

Unit - I

- a) Surveying as an art and science.
- b) Principles of surveying.
- c) General errors and inaccuracies in surveying.
- d) Precautions in using survey instruments.
- e) Trigonometrically methods of solution of triangles and computation of lengths.

Unit - II

Plane Table:

- a) Use of plane table in composite surveys and related methods.
- b) Methods of resectioning.
- c) General planning of large area plane surveys.
- d) A composite survey of college campus or any neighborhood area on scale 1:100 to 1:1000.
- e) Drawing of control points and surveyed plan.

Unit - III

Theodolite and tacheometer:

- a) Theodolite as an instrument of surveying and levelling.
- b) Adjustments of theodolite.
- c) Computation of theodolite bearings.
- d) Computation of lengths of triangles and plotting of control points.
- e) Telemetry: stadia and tangential.

Unit - IV

- a) Concepts of social well-being and physical quality of life.
- b) Human development: concept, components, indices and measurement.
- c) Rural-urban deprivation with respect to shelter, health and education.
- d) Level of Economic Development
- e) Current Regional Problem (e.g –Water Problem, Traffice Problem)

Unit - V

Dumpy level:

- a) Use of dumpy level as an instrument of levelling.
- b) Adjustment of the dumpy level.
- c) Principles: Calculation of difference of level, series levelling, backsights, foresights, intermediate sights.
- d) Level book and computation of reduced levels: Rise and fall and collimation methods.
- e) Plotting of profiles.

Note:

Candidates will submit following exercises as record work:

Resectioning: 3 exercises of graphical methods of Lano's, Bessel's and trial and error.

Profiles: 2 exercises based on levelling measurements obtained with dumpy level.

Contouring: 1 exercise based on levelling measurements obtained with dumpy level.

Contouring: 1 exercise based on levelling measurements obtained with Clinometer.

Measuring and plotting reduced levels using tacheometer: 2 exercises.

Triangulation survey based on a minimum of 15 control points using theodolity: 2 exercises including one related to composite survey.

Plan of any **unsurveyed** campus/neighbourhood area based on composite survey: 1 exercise.

Thematic maps showing socio-economic characteristics of the surveyed area: form of built-up area, building material, functional use, social composition, availability of sanitary, water, electricity, telephone amenities, assets and income: 6 exercises.

All exercises will be based on surveying and levelling work done by the candidates themselves for areas hitherto unsurveyed.

Distribution of Marks

Total Marks 100

A Part –Practical paper of three hours duration will be held along with main theory paper examination. (40 marks)

Section – A Objective type 5 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 20 marks, Asked 10 questions, one question from each unit and attempt five questions.

Section-C Descriptive type-15 marks ,Asked 5 questions, one question from each unit and attempt two questions

Practical – Assessed by Exnternal Examiner

B Part- Surveying –Practical Exam

(60 marks)

Surveying – 60 marks

- A - Test paper Survey exercise – 30 marks, Working on each instruments with following distribution of marks:

Instrument	Exercise	Marks	Time (minute)
A. Plane Table	Resectioning	10	35
B. Theodolite	Measurement of angle between two points	5	10
C. Dumpy Level	Measuring level difference between two distant points	5	10
D. Clinometer	Measuring heights of and level difference between two distant points	5	10
E. Tacheometer	Measuring distance of any distant point	5	10

- B - Record work – 20 marks

- C - Viva-voce – 10 marks

Suggested Readings:

1. Clark, D., Plane and Geodetic Sureying, Constable.
2. Davis, R.E. and F.S. Foot, Surveying: Theory and Practice, McGraw Hill.
3. Hinks, A.R., Map and Survey, Cambridge.
4. Kanetkar, T.P., Surveying and Levelling, Vol. I & II, A.U. Grah Prakashan.
5. Kiley, P.T., Surveying and Levelling, Vol. I & II, A.U. Grah Prakashan.
6. Survey Manual, Vol. I - VIII, Survey of India.
7. Williamson, J.T., Surveying and Field Work, Constable.

M.A. / M.Sc. (Final) Geography Practical - II : GIS & Digital Cartography

Unit - I

- a) Introduction to GIS and Cartography -
 - i. Concept of GIS
 - ii. History of Cartography and GIS.
- b) The Structure of Geospatial Data.
 - i. GIS file types and organization, Metadata.
 - ii. The Geodatabase.

Lab Work

- c) Using and Making Maps
 - i. Open and save a Map Document.
 - ii. Work with Map Layers.
 - iii. Measure Distances.
 - iv. Work with Feature Attributes.
 - v. Select Feature.
 - vi. Label Feature.

Unit - II

- i. Measuring the Surface of the Earth
- ii. Geodesy

- iii. Coordinate Systems
- iv. Shape and Scale - The Map Compromise
- v. Projections
- vi. Scale

Lab Work

- b) Map Design
 - i. Create Choropleth Maps
 - ii. Create Point Maps
 - iii. Create a point map based on a definition query

Unit - III

- c) Cartographic Principles in GIS Map Design
 - i. Map Lay-out
 - ii. Labels
- b) Vector Data Points, Lines and Polygons
 - i. Vector analysis and symbols
 - ii. Cartographic Generalization

Lab Work

- c) GIS Outputs
 - i. Create Map Layouts
 - ii. Add a report to layout
 - iii. Add a Grapy to layout

Unit - IV

- a) Raster Data
 - i. Satellite Imagery
- b) Colour and Modelling Terrain
 - i. Aspects of Colours
 - ii. DEM and Hillshading

Lab Work

- c) Digitizing
 - i. Digitize polygon Features
 - ii. Digitize point Features
 - iii. Digitize line Features

Unit - V

- a) The Display of Spatial Data - Thematic Maps
 - i. Choropleth and Graduated Symbols Maps
 - ii. Dot Density Maps

Lab Work

- b) Geoprocessing
 - i. Clip Features
 - ii. Merge Features
 - ii. Union Layers

Distribution of Marks

Total Marks 100

A Part – GIS & Digital Cartography (40 marks)

Practical paper of three hours duration will be held along with main theory paper examination.

- Section – A Objective type 5 marks. Asked 10 questions, attempt all questions.
- Section – B Short Answers – 20 marks, Asked 10 questions, one question from each unit and attempt five questions.
- Section-C Descriptive type-15 marks ,Asked 5 questions, one question from each unit and attempt two questions

Part B- GIS & Digital Cartography – 60 marks

- I. A -Test paper Lab exercise – 35 marks (25+10),
- II. Practical exercise shall be of three hours duration and of 25 marks and candidates will be required to attempt any 2 exercises out of 4. One based on computer.
 - B - Record work – 20 marks
 - C - Viva-voce – 10 marks

Suggested Readings:

1. Atkinson, Peter M. Nicholas J. Tate (Ed.), 1999: *Advances in Remote Sensing and GIS Analysis*, John Wiley & Sons, Inc., New York.
 2. Burrough, Peter A. and McDonnell, Rachael A., 2000: *Principles of Geographical Information Systems, Spatial Information Systems and Geostatistics*, Oxford University Press, Noida, Delhi, India.
 3. Berry, Joseph K., 1996: *Beyond Mapping: Concepts, Algorithms, and Issues in GIS*, John Wiley & Sons, Inc., New York.
 4. Chang, Kang-tsung, 2006: *Introduction to Geography Information Systems*, Tata McGraw-Hill Edition, New Delhi, Third Edition.
 5. Clarke, Keith C., 1999: *Getting Started with Geographic Information Systems*, Prentice Hall Series in Geographic Information Science, Prentice Hall, New Jersey, Second Edition.
 6. Chrisman, Nicholas, 2001: *Exploring Geographic Information Systems*, John Wiley & Sons, Inc., New York, 2nd Edition.
 7. Cromley, Robert G., 1992: *Digital Cartography*, Prentice Hall, New Jersey.
 8. DeMers, Michael N., 2004: *Fundamentals of Geographic Information Systems*, John Wiley & Sons, Inc., New York, Third Edition.
 9. David, Grahame, Shane, Brian McGrath (Ed.), 2005: *Sensing the 21st Century City: The Net City Close-up and Remote*, John Wiley & Sons, Inc., New York.
 10. Heywood, Ian, Cornelius, Sarah, Carver, Steve and Raju, Srinivasa, 2006: *An Introduction to Geographical Information Systems*, Pearson Education, Inc., Delhi, Low Price Edition, Second Edition.
 11. Harmon, John E. and Steven J. Anderson, 2003: *The Design and Implementation of Geographic Information Systems*, John Wiley & Sons, Inc., New York.
 12. Longley, Paul A., Goodchild Michael F., Maguire, David J. and Rhind David W., 2001: *Geographic Information Systems and Science*, John Wiley & Sons, Ltd., England.
 13. Mather, Paul M., 2004: *Computer Processing of Remotely-Sensed Images: An Introduction*, John Wiley & Sons, Inc., New York, 3rd Edition.
 14. Mesev, Victor, 2008: *Integration of GIS and Remote Sensing*, John Wiley & Sons, Inc., New York.
 15. Mather, Paul M., 1991: *Computer Applications in Geography*, John Wiley & Sons, Inc., New York.
 16. Stillwell, John and Graham Clarke (Ed.), 2003: *Applied GIS and Spatial Analysis*, John Wiley & Sons, Inc., New York
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