

# **SCHEME OF EXAMINATION**

## **M.Sc. GEOGRAPHY**

### **1st SEMESTER**

#### **Subjects List : Theory**

|          |                                       |
|----------|---------------------------------------|
| GR - 101 | Geomorphology                         |
| GR - 102 | Economic Geography                    |
| GR - 103 | Geography of India and Andhra Pradesh |
| GR - 104 | Principles of Cartography             |

#### **Practicals :**

|            |              |
|------------|--------------|
| GR – 105 - | Map Analysis |
| GR – 106 - | Cartography  |

### **2nd SEMESTER**

#### **Subjects List : Theory**

|          |                              |
|----------|------------------------------|
| GR - 201 | Climatology and Oceanography |
| GR - 202 | Geographical Thought         |
| GR - 203 | Urban Geography              |
| GR - 204 | Principles of Remote Sensing |

#### **Practicals :**

|            |                                      |
|------------|--------------------------------------|
| GR - 205 - | Interpretation of Aerial Photographs |
| GR - 206 - | Urban Geography                      |
| GR - 207 - | Viva-Voce                            |

## **3rd SEMESTER**

### **Subjects List : Theory**

- GR - 301      Population Geography
- GR - 302      Environmental Geography
- GR - 303      Pedology
- GR - 304      Applied Climatology

### **Practicals :**

- GR – 305 - Quantitative Techniques in Geography
- GR – 306 - Climatic Data Analysis

## **4th SEMESTER**

### **Subjects List : Theory**

- GR - 401      Hydrology
- GR - 402      Regional Planning and Development
- GR - 403      Geography of Health
- GR - 404      Geographic Information Systems

### **Practicals :**

- GR - 405 - Terrain Analysis
- GR - 406 - Geographical Information Systems
- GR - 407 - Viva-Voce

## 1<sup>st</sup> SEMESTER

### Gr 101 GEOMORPHOLOGY

- Unit – I      Fundamental concepts in Geomorphology. The concepts of erosional cycle-Davis And penck, Peneplain concept. Applied aspects of geomorphology.
- Unit – II      Isostasy – Theories of continental drift – Interior of the earth – Mountain building Activity – Plate tectonics.
- Unit – III     Earth movements: Tectonic movements – Folds, Faults and Volcanicity and their Associated topographic forms.
- Unit – IV     Landforms and earth materials. Processes of weathering, mass wasting and erosion.
- Unit – V      Landforms made by (a) streams (b) wind (c) underground water (d) Waves (e) Glaciers

#### References :

1. W.D. Thornbury. Principles of Geomorphology, John Wiley & Sons, 1958.
2. A.N. Strahler. Physical Geography, Wiley Eastern Pvt. Ltd., New Delhi, 1969.
3. A.K. Lobeck. Geomorphology, McGraw Hill Book Co. 1930.
4. A.F. Fitty. Introduction to Geomorphology, Methuen & Co., London, 1971.
5. Wooldridge, S.W. & Morgan, R.S. An outline of Geomorphology, London, 1969.
6. J.A. Steers. The Unstable Earth, Lyell Book Dept, Ludhiana, 1961.
7. A.N. Strahler & A.R. Strahler. Modern Physical Geography, John Wiley, 1978.
8. Dayal, P. A text book of Geomorphology, Shukla Book Dept, Patna, 1976.
9. Kale V. and Gupta, A. Elements of Geomorphology. Oxford University Press, Calcutta. 2001
10. R.J. Chorley and B.A. Kennedy, physical Geography, Prentice Hall, 1971.

## Gr 102 ECONOMIC GEOGRAPHY

- Unit – I      Scope, content and recent trends in economic geography, relation of economic Geography with economics and other branches of social sciences, Location of Economic activities and spatial organization of economics, Classification of Economics, sectors of economy (primary, secondary and tertiary).
- Unit – II      Factors of location of economic activities: Physical social, economic and cultural; Concept of techniques of delimitation of agricultural regions, crop combination And diversification – Von Thunen’s model and its modifications.
- Unit – III     Classification of industries, Resource basin and footloose industries. Theories of Industrial location-Weber, Losch and Isard; Case studies of selected industries Iron and Steel, Aluminum, Chemical, Oil refining and Petrochemical, Engineering Textile etc.
- Unit – IV     Modes of transportation and transport cost, accessibility and connectivity: International, inter and intraregional; comparative cost advantage. Typology of Markets, market network in rural societies, market system in urban economy, role Of market in the development of trade and commerce.
- Unit – V      Economic development of India, Regional disparities, Impact of green revolution on Indian Economy, Globalization and Indian economy and its impact on environment.

### References :

1. Berry, J.L. Geography of Market Centers 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 t. McMillan, London, 1995.
6. Garnier, D.J. and Delobez. A Geography of Marketing. Longman, London, 1979.
7. Hamilton, F.E.I. Spatial perspectives on industrial organization and decision making. John Wiley, New Yord, 1974.
8. Hamilton, I. (ed) Resources and Industry. Oxford University press, New York, 199.
9. Hurst, E. Transport Geography – Comments and Reading, McGraw Hill, New York, 1974.
10. Morgan, W.B. and Muntion, 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. Rostow, W.W. The stages of Economic Growth. Cambridge University press, London, 1960.
14. Sing, J. and Dillon, 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.

## **Gr103 GEOGRAPHY OF INDIA AND ANDHRA PRADESH**

- Unit - I Location – Major physiographic divisions – Major river systems – drainage pattern – climate and climatic regions of India.
- Unit - II Soils – Natural vegetation – Need for conservation of soils and forests. Agricultural types and regions – irrigation and power – distribution of food and commercial crops.
- Unit - III Power resources – Hydel – Thermal – Atomic – Mineral sources – Major industries, iron and steel, ship building, Cement, Cotton, Sugar and Jute.
- Unit - IV Population – Distribution and density - growth – trends - problems – urbanization. Transport and communication. India's foreign trade – problems and prospects.
- Unit - V Andhra Pradesh – Relief, climate, soils, vegetation, agriculture, irrigation and power, mineral Wealth and industrial development, population and urbanization.

### References:

1. R.L. Singh. The Regional Geography of India, NGS IX, Banaras, 1968.
2. O.H.K. Spate and Lear month. India and Pakistan, Methuen, London.
3. C.B. Matoria. Economic and commercial geography of India, 1984.
4. C.B. Matoria. Geography of India. Sivalal Agarwala & Co., Agra, 1975.
5. Shrama and Cautinho. Economic and Commercial geography of India.
6. Shrama, T.C. Technological change in Indian Agriculture, Rawat publication, Jaipur.
7. Negi, B.S. Geography of India, Kedar Nath Ram Nath, New Delhi.
8. Alam, S.M. Planning Atlas of Andhra Pradesh.

## **Gr. 104 PRINCIPLES OF CARTOGRAPHY**

Unit – I Introduction to Cartography. Scope and Nature. Basic principles of cartography-scales, projections.

Unit – II Cartography as graphic means of Communication. Theory of Visual perception- Visual variables. Graphic elements- Clarity and legibility contrast, Figure- ground, Balance. Colour and pattern in Cartography.

Unit – III Topography and lettering. Generalization. Compilation process and procedure. Map design and layout – Constraints and restrictions in Map design.

Unit – IV Types of maps and their uses. Symbolization. Cartographic techniques for different Purposes – Socio economic data, Weather and Climatic data, Physiographic.

Unit – V Computer Assisted Cartography. Cartography and GIS – Data processing, Types of output Output products.

### References:

1. Burrough, P.A. Principles of geographic information systems for Land Resource Assessment, Oxford University Press, New York, 1986.
2. Fraser Taylor D.R. Geographic information systems for Land Resource . Pergaman Press, Oxford, 1991
3. Misra, R.P. and Ramesh, A. Fundamentals of Cartography, McMillan Co., New Delhi.
4. Monk House, E.J., Wilkinson, H.R. Maps and Diagrams, Methuen, London.
5. Khan , Z.A. Text book of practical geography, Concept, New Delhi, 1998.
6. Robinson, A.H. and Sales, K.D. Elements of cartography, John Wiley & Sons Inc.
7. Singh, R.L and Dutt, P.K. Elements of Practical Geography, Kalyani Publishers, New Delhi.
8. Steers, J.A. Map Projections, University of London Press, London.

# **1<sup>st</sup> SEMESTER – PRACTICALS**

## **Gr 105 MAP ANALYSIS**

1. Introduction to types of maps and scales.
2. Map series, numbering methods, scales of the map series (Old & New), Latitudinal and Longitudinal extents of International maps and topographical maps
3. Interpretation of topographical maps – Indian and foreign.
4. Representation of relief features by contours
5. Profile drawing – Simple, superimposed and composites
6. Weather maps.

### References:

1. R.L. Singh. Elements of Practical Geography, Kalyani Publishers, New Delhi
2. R.Singh & Kanujia. Map work and practical geography, Central Book Depot, Allahabad

## **Gr 106 CARTOGRAPHY**

1. Scales: Methods of Representation, Conversions
2. Map projections: Zenithal, Conical, Cylindrical, Conventional Map Projections
3. Thematic mapping:
  - Bar graphs – simple, compound, wind roses
  - Line graphs – simple and polygraph
  - Dot method
  - Choropleth Technique
  - Isopleth technique
  - Proportional circles
  - Sector Diagrams

### References:

1. Misra, R.P. and Ramesh, A. Fundamentals of cartography, Concept, New Delhi
2. E.Raisz. Principles of cartography
3. Singh, R.L. Map work and practical geography. Central Book Depot, Allahabad, 1972
4. Steers, J.A. Map projections, University of London Press, London

## 2<sup>nd</sup> SEMESTER

### Gr 201 CLIMATOLOGY AND OCEANOGRAPHY

- UNIT – I Earth, its origin and its planetary relation to the sun, time and its measurement. Structure and composition of the atmosphere. Insolation, heat budget of the earth and atmosphere.
- UNIT – II Mean sea level temperature distribution over the earth, temperature types of the stations. Mean sea level pressure distribution over the earth, wind systems of the globe. Zonal and seasonal distribution of precipitation, types of stations, major precipitation regions of the world
- UNIT – III Air masses and fronts – Cyclones and anticyclones, Elements of climatic classification: Koppen and Thornthwaite. Climatic Change.
- UNIT – IV Physical properties of sea water. Distribution of temperature and salinity of oceans. Submarine relief of Atlantic, Pacific & Indian oceans.
- UNIT – V Movements of ocean water (a) waves (b) Tides (c) Currents.

#### References:

1. H.J Critchfield. General Climatology, Prentice Hall of India, New Delhi, 1975.
2. G.T. Trewartha. An Introduction to climate, McGraw Hill Book Co., New York, 1954.
3. B. Haurwitz and H.M. Austin, Climatology, McGraw Hill Book Co., New York, 1944.
4. Jerome Spar. Earth, Sea , Air. Addison Wesley, 1962.
5. R.C.Barry & R.J. Chorley. Atmosphere, Weather & Climate
6. D.S.Lal. Climatology, Chaitanya Publishing House, Allahabad, 1989.
7. Sverdrup, Johnson & Fleming. The Oceans. Prentice Hall Inc., New York, 1966.
8. C.A.M. King Oceanography for Geographers. Edward Arnold Ltd., London, 1962.
9. C.A.M. King. An Introduction to Oceanography. McGraw Hill Book Co., New York, 1946.
10. Sharma and Vatal. Oceanography for Geographers, Chaitanya Publishing House, Allahabad.



## Gr 202 GEOGRAPHICAL THOUGHT

- UNIT – I The field of geography; its place in the classification of sciences; geography as a social science; and natural science, selected concepts in the philosophy of geography, distributions; relationships, interactions; aerial differentiation and spatial organization.
- UNIT – II Dualisms in geography; systematic & regional geography; physical & human geography. Systematic geography & its relation with systematic sciences and with regional geography. The myth and reality about dualisms. Regional geography: Concept of region, regionalization and the regional method.
- UNIT – III Scientific explanations: routes to scientific explanations (Inductive/Deductive); types of explanations; cognitive description; cause & effect; temporal; functional/ecological systems
- UNIT – IV Laws, theories & models, the quantitative revolution, response to positivism, behaviorism, postmodernism
- UNIT – V Historical Development Contributions of different scholars during ancient medieval and modern period. Geography in the 20<sup>th</sup> Century; conceptual and methodological developments and changing paradigms, status of Indian Geography. Future of geography, task ahead relating to development of geographic thought with special reference to changing views on man-environment relationship.

### References:

1. Abler, Ronald, Adams, John S. Gould, Peter. Spatial Organization: The Geographer's View of the World. Prentice Hall, N.J., 1971.
2. Ali, S.M. The Geography of Puranas. Peoples Publishing House, Delhi, 1966.
3. Amedeo, Douglas. An introduction to scientific reasoning in Geography. John Wiley. U.S.A., 1971
4. Dikshit, R.D.(ed) The Art & Science of Geography – Integrated Readings. Prentice Hall of India, New Delhi, 1994.
5. Hartshorne, R. Perspectives on Nature of Geography. Rand McNally & Co., 1959
6. Hussain, M. Evolution of Geographic Thought. Rawat Pub. Jaipur, 1984.
7. Johnston, R.J. Philosophy and Human Geography. 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. Taylor (ed). Geography of the 20<sup>th</sup> century. Mathew, London.

## 3<sup>rd</sup> SEMESTER

### Gr 301 POPULATION GEOGRAPHY

- Unit – I Nature and Scope of population geography-Interface between society, population, ecology and geography. Population geography and its relation with other social sciences. Sources of data and methodology of studying population geography
- Unit – II World population, distribution and composition. India's population, composition and distribution. Factors affecting the growth and distribution of population.
- Unit – III Malthus theory of population and his contribution – Demographic transition theory and theory of optimum population.
- Unit – IV Components of population growth – Fertility, mortality and migration. Factors affecting fertility, mortality and migration.
- Unit – V Population policies in developed and developing countries – India's population policy measures to control population.

#### References:

1. UNESCO. Determinants and consequences of population trends, 1953.
2. W.S. Thompson. "Population", National Book Trust, New Delhi, 1967.
3. J.I. Clarke. Population Geography, Pergamon Press, 1965.
4. Asha, A. Bhende & Tara Kanitkar. Principles of population studies, Himalaya Publishing House. Bombay, 1978
5. Zelinsky, W. Prologues to population Geography, Prentice Hall, Englewood Cliffe, M.J., 1966.
6. Garnier, J.D. Geography of population, Longman and Green, 1968.
7. Agarwala, S.N. India's population: Facts, problems and policy, Meerut, Meenakshi Prakasam, 1967.
8. Chandrasekhar, S. India's population: Facts, problems and policy, Meerut, Meenakshi Prakasam, 1967.

## Gr 302 ENVIRONMENTAL GEOGRAPHY

- UNIT – I Nature and scope of environmental geography – Man and environment. Environmental geography and related sciences, ecosystem – concepts and components, energy and nutrients in the ecosystem – Biogeochemical cycles. Biomes – major biotic regions of the world.
- UNIT – II Human settlements and environment; industrial environment – urban environment – environmental pollution – ozone depletion – green house gases – global warming.
- UNIT – II Environmental hazards and disasters, environmental degradation, Man's impact on physical & social environments, emerging environmental issues.
- UNIT – IV Man's modification of the biosphere – Agriculture – Green Revolution – HYV and pesticides – Man's impact on land, soils and coastal areas.
- UNIT – V Environmental planning and Management, Resource management, conservation of forests and wild life., environmental quality, environmental law and protection, environmental impact assessment, environmental programmes.

### References:

1. The State of India's environment 1982 & 1984 – A citizen's report. Centre for Science and environment, New Delhi.
2. Savindra Singh. Environmental geography. Prayag Pustak Bhavan, Allahabad.
3. Robinson, H. Biogeography, ELBS, KLondon, 1978.
4. Swarup, R.V., Mishra, S.N., Janchari, V.P. Encyclopediao of ecology, environment and pollution control.
5. K.M. Agrawal, P.K., Sikdar, S.C. Deb. A Text book of Environment. Macmillan India Limited.
6. Nag, P., Kumar, V.K. and Singh, J. Geography of Environment.
7. Strahler, A.N. and Strahler, A.H. Geography and Man's Environment. John Wiley and Sons, New Delhi.
8. Daniel B. Botkin, Edward A. Keller. Environmental Science (Earth as a living planet). John Wiley Sons Inc., New York.
9. Bernard J. Nebel. Environmental Science – The way the world works. Prentice Hall, Englewood Cliff, NJ 07632.
10. Chandana, R.C. Environment. Kalyani Publishers, Ansari Road, New Delhi.

## Gr 303 PEDOLOGY

- UNIT – 1 Nature and scope and significance of soil studies – Factors of soil formation – Processes of soil formation and soil development – soil profiles.
- UNIT – II Physical properties of soils – chemical properties of soils
- UNIT – III Classification of soils – zonal, azonal and intrazonal – world patterns – soil erosion and conservation
- UNIT – IV Evaluation of land and soil-land capability classification. Indian soils – distribution problems and prospects
- UNIT – V Soil reclamation and management: Soil survey and landforms in environmental management; Integrated soil and water management; sustainable development of solid resources with reference to India

### References:

1. Backman, H.O. and Brady, N.C. The nature and properties of Soils, Mc Millan, New York, 1960.
2. Bennet, Hugh H. Soil Conservation, McGraw Hill, New York.
3. Bunting, B.T.. The Geography of Soil, Hutchinson, London, 1973.
4. Clarke, G.R. Study of the Soil in the Field, Oxford University Press, Oxford, 1957.
5. Fothy, H.D. and Turk, L.M. Fundamentals of Soil Science, John Wiley, New York. 1972.
6. Govinda Rajan, S.V. and Gopala Rao, H.G. Studies on Soils of India, Vikas, New Delhi, 1978
7. Mc Bride, M.B. Environmental Chemistry of Soils, Oxford University Press, New York.
8. Nye, P.H. and Greene, D.J. The soil under shifting cultivation, Commonwealth Bureau of Soil Science, Technical Communication, No. 51, Harpenden, England, 1960
9. Raychoudhuri, S.P. Soils of India, ICAR, New Delhi, 1958
10. A.N. Strahler. Physical Geography, Wiley Eastern Pvt. Ltd., New Delhi, 1965.

**Gr 304      APPLIED CLIMATOLOGY**

- UNIT – I      Scope and content of climatology: Climatology as a geographical discipline. Solar and terrestrial radiation, net radiation, distribution of temperature – continentality.
- UNIT – II      Pressure, winds and precipitation, local control of climate, monsoon. General circulation of atmosphere – Upper air circulation. Air masses and their classification
- UNIT – III      Climates and their classification. Climatic change – theories and evidences.
- UNIT – IV      Hydrological climatology and development of water resources. Climate – agriculture and animal production.
- UNIT – V      Physiological climatology of man, human comfort, health and efficiency, climate and human diseases. Urban climate – heat islands – Air pollution. Environmental climatology – weather and climate modification.

References:

1. B. Haurwitz and J.M. Austin. Climatology. McGraw Hill Book Co., new York, 1944
2. L.H. Horn, G.T. Trewartha. An introduction to climate, McGraw Hill Book Co., New York, 1954.
3. G.H.J. Critchfield. General Climatology. Prentice Hall of India m, New Delhi, 1975.
4. W.G. Kendrew. Climatology, Oxford University Press, 1957.
5. L.A. Ramdas. Crops and weather in India, ICAR, New Delhi.
6. J.R. Mather. Climatology: Fundamentals and applications. McGraw Hill Book Co., New York, 1974.
7. F.A.Berry, E.Bollay and N.R. Beers. Hand book of Meteorology. McGraw Hill Book Co., London, 1945.
8. D.S.Lal. Climatology. Chaitanya Publishing House, Allahabad, 1989.
9. WMO. Technical Note No. 108 – Urban Climates

## **3<sup>rd</sup> SEMESTER – PRACTICALS**

### **Gr 305 QUANTITATIVE METHODS IN GEOGRAPHY**

1. Questionnaire formulation and collection of primary data
2. Processing of data: Classification and tabulation
3. Representation of statistical data
4. Statistical measures of central tendency – Mean, Median, Mode, Quartiles, Deciles and percentiles.
5. Measures of dispersion – Range, Mean deviation, standard deviation and quartile deviation.
6. Interpolation and extrapolation
7. Time series
8. Correlation

#### References:

1. Rao, A.B.: Essentials of statistics, Continental Prakasan, Poona, 1972
2. C.B. Gupta. An Introduction to statistical methods. Vikas publishing House Pvt. Ltd., New Delhi.
3. S.P. Gupta. Practical statistics. S. Chand Co.Ltd. Ramnagar, New Delhi.
4. Gregory, G. Statistical methods in Geography, Longman & Green Co., London, 1963.
5. Pet. Devies. Data description and presentation. Oxford University Press, London, 1974.

### **Gr 306 CLIMATIC DATA ANALYSIS**

1. Rainfall data analysis – Mean annual and seasonal – intensity – rainfall variability
2. Monthly march of precipitation and temperature – global stations and Indian stations
3. Wind rose diagrams
4. Thermal continentality
5. Water balance computation and graphical representation. Humidity and aridity indices – Moisture index – Moisture adequacy
6. Drought climatology – drought frequency histogram – climatic shifts
7. Graphs – Clmograph, Hythergraph and Ergograph
8. Urban heat islands and temperature inversions.

#### References:

1. H.J. Critchfield. General Climatology. Prentice Hall of India, New Delhi – 1975
2. B.Haurwitz and J.M. Austin. Climatology. McGraw Hill Book Co., new York, 1944.
3. L.A. Ramdas. Crops and Weather in India. ICAR, New Delhi.
4. J.R. Mathur. Climatology: Fundamentals and Applications. McGraw Hill Book Co., New York, 1974.

## 4<sup>th</sup> SEMESTER

### Gr 401 HYDROLOGY

- UNIT – I Hydrological cycle – Elements of hydrological cycle – precipitation – intensity and duration, evaporation, infiltration, surface runoff.
- UNIT – II Drainage basin characteristics – morphometric analysis – Human impact on hydrological system.
- UNIT – II Groundwater – Occurrences and types. Movement, Quality and Quantity measures
- UNIT – IV Floods and droughts. Nature and distribution of ground and surface waters in India
- UNIT – V Principles of water balance and their application – its relevance in crop geography – water pollution – need for water management - Application of remote sensing in hydrological studies.

#### References:

1. Addison, H. Land, water and food. Chapman and Hall, London, 1961
2. Chorley, R.J. (ed). Introduction to Physical Hydrology. Methuen, London, 1969.
3. Chorley, R.J. Water, Earth and Man, Methuen, London, 1967.
4. Dakshinamurthy, C et al. Water Resources of India and their utilization in Agriculture, Indian Agriculture Research Institute, New Delhi, 1973.
5. Jones, J.A.A. Global Hydrology: Processes, Resources and Environmental Management, Longman, London, 1997.
6. Matter, J.R. Water Resources. Distribution, Use and Management. John Wiley, Marylane, 1984
7. Singh, R.A. and Sing, S.R. Water Management: Principles and Practices. Tara Publication, Varanasi, 1972.
8. Todd, D.K. Groundwater Hydrology. John Wiley, New York, 1959.

## **Gr 402 REGIONAL PLANNING AND DEVELOPMENT**

- UNIT – I Regional concept in geography, conceptual and theoretical framework, merits and limitations for application to regional planning and development; changing concept of the region from and inter-disciplinary view=point, concept of space, area and locational attributes.  
Types of regions: Formal and functional; uniform and nodal, single purpose and composite region, in the context of planning; regional hierarchy; special purpose regions.
- UNIT –II Physical regions, resource regions, regional divisions according to variations in levels of socio-economic development; special purpose regions – river valley regions, metropolitan regions, problem regions – hilly regions, tribal regions, regions of drought and floods.
- UNIT – III Approaches to delineation of different types of regions and their utility in planning. Planning process – sectoral, temporal and spatial dimensions; short-term and long term perspectives of planning. Planning for a region's development and multi-regional planning in a national context. Indicators of development and their data sources, measuring levels of regional development and disparities – case study of India.
- UNIT – IV Regional development strategies – concentration vs. dispersal, case studies for plans of developed and developing countries, Regional plans of India.
- UNIT – V Concept of Multi-level planning; decentralised planning; peoples participation in the planning process; Panchayati Raj system; role and relationship of Panchayati Raj Institutions (Village, Block and District)/ Regional development in India- Problems and prospects.

### References:

1. Abler, R., et al. Spatial Organization: The Geographer's View of the World. Prentice Hall, Englewood Cliffs, N.J., 1971.
2. Bhat, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3. Bhat, L.S. et al. Micro-Level Planning: A Case Study of Karnal Area, Haryana. K.B. Publications, New Delhi, 1976.
4. Chorley, R.J. and Hagget, P. Models in Geography, Methuen, London, 1967.
5. Christaller, W. Central Places in Southern Germany. Translated by C.W.Baskin, Prentice Hall, Englewood Cliffs, New Jersey, 1966.
6. Friedman, J. and Alonso, W. Regional Development Policy- A Case Study of Venezuela. M.I.T.Press, Cambridge, Mass, 1966.



7. Friedman, J. and Alonso, W. Regional Development and Planning – A Reader. M.I.T.Press, Cambridge, Mass, 1967.
8. Glikson, Arthur. Regional Planning and Development. Netherlands Universities foundation for International Co-operation, London, 1955
9. Gosal, G.S., and Krishan, G. Regional Disparities in Levels of Socio-Economic Development in Punjab. Vishal Publications, Kurukshetra, 1984.
10. Government of India. Planning Commission: Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi, 1961.
11. Indian Council of Social Science Research. Survey of Research in Geography., Popular Prakashan, Bombay, 1972.
12. Johnson, E.A.J. The Organization of Space in Developing Countries. Harvard University Press, Cambridge, 1970.
13. Kuklinski, A.R.(ed). Growth Poles and Growth Centres in Regional Planning. Mouton the Hague, 1972.
14. Kundu, A. and Raza, Moonis. Indian Economy – The Regional Dimension Spectrum Publishers, New Delhi, 1982.
15. Chand, M and Puri, V.K. Regional Planning in India, Allied Publishers Limited, New Delhi, 1983.

## **Gr 404 GEOGRAPHIC INFORMATION SYSTEMS**

- UNIT – I GIS: Development and definitions – computer environment of hardware and software – Trends in GIS. General database concept: Spatial and non-spatial data – Database Management Systems – Geographic data sources – Sources of error and data quality.
- UNIT – II GIS Database: Data structure – Raster and Vector and their capabilities – Data conversions – Relational database model; Data compression of spatial objects. GIS Functioning: Data capture – digitizing and scanning – preprocessing – Data manipulation – analysis.
- UNIT – III GIS and Cartography: Mapping concepts – Coordinate system and geocoding: Common coordinate system and map projections – grids – UTM - computer assisted cartography.
- UNIT – IV GIS and Remote Sensing: Satellite data – digital processing – Classification – Integration of GIS and Remote Sensing – Use of GPS. GIS and digital elevation models – concepts of DTM, DEM and TIN.
- UNIT – V GIS and applications – GIS application areas – GIS as a decision making tool – management of information systems – Land information system – Resource management applications – Facility management applications – Urban GIS – Environmental GIS.

### References:

1. Arnoff S. Geographic Information Systems: A Management Perspective. DDL Publication Ottawa. 1989.
2. Burrough P.A. Principles of Geographic information systems for Land Resource Assessment. Oxford University Press, New York, 1986.
3. Fraser Taylor D.R. Geographic Information Systems. Pergamon Press, Oxford, 1991.
4. Maquire D.J., M.F. Goodchild and D.W. Rhind (eds). Geographic information Systems: Principles and Application. Taylor & Francis, Washington, 1991
5. Mark S. Monmonier. Computer –assisted Cartography. Prentice – Hall, Englewood Cliff, New jersey, 1982.
6. Peuquet D.J. and D.F.Marble. Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington, 1990.
7. Star, J. and J. Estes. Geographic Information Systems: An Introduction. Prentice Hall, Englewood Cliff, New Jersey, 1994
8. ESRI. Understanding GIS – Redlands, USA: ESRI
9. Anji Reddy, M. Remote Sensing and Geographical Information Systems. Book Syndicate, Hyderabad, 2000
10. Ian Heywood, Sarah Cornelius, Steve Carver: An introduction to Geographical Information Systems, Longman, 1998.

# 4<sup>th</sup> SEMESTER – PRACTICALS

## Gr 405 TERRAIN ANALYSIS

1. Methods of Representation of relief – Profiles – Geological cross sections
2. Morphometry of drainage basin
3. Slope analysis – Wentworth and Smith methods
4. Altimetric frequency Analysis
5. Hypsometric Analysis
6. Clinometric Analysis
7. Relative relief Analysis
8. Digital Elevation Model representation

### References:

1. Singh R.L. Map work and practical geography. Central Book Depot, Allahabad, 1972.
2. Khan, Z.A. Text Book of practical geography, Concept, New Delhi, 1998.
3. John Bygott, An introduction to Map work and practical geography, University tutorial Press Ltd., London, 1974.
4. Monk House, F.J.H.R. and Wilkinson. Maps and diagrams, Methuen and Co., London, 1984.
5. Peter Toyne and Peter Newby, T. Techniques in physical geography, Mac Millan, London, 1972
6. Gregory, K.J. and Walling, D.E. Drainage basin form and process. Arnold, London, 1973.

## **Gr 406 GEOGRAPHICAL INFORMATION SYSTEMS**

1. Components of Information system
2. Directory and File Structures, Binary coding
3. Organization of data records – network, relational and hierarchical records
4. Topology
5. GIS data structure: Vector and raster database structures and conversions
6. Buffer zones in Raster and Vector models
7. Data entry and map composition: Digitizing – Scanning – Editing – Plotting and map making
8. Overlay analysis and Boolean operations
9. Digital Elevation Models

### References:

1. Michael G. Goodchild and Karen K. Kemp. Introduction to GIS, Santa Barbara, NCGIA, 1990
2. ESRI. Arc/Info User's guide, Redlands, USA, 1992.
3. Burrough, P.A. and Rachael A.McDonnell. Principles of Geographic Information Systems. Oxford University Press, New York, 1988.
4. Mishra, H.C. GIS handbook, GIS India Hyderabad, 1996
5. Star J. and J.Estes: Geographic Information Systems: An introduction. Prentice Hall, Englewood Cliff, New Jersey, 1994