

UNIVERSITY OF RAJASTHAN
JAIPUR

GEOGRAPHY *Semester*

M.A./M.SC

2013-2014 (PREVIOUS)-I/II SEMESTER ✓

2014-2015 (FINAL)- III / IV SEMESTER) ✓

Prepared

by

M/S

Checked

by

[Signature]

SECTION OFFICER (Head-1)
University of Rajasthan
JAIPUR-302 004

M A / M - Se Geography 2013-2015

| | | |
|---|--------------|------|
| D | 1.50 to 2.49 | 0.12 |
| E | 0.50 to 1.49 | 0.08 |
| F | 0.00 to 0.49 | 0.5 |

For example (i) CGPA of 5.73 is equivalent to 86.5%, (ii) CGPA of 5.12 is equivalent to 71.2%, (iii) CGPA of 4.34 is equivalent to 63.4%, (iv) CGPA of 3.26 is equivalent to 52.6%, (v) CGPA of 2.17 is equivalent to 41.04%, and (vi) CGPA of 1.11 is equivalent to 29.88%.

2. Eligibility:

A candidate who has secured more than 50% or CGPA of 3.0 in the UGC Seven Point scale [45% or CGPA 2.5 in the UGC Seven Point Scale for SC/ST/Non-creamy layer OBC] or equivalent in the Bachelor degree in Science or Engineering or Technology or Medicine or Pharmaceutical Science shall be eligible for admission to First Semester of a Master of Science/ Social Science course.

The eligibility for admission will be as per notified in the prospectus.

3. Scheme of Examination:

- (1) Each theory paper EoSE shall carry 100 marks. The EoSE will be of 3 hours duration. Part 'A' of theory paper shall contain 10 Short Answer Questions of 20 marks, based on knowledge, understanding and applications of the topics/texts covered in the syllabus. Each question will carry two marks for correct answer.
- (2) Part "B" of paper will consist of Four questions with internal choice (except in cases where a different scheme is specifically specified in the syllabus) of 20 marks each. The limit of answer will be five pages.
- (3) Each Laboratory EoSE will be of four/six hour durations and involve laboratory experiments/exercises, and viva-voce examination with weightage in ratio of 80:20

4. Course Structure:

The details of the courses with code, title and the credits assigned are as given below.

Abbreviations Used

Course Category

CCC: Compulsory Core Course

ECC: Elective Core Course

OEC: Open Elective Course

SC: Supportive Course

SSC: Self Study Core Course

SEM: Seminar

PRJ: Project Work

RP: Research Publication

Contact Hours

L: Lecture

T: Tutorial

P: Practical or Other

S: Self Study

Relative Weights

IA: Internal Assessment (Attendance/Classroom Participation/Quiz/Home Assignment etc.)

ST: Sessional Test

EoSE: End of Semester Examination

First Semester

| S. No. | Subject Code | Course Title | Course Category | Credit | Contact Hours Per week | | | EoSE Duration (Hrs.) | |
|--------|--------------|--|-----------------|--------|------------------------|---|----|----------------------|---|
| | | | | | L | T | P | Thy | P |
| 1. | Geo 101 | Geographical Thoughts (Upto Medieval Period) | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 2. | Geo 102 | Dynamic Geomorphology | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 3. | Geo 103 | Economic Geography | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 4. | | Core Elective –I | ECC | 6 | 5 | 1 | 0 | 3 | 0 |
| 5. | Geo 111 | Practical | CCC | 12 | 0 | 0 | 18 | 4 | 2 |

Second Semester

| S. No. | Subject Code | Course Title | Course Category | Credit | Contact Hours Per week | | | EoSE Duration (Hrs.) | |
|--------|--------------|---|-----------------|--------|------------------------|---|---|----------------------|---|
| | | | | | L | T | P | Thy | P |
| 1. | GEO 201 | Modern Geographical Thoughts | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 2. | GEO 202 | Climatology and Oceanography | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 3. | GEO 203 | Principles and Theory of Economic Geography | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 4. | | Core Elective –II | ECC | 6 | 5 | 1 | 0 | 3 | 0 |

| | | | | | | | | | |
|----|------------|-----------|-----|----|---|---|----|---|---|
| 5. | GEO 211 | Practical | CCC | 12 | 0 | 0 | 18 | 4 | 2 |
|----|------------|-----------|-----|----|---|---|----|---|---|

Third Semester

| S. No. | Subject Code | Course Title | Course Category | Credit | Contact Hours Per week | | | EoSE Duration (Hrs.) | |
|--------|--------------|-----------------------------|-----------------|--------|------------------------|---|----|----------------------|---|
| | | | | | L | T | P | Thy | P |
| 1. | Geo 301 | Advanced Geography of India | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 2. | | Core Elective-III | ECC | 6 | 5 | 1 | 0 | 3 | 0 |
| 3. | | Core Elective-IV | ECC | 6 | 5 | 1 | 0 | 3 | 0 |
| 4. | | Core Elective-V | ECC | 6 | 5 | 1 | 0 | 3 | 0 |
| 5. | Geo 311 | Practical | CCC | 12 | 0 | 0 | 18 | 4 | 2 |

Fourth Semester

| S. No. | Subject Code | Course Title | Course Category | Credit | Contact Hours Per week | | | EoSE Duration (Hrs.) | |
|--------|--------------|------------------------|-----------------|--------|------------------------|---|---|----------------------|---|
| | | | | | L | T | P | Thy | P |
| 1. | Geo 401 | Geography of Rajasthan | CCC | 6 | 5 | 1 | 0 | 3 | 0 |
| 2. | | Core Elective-VI | ECC | 6 | 5 | 1 | 0 | 3 | 0 |
| 3. | | Core Elective-VII | ECC | 6 | 5 | 1 | 0 | 3 | 0 |
| 4. | | Core Elective-VIII | ECC | 6 | 5 | 1 | 0 | 3 | 0 |

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| | | | | | | | | | |
|----|------------|-----------|-----|----|---|---|----|---|---|
| 5. | Geo 411 | Practical | CCC | 12 | 0 | 0 | 18 | 4 | 2 |
|----|------------|-----------|-----|----|---|---|----|---|---|

Elective Core Course

| Elective Course code | Specialization | Paper Title | Prerequisite | Semester |
|----------------------|----------------|---|--------------|------------|
| GEO A01 | | Man and Natural Environment | | I Ele.1 |
| GEO A02 | | Cultural Geography | | I Ele.1 |
| GEO B01 | | Population Geography | | II Ele. 2 |
| GEO B02 | | Quantitative Techniques in Geography | | II Ele. 2 |
| GEO C01 | | Research Methodology | | III Ele. 3 |
| GEO C02 | | Disaster Perception and Management | | III Ele.3 |
| GEO D01 | | Principles and Applications of Remote Sensing and Geographical Information System | | III Ele. 4 |
| GEO D02 | | Urban Geography | | III Ele. 4 |
| GEO E01 | | Political Geography | | III Ele. 5 |
| GEO E02 | | Advanced Geomorphology | | III Ele. 5 |
| GEO F01 | | Applied Geography | | IV Ele. 6 |
| GEO F02 | | Regional Planning | | IV Ele. 6 |
| GEO G01 | | Geography of Water Resources | | IV Ele. 7 |
| GEO G02 | | Agricultural Geography | | IV Ele. 7 |
| GEO H01 | | Industrial Geography | | IV Ele. 8 |
| GEO H02 | | Biogeography | | IV Ele. 8 |

GEO 101: Geographical Thoughts (upto Medieval period)

Section-A

Definition, Scope, Nature and purpose of geography, The beginning of geography in classical age, contribution of Greeks and Romans to geography with special reference to the work of Herodotus, Eratasthnes, Pasidonius, Strabo and Ptolemy.

Section-B

Geography in the middle ages, the geographical ideas of the christian world. Contributions of Muslims to Medieval geography, the work of Al Birumi, Edrese, Ibn-Batute, Ibn Khaldun, the Geography of ancient India.

Section-C

The revival of scientific geography during 16th and 17th centuries, the works of Sebastian Munstar, Cluvarious, Carpenter and Varenius, the development of scientific geography during 18th and 19th centuries, the works of Buching, Malti Baru, Kant.

Books Recommended:

1. Burnpury, E.H. History of Ancient Geography.
2. Dickinson: The Makers of Modern Geography.
3. James P.E. All Possible world.
4. Richard Hart Shorne: Perspective on the Nature of Geography.
5. Richard Hart shorne: The Nature of Geography.
6. Tozer: A History of Ancient Geography.

GEO 102: Dynamic Geomorphology

Section-A

Introduction to physical Geography, Definition, Recent Trends in Physical Geography, Models and systems in Physical Geography.

Zoning of the earth's interior, Thermal state of the interior, Endogenetic forces, Mountain Building Theories, (Kober, jeffreys, joly, Holms, Wegener and plate tectonics), Volcanic activity and Earth quakes, Isostasy.

Section-B

Denudation types or weathering: Physical and chemical weathering; factors affecting weathering processes. Rivers and Drainage Basins: Work of Rivers, classification of Valleys, Drainage pattern. Drainage basin and morphometry, baseline changes, Glacial and periglacial landforms. Desert and tropical landforms, process of desertification. Coastal features, Factors affecting coast and shoreline processes. Cliffs and platforms, coastal classification. Karst and limestone topography.

Section-C

Concepts in Geomorphology various school of landscape development Element of slop various models of slope development

Books recommended



1. Coller: Oceanography.
2. Cotton, C.A.: Geomorphology (John Wiley & Sons; New York)
3. Davis, W.M.: Geographical Essays (Dover).
4. Davison, C: Theories of Earthquakes(Mechmillan and Co.,London).
5. Dayal, P. : Bhoo Akriti Vigyan.
6. Hodgson: Earthquakes and Earth-Structures.
7. Holmes,Arthur: Physical Geology (Nelson).
8. Jeffreys, H: The Earth-Its Origin History and Physical Constitution.
9. John Petty: Sedimentary Rocks.
10. John, Pity: Introduction to Geomorphology.
11. King and Embleton, C.A.M.: Glacial and peri-Glacial Geomorphology (Arnold).
12. Lobeck, A.K.: Geomorphology: (McGraw Hill Book Co.New York).
13. Lydolph: Physical Geography Laboratory Mannual.
14. Platt: Simple Geological Structures.
15. Ramsey: Folding and Fracturing of Rocks.
16. Sharma, R.C.: Oceanography for Geographers.
17. Soovel: Atlas of Land Forms.
18. Steers, J.A.: Unstable Earth(Methuen and Co.London).
19. Strabler.A.N.:Modern Physical Geography (John Wiley and Sons,Inc.New York).
20. Strahler, A.N.: Earth Sciences(Harper and Row Publishers,New Delhi).
21. Thomas, M.F.: Tropical Geomorphology:A Study of Weathering and land Form Development in Warm Climate, Macmillan, Delhi,1974.
22. Thornbury, W.D.: Principles of Geomorphology:(John Wiley,new York).
23. Von-Engelin, O.D.: Geomorphology (Mecmillanm, New York).
24. Wooldridge and Morgan: An Introduction to Geomorphology (Longmeans, green and Co.London).

GEO 103: Economic Geography

Section-A

Changing nature of economic geography as a field of study. Agricultural typology-with special reference to: subsistence agriculture, plantation agriculture, Mediterranean agriculture, Mixed farming, Commercial grain farming, Livestock rearing.

Section-B

Energy resources: Conventional and non-conventional spatial patterns and supply problems Industries-Iron & Steel, Alluminium Industry, paper and pulp, cotton textile, chemical Industries-Fertilizer.

Section-C

Decision making process: Location decision-behavioural view. Dynamics of world trade and investment: Trade and growth international co-operation in trade.. Economic Region-Concept and methods of delineation, need of economic regionalization for area development and planning-economic regions of India.

Books Recommended

1. Bengston, N.A. and Royen, M.V.: Fundamentals of Economic Geography (Prentice Hall, New York).
2. Boesh, H.: A Geography of World Economy.
3. Brain J.L. Berry, Edger C. Coonking and D. Michael Ray Economic Geography Prentice-Hall, New Jersey.
4. Cox, K.P. Man, Location and Behavior- An Introduction to Human Geography.
5. Estall, R.C and Buenman: Industrial Activity and Economic Geography.
6. Garlson, A.S.: Economic Geography of Industrial Material.
7. Ghose, B.C.: Industrial Location.
8. Hodder and Lee: Economic Geography.
9. James, O. Wheeler and Peter O. Muller: Economic Geography (Second Edition) John Wiley and Sons.
10. Kashinath Singh and Jagdish Singh: Bhugol Ke Mool Tatva, Gyanodye Prakashan, Gorkhpur.
11. Lloyd and Dickens: Location in Space: Theoretical Approach to Economic Geography.
12. Mc. Cart and Lindberg: A Preface to Economic Geography.
13. Miller, E.W.: A Geography of Manufacturing.
14. Reopke, H.G.: Readings in Economic Geography (Wiley & Sons).
15. Smith, D.E.: Industrial Location: An Economic Geographical Analysis.
16. Smith, J.C. and Phillip, M.O.: Industrial and Commercial Geography (Hence Halt).

GEO -111 Practical

| | | |
|-------------------------------|-----------------|------------------|
| 1. Written Test on Lab. Work. | Four hrs (4Qs.) | 60 Marks |
| 2. Record Work & Viva-Voce. | (20+20) | 40 Marks |
| | | 100 Marks |

Laboratory and Map Work

- i. The Art and Science of Cartography. History of Maps. Materials. Techniques and Preparation of Maps.
- ii. Enlargement. Reduction and Finding of Area of Maps. Use of Planimeter.
- iii. Study of geological maps and preparation of their section and interpretation.
- iv. Interpretation of weather-Maps and Weather for cast.
- v. Elementary Trigonometry.
- vi. Maps Projections.

Projections and their classification: Construction and characteristics of any three from each of the four classes of projections (mathematical constructions).

I. Conical Projections:

1. Equal Area with the one standard parallel (Lambert's Projections)
2. Equal Area with two standard parallels (Alber's Projections).
3. Bonne's
4. polyconic

5. International
- II. Cylindrical Projections:
 1. Cylindrical Equal Area
 2. Mercator's
 3. Gall's Stereographic.
- III. Zenithal Projections:
 1. Geomonic.
 - a. Polar Case
 - b. Eq. Case
 2. Stereographic
 - a. Polar Case
 3. Orthographic
 - a. Polar Case
 - b. Eq. Case.
 4. Equal Area
 - a. Polar Case
 - b. Eq. Case
 5. Equidistant
 - a. Polar Case
 - b. Eq. Case
- IV. Conventional projections:
 1. Sinusoidal
 2. Mollweide
 3. Interrupted Mollweide and Godde's
 4. Interrupted Sanson Flemsteed (Homolosine),
 5. Aito's.

Choice of Projections, Projections used for maps produced in India.

Books Recommended

1. Dickinson, G.C.: Statistical Mapping and Mapping Statistics, London.
2. Raisz, Erwin: General Cartography.
3. Singh, R.L. : Elements of Practical Geography

GEO 201: Modern Geographical Thoughts

Section-A

founders of modern geography, Humboldt and Ritter, shifting view points of geography during the later half of 19th century-Geography as geophysics, geography as a science of planet earth, geography as a science of distribution and geography as science of relationship, the works of Richthofen and Ratzel. The development of geographical ideas during the 20th century, geography as a science of landscape morphology, the contribution of Schelluter and Sauer, Geography as Human Ecology, the views of Huntington, Blache and Brunches. C. O. Sanur

Section-B

The debate between environmental determinism and possibilism, the dualism of regional and systematic geography. the dichotomy of Human and Physical Geography, Quantitative and

conceptual revolution in geography, the influence of logical positivism on the development of analytical geography, the development of Behavioural geography, Radical geography.

Section-C

Philosophy in geography, exceptionism in geography, scientific positivism, humanistic geography, idealism, phenomenism, development in geography in India.

Books Recommended

1. Ahmed: Muslim Contributions to Geography.
2. Burnpurj, E.H.: History of Ancient Geography.
3. Dickinson: The Members of Modern Geography.
4. Gregory: Idiology and Geography.
5. Harvey and Poly: Themes in Geography.
6. Harvey, David : Explanation in Geography.
7. James P.E.: All Possible world.
8. Johnston, R.J. : Geography and Geographers.
9. Peet, Richard,: Modern Geographical Thought.
10. Richard Hart Shorne:Perspective on the Nature of Geography.
11. Richard Hart shorne:The Nature of Geography.
12. Taaffe:Geography.
13. Tozer:A History of Ancient Geography.

GEO 202: Climatology & Oceanography

Section-A

Climatology: The structure of Atmosphere, Atmospheric energy air temperature, heat balance, Layered structure of atmosphere and characteristics of each layer. Moisture in the Atmosphere, humidity and its expression, Evaporation and condensation, adiabatic non-adiabatic proceses, stability and instability, precipitation, Thunderstorms, World precipitation pattern, Air Motion, Pressure variations, Pressure belts, forces governing air movement, upper air motion. General circulation, the planetary wind system, the mechanism of the circulation surface features and circulation. Fronts, airmassges and Types, Depression, cyclones(Tropical and extra tropical) and anticyclones. Climatic types: Koppen's, Thorthwait's schemes of climatic classification

Section-B

Oceanography: Oceanic water circulation, Ocean bottom relief, horizontal and vertical distribution of temperature, ocean deposits, origin and impact of ocean currents, Tides and tidal theories of coral reef formation, atolls and coral islands, marine resources-biotic, mineral and energy resources and their utilization.

Section-C

Soil and Vegetation: Soil genesis, classification and distribution: biotic succession and major biotic regions of the world with special reference to ecological aspects of savannah and monsoon biomes.

Books recommended

1. Austin, H.: Climatology.
2. Blair, T.A. and Fite R.C.: Weather Elements: A Text book in Elementary Meteorology, prentice Hall.
3. Brooks, C.E.P.: Climate in Every Life.
4. Cotter: Oceanography.
5. Critchfield, H.J.: General Climatology.
6. Das, P.K.: Monsoon, National Book Trust
7. H.Lamdborn Dubis: Physical Climatology, Pre Gray printing Co. U.S.A.
8. Holmes Arthur: hysical Geology.
9. Kendrew, W.G.: The climates of the Continents: Oxford University
10. Lake, P.: Physical Geography. press, New York.
11. Patterson: Weather Analysis and Forecasting
12. Sharma, R.C.: Oceanography for Geographers, Chaitanya Publishers, Allahabad.
13. Trewartha, G.T.: Introduction to Weather and

GEO 203: Principles and Theory of Economic Geography**Section-A**

Simple model of economy, environmental relations of the economy. Spatial structure of economy. Geographical basis of economic activities: systematic approach and spatial approach.

Section-B

Manufacturing-Factors of production: Theories of plant location: Weber's Least cost theory, Loscher's economics of location, Isard's space economy, Smith's spatial margins. Spatial variation in transport costs: Location and structure of transport costs. Transportation network analysis and models. World transportation patterns.

Section-C

Spatial organisation of land use: Laws of return, concept of rent, Vonthunen's isolated state, Vonthunen's principles then and now, classical central place theory; Range of good, threshold. central place system, central place hierarchy, Modification of christaller's model.

Books recommended

1. Multinational enterprise toward a dynamic new theory of international commerce Alexander, J.W.: Economic Grography (prentice Hall, New York).
2. P.Sen Gupta and Galyna Sydasuk: Economic Region and Regionalisation in India.
3. Renner, T.H. and others: world Economic Geography.
4. Robson, H.: Economic Geograpy (Mac Donald London).
5. C.Langdo White, Paul F.F.Griffin and others: World Economic Geography.
6. F.A.O Year Book.
7. Fried Sykes: Food Farming and the future.
8. Ghua and Chaterjee: A New Approach to Economic Geography.
9. Hutington and Ellsworth: Principles of Economic Geography.
10. Indian Year Book.
11. Mac Carty Harold H.Lindberor James B.: A Preface to Economic Geography.(prentice Hall New York).

12. Morgan: Ports and Harbours.
 - a. Briton John ,N.H.: Regional Analysis and Economic Geography.
13. Sargent Ports and their Hinterlands.
14. Statesman; year Book.
15. Thoman, R.S.: The Geography of Economic Activity (Mc Graw Hill New York).
16. U.N.O Statistical Year Book.
17. Zimmrman, E.W.: World Resources and Industries(Harper & Co. New York).

GEO- 211 Practical

| | | |
|--------------------------------|-----------------|------------------|
| 1. Written Test on Lab. Work. | Four hrs (4Qs.) | 40 Marks |
| 2. Record Work & Viva-Voce. | (20+10) | 30 Marks |
| 3. Project Report & Viva-Voce. | (20+10) | 30 Marks |
| Total | | 100 Marks |

Geographical Maps and Diagrams: Computations of data Preparation of frequency tables representation of data by Histograms and ogives. Finding skewness. Computation of Mean, Median and Modes. Deviations-Standard Deviations and Mean Deviations and finding out of correlations. Theoretical basis of nearest neighbour analysis. Practical exercises of nearest neighbour analysis. Locational analysis of urban centres. Coefficient Variation. All these be computed from the statistical data, preferably based of state, District, Tehsil and Community Development Block as unit areas and the following types of maps and diagrams be prepared.

One exercise on each of the following and their interpretations. Isopleth, Choropleth and chorochromatic map. Isochrone map population potential surface map, population Pyramids map. Three dimensionals diagrams and cargograms of economic and social data.

Diagrams: Polygraph semi-log and loggraphs, Trilinear chart, circular gaph, Climatograph. Taylors/Fosters Climograph. Annual water deficiency and water surplus graph.

Project Report: A candidate is to prepare project report of a village area. The candidate is free to select any supervisor amongst the staff members of the project. A supervisor can take only 5 candidates. The marking on the project report will be awarded by the external examiner in consultation with the supervisor concerned. The project should be based on primary data obtained by the candidate. The data should be represented by suitable cartographic methods.

Books recommended

1. Dickinson, G.C.: Maps and Air photographs. London, 1969.

2. Robinson, A.H. & R.D. Sale: Elements of Geography, Wiley International Inc. New York, 1969.

3. Lawrence, G.R.P. Cartographic Methods, London, 1971.

GEO 301: Advanced Geography of India

Section-A

Geological structure and its relation with relief and distribution of minerals. Physiographic divisions, climatic divisions, soil regions-characteristics and distribution. Resources potential a general appraisal.

Section-B

- i. Land resources,
- ii. Water resources,
- iii. Vegetational resources,
- iv. Animal resources
- v. Mineral resource
- vi. Human resources.

Section-C

Resources development : Power, industries and transport River basins of India, riverian problems of sharing water and their planning. Economic regions of India and Regional problems.

Books Recommended:

1. Chatterji S.P.: Climatology of India (Calcutta University, Calcutta).
2. Choudhary, M.R.: Indian Industries Development and Location.
3. Gazetteers of India: Publication Division, New Delhi.
4. GOI: Five Year Plans of India.
5. Indian Year Book: (Latest Edition) Publication Division, Delhi.
6. Irrigation Atlas of India.
7. Krishan, M.S.: Geology of India and Burma (Law Journal Office, Madras).
8. Kumar, I.S.S and Others: Agriculture in India Vol. I & II (Asia Publishing House Bombay).
9. NCAER: Techno- Economic survey report of various states in India. Central Board of water power and Irrigation in India-Development of Irrigation in India, 1965.
10. P. Sen Gupta and Galyna, Sydasuk : Economic Region and Regionalisation in India, 1968.
11. Ramdas L.A.: Crops and weather in India I.C.A.R. New Delhi, 1960.
12. S.P. Roy, Choudhary: Land and soil (National Book Trust, New Delhi.)
13. Sapté, O.H.K.: Geography of India and Pakistan (Mathuen and Co., London).
14. Sharma T.R.: Location of Industries in India (Hindu Kitab, Bombay).
15. Singh R.L.: India-A Regional Geography N.G.S.I. Varanasi 1971.
16. Sinha: A treatise on Industrial Minerals.
17. Techno Economic surveys of states (N.C.E.A.R.) Delhi.
18. Time of India: Hindustan Year Book (Latest Edition).

GEO 311: Practical

- | | | |
|-------------------------------|--------------------|----------|
| 1. Written Test | Four Hours. (4Qs.) | 60 Marks |
| 2. Record Work and Viva-Voce. | (20+20) | 40 Marks |

Total**100 Marks**

Methods and techniques of representation of relief:

Methods and techniques of depicting relief Profile, gradients and calculation of slope, Block diagrams, field sketching, serial profile, hypsographic curves. altimetric frequency graphs.

Interpretation of topographical maps:

A brief history of topographical maps of the world with special reference to India and their interpretation. Detailed study of such topographical sheets which depict typical geomorphological and cultural landscapes. Scanning and digitization of maps.

Air photo interpretation and exercise on the determination of height of plan, parallax, number of runs and number of photographs, knowledge of stereoscopic vision, mosaics; types of cameras, emulsions and stereoscope. Interpretation and identification of cultural and physical features on serial photographs. Photo interpretation of land use and settlements in the field.

Books Recommended

1. B.C.Punmia: Surveying and Field Work Vol.I(Standard Book Depot.Delhi).
2. Deshoande,R.S.: A test book of surveying and levelling.(United Book Corporation.Poona).
3. James Clending:Principles and use of surveying(Blackie and Sons Ltd.Glasgow).
4. Kanethkar.T.P.and Kukkarni,S.V.: Surveying and Levelling Vol.I(A.V.Gria Prakash,Poona).

GEO 401: GEOGRAPHY OF RAJSTHAN

Section-A

Physical aspects of Rajasthan: Geological Structure, Relief, Climate, Drainage, Natural Vegetation, Soils. Environmental Pollution-Causes and types. Drought, Desertification, Soil erosion and conservation ,Availability, Problems and Conservation of Water Resources.

Section-B

Economics Aspects: Irrigation, Sources, types, irrigation intensity, crop wise irrigation, Quality of irrigation water, problems. Irrigation Projects: Detailed study of Indira Gandhi Canal Project, Chambal Valley Project, Mahi Bajaj Sagar Projects on Physical and socio-economic aspects.

Agriculture: Development under Five Year Plans. Problems of Agriculture Development Plans.General Land Use: Live-Stock and Dairy Development, Minerals.

Industries: Textile, Sugar, Cement, Marble and Granite, Fertilizer, Zinc and Copper smelting. Power & Energy: Hydro-electricity, Coal, Petroleum. Solar Energy. Bio-energy. Transport & Trade. Development of Tourism. Desert development programme. Tribble Areas development programme, Aravali Hill Development programme.

Section-C

Cultural and Development Aspects: Population-number, growth, distribution and density, Rural and urban, Male and female population, Literacy status. Occupational structure, Schedule castes and schedule tribes. Study of Bhil, Meena and Garasia. Population Problems.

Settlement Pattern: Types of settlements, building materials and house types in Rajasthan with examples. Factors affecting settlement.

Book Recommended

1. Bhalla L.R. Geography of Rajasthan
2. Mishra, V.C.: Geography of Rajasthan.
3. Sharma B.L: Agricultural Typology of Rajasthan.
4. Govt. of Rajasthan: Techno-Economics Survey Of Rajasthan, Govt. of Rajasthan Publication.
5. Sing, R.L.: Regional Geography of India.
6. Gujar, R.K: Geography of Indira Gandhi Canal, Rajasthan Hindi Granth Academy.
7. Sharma H.S. and M.L. Sharma: Geography of Rajasthan , Panchcil Puplicher, Jaipur.

GEO 411 Practical

| | | |
|--------------------------------|--------------------|------------------|
| 1. Written Test | Four Hours. (4Qs.) | 40 Marks |
| 2. Record Work and Viva-Voce. | (14+16) | 20 Marks |
| 3. Field Survey and Viva-Voce. | Four Hrs.(14+16) | 20 Marks |
| 4. Camp Work and Viva-Voce. | 7 Days(14+16) | 20 Marks |
| | Total | 100 Marks |

The Art of surveying History of surveying, scope utility and problems classification of surveying.

Field Surveying and Camp Work.

Theodolite: Its parts and their function, use of theodolite, theodolite traverse and traverse computation, independent coordinates. Use of Total Station and GPS.

Use and application of plane table and clinometer in small area surveys. Traverse, plane table, resecting: Two and three point problems of leveling, Classification of leveling. Profile, precise and other types of leveling. Use of dumpy level. Practical contouring cross sectioning use and application of abeny level.

Camp Work: A topographical survey of a settlement of about 500 acres of land will be done by organizing a camp at least for a week away from the centre of the institution and maps and reports of the same will be prepared.(Students are expected to stay in the camp at night).

Books Recommended

1. Breed.C.B.and Hosmer,G.L.: The Principle of Surveying Vol.I and II(New York).
2. Devis,R.E.and Foot,F.S.: Surveying theory and practice (Mc-Graw Hill Book Co.,New York).

3. N.C.Gautam: Urban Land use studies through Airphoto Interpretation Techniques:Pink Publishing House,Mathura.
4. Roorke Engineering College: Mannual of Surveying.
5. T.R.Tracy: Surveying theory and practice(John Willey and Sons,Inc.,New York).
6. Thrilfall,H.S.,A.Text Book of surveying and Levelling(Charles Graffilin,London).
7. Williamson: Surveying and Field work(Constable).

GEO A01 Man and Natural Environment

Section-A

Perspective on man environment Relationship, symbiosis between man and environment, the effect of environment on man: biophysical, perceptional and behavioural related to resource availability. The effect of man on environment:

- a. direct and indirect
- b. man's capacity to modify the environment.

Section-B

The environmental crises, nature and causes of environmental problems, some case studies of India, Environmental pollution-Air, Water, Noise, Soil pollutions.

Section-'C'

Criteria for environmental quality. Evolution of balanced and healthy environment, sustainability of human ecosystem, Ecological basis of environmental management.

Books Recommended

1. Arvilla R.:Man and Environment:Crises and strategy of Choice,Reguin,harmonds-worth,1967.
2. Botking,Deniel B. and Keller,Edward,A.:Environmental Studies,chaes,E.Merril publishing company.columbus,ohio,1982.
3. C.S.E.:The state of India's Environment-A Citizen's Report ,centre for Science and Environment, New Delhi 1982.
4. C.S.E.: The state of India's Environment-The second citizen's Report, centre for science and Environment-New Delhi,1984.
5. Dasman, R.F.: Environmental Conervation,John Wiley & Sons, New York,1972.
6. Detwyler, J.R.: Man's Impact on Environment, John Wiley and Sons, New York,1975.
7. Duffey, E.: Conserdinagton of Nature Collins, London 1970.
8. Edington, J.M. and Edington, M.A.:Ecology and Environmental planning, champan and Hall,London,1977.
9. Harvey, B.and Hallet,J.D.: Environmental and Society:An Introductoty Analysis,Macmillan,London,1977.
10. Hewitt, K.and Hari. F.K.:Man and Environment: A Conceptual Framwork Commission on college Geography Resources Paper20,1973 (AAG).
11. M.I.T.: Study of Critical Environmental Problems, M.I.T., Massachusetts,1970.
12. Merrll, N.J.Inherit the Earth-The story of man and changing planet.Fawcett,Greewich,Connecticut,1967.

13. Park, C.C.: Ecology and Environmental Management, Butterworths, London, 1980.
14. Sherlock K.L.: Man as a Geological Agent, Witherby London, 1972.
15. Thomas, W.L. (ed): Man's Role in changing the Face of the Earth, University of Chicago Press, Chicago, 1956.

GEO A02: Cultural Geography

Section-A

The Nature of Cultural Geography. The evolutionary approach in cultural geography. The Framework of cultural Geography. The evolution of cultural Geography-The contribution of Otto Schlüter and Carl Sauer and others. Themes in cultural Geography-The Cultural Region. Functional Formal and perceptual Determinism and Possibilism, cultural Adaptation and Environmental perception. Man as modifier of the earth, Cultural Integration, the cultural landscape, the cultural history and sequent occupancy.

Section-B

Humanization of the Earth-Pleistocene inheritance, The environmental changes during the Pleistocene, The Impact of glaciations, Land Dirges and the pattern of land and sea. Shifting life zone of Pleistocene, Human ancestors, Food gathering and Man's tropical origin, Discovery of fire and building of shelter. Homo sapiens their rise and dominance. Man's deployment over the continents, culture as a new method of evolution and interrelationships in human living.

The beginning of plant domestication, the regions the agriculture origins, evolution of cropping system, origin of Animal Domestication, the Regions of Animal Domestication, The Consequences of Animal Domestication. The evolution of system of Animal Husbandry. The origin of Metal Extracting and the Diffusion of metal smelting technology. The evolution of civilization, The Main culture Hearths-Mesopotamia, The Nile Valley, The India's valley and the North China. The main cultural regions of the world with special reference to India and south-east Asian cultural regions.

Section-C

The Geography of Language, the major linguistic families and their distribution in the world language and religion, Language and Nationalism, Language and Environment. The Geography of Religion-The major religions of the world and their distribution. The Health of Semitic and Hindu religion. Places of pilgrimage. Religions Landscape. Cultural Integration in Religion. Origin and causes of settlement types. Settlement patterns-Clustered, Semiclustered and dispersed. Building Materials and House types and fold Architecture. Origin and Diffusion of the City, especially the Grid pattern city, population density regions, Death rate, birth rate and population exploration, Quality of life.

Books Recommended

1. Jordan and Rowntree-The Human Mosaic
2. Spencer and Thomas-The cultural Geography.

GEO B01 Population Geography

Section-A

Definition and scope of Population Geography, Theory in Population Geography-Malthusian Neo malthusian and optimum population theory and Biological population Theory. Types of Data and population census with special reference to the Indian censuses. Density and Distribution of population in the world. Factors affecting population Distribution in the world. Measures of population density, Measures of Dispersal and concentration of population and population potential. The Growth of population, world patterns of Fertility and Mortality. Demographic transition.

Section-B

Age and Sex composition, Marital status, Families and Households, Language and Literacy, Religious composition of Population, Economic composition of population, primary occupations, Manufacturing Industry, Transport, Trade and services etc. Rural and Urban population and urbanisation. Internal and international Migration. Behavioural Migration studies.

Section-C

The Growth of India's population, The Death rate and birth rate in India, Density and Distribution of population in India. Is India over populated? Age and sex composition in India's population. Urbanisation in India, Occupational composition and internal Migrations. Economic composition of India's population, Internal Migration in India. The population policy of Govt. of India.

Books Recommended

1. Beanjen Garnier- Geography of population.
2. Chandra- Population Geography
3. Clarks (ed): Geography and population.
4. Clarks: Population Geography.
5. Davis- The population of India and pakistan.
6. Dyson and crook: India's Demography.
7. Jones: A population Geography.
8. Pacione: Population Geography-problems and prospects.
9. Rees and wilson: Spatial population Analysis.
10. Schnell & Monmonier: The study of population-Elements patterns and processes.
11. Trewarth: A Geography of population.
12. Wilson- Population Geography.
13. Woods- Population Analysis in Geography.
14. Woods- Theoretical population Geography.
15. Zelinsky: A prologue to population Geography.

GEO B02: Quantitative Techniques in Geography

Section-A

Probability: Theory of probabilities- law of addition and multiplication probabilities of distribution: normal. binomial, poisson-sampling; basic concepts, sample units and design,

sampling frame and procedures, standard error and sample size, testing the adequacy of samples. Hypothesis Testing: Needs and types of hypotheses-goodness of fit and significance and confidence levels-parametric and non-parametric procedures; contingency tables, chi-square test, binomial test, t-test, Mann-Whitney U test, Analysis of Variance (ANOVA)

Section-B

Bivariate Analysis; Forms of relation and measuring the strength of association and relation-construction and meanings of scatter diagram simple linear and regression analyses-spearman's Rank and product Moment Correlation Coefficients-the ordinary least square method of fitting a regression line-construction of regression line: interpolation, prediction, explanation and residual-statistical tests of significance of the estimates; residuals and their mapping.

Section-C

Multivariate Analysis: Basics of multiple regression-partial correlation coefficient regression analysis and ANOVA-testing the overall significance of a regression auto correlation-multicollinearity-basis principles and elements of factor Analysis and principal component analysis. Surface and Models: Gravity potential; model-spatial interpolation and trend surface analysis-simulation models: random walk and diffusion models-markov chain model similarity indices and region building-construction of Thiessen polygons.

Books recommended

1. David unwin, Introductory spatial Analysis, Methuen, London, 1981.
2. Gregory, S. Statistical Methods and Geographer, Longman, London, 1978.
3. Hammond R and P.S. McCullagh Quantitative Techniques in Geography: An Introduction, Clearendan Press, Oxford, 1974.
4. John P. Cole and Cuchlanie A.M. King, quantitative Geography. John Wiley, London, 1968.
5. Johnston R.J., Multivariate Statistical Analysis in Geography, Longman, London, 1973.
6. Kautsoniannis, Theory of Econometrics, Mcmillan, London, 1973.
7. Maurice Yeats, An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1974.
8. Peter Haggett, Andrew D. Cliff, & Allan Frey, Location Methods vol I and II, Edward Arnold, London, 1977.

GEO C01: Research Methodology

Section-A

Problems of geographical research. Identification of problems of regional and systemic geography sources and natures of data to be used. Hypotheses and Preparation of research projects and writing of reports. Preparation of field reports, spatial data. classification and sampling problems. Need for sampling, types of sampling, sample size and sampling area.

Section-B

Selected techniques of spatial analysis, methods of measuring concentration and dispersal of economic activities. Nearest Neighbour analysis, Regional interaction analysis gravity potential, inter-regional flow-analysis, Methods of delimiting regions economic industrial regions, planning regions, agricultural regions.

Section-'C'

Regional population analysis, population projection, population migration projection; Network analysis, Techniques of urban analysis with reference to land use, population and hinterland relationship delimiting sphere of city influence. Determining of core and marginal areas. Techniques of Map Analysis, Morphometric analysis. Thalegaltimetric frequency graphs, Drainage basin analysis, Slpe analysis Analysis of biogeochemical cycles, Integrated Area Development planning.

Books Recommended:

1. Abercrombie: Town and Country Planning.
2. Chapin, F.S.: Urban Land Use Planning.
3. Chisholm: Rural Settlement and Rural Land Use.
4. Freeman: Geography and Planning.
5. Graham, F.H.: Natural Principles of Land Use.
6. Hagget and Chorley: Models in Geography.
7. Hagget Peter: Geography A Modern Synthesis.
8. Hoyle, B.S. (Ed.): Spatial Aspects of Development.
9. Isard and Cumberland: National Economic planning 1961.
10. King, C.A.M.: Techniques of Geomorphology.
11. Misra, R.P., (Ed.): Regional Planning, Concepts, Techniques, Policies and case studies, 1969.
12. Morrill: Migration and Spread and Growth of Urban Settlement.
13. Mukerjee, R.K.: Planning the country side.
14. Prakasa Rao: Regional Planning.
15. Prakasa Rao: Towns of Mysore.
16. Shafl, M.: Land utilisation in Eastern Uttar Pradesh.
17. Smailes: Geography of Towns.
18. Stamp, L.D.: Applied Geography.
19. Stamp, L.D.: The Geography of Life and Death.
20. Stamp, L.D.: The Load of Britain: Its Use and Misuse.
21. Stamp, L.D.: Our Development World.
22. Worthington and Gant: Techniques of Map Analysis.

GEO C02: Disaster Perception and Management**Section-A**

Concept of disaster management, its importance, need and scope Hazards, risks, vulnerability and disaster. types of hazards and disaster manmade and natural, climate change.

Section-B

Natural and Man Made disaster . Floods, drought, earthquakes, landslides, cyclones, forest fire and Tsunamis, forest degradation, construction of dams, diversion of river channels, mining and quarrying, haphazard urban growth and industrial location.

Section-C

Disaster perceptions: Concept relating to the pre disaster phase, emergency phase and post disaster management, disaster preparedness, mitigation and response. Disasters management mechanism in India: Public awareness, agencies, resources, early warning system, plans, policies, training in disaster management.

Books Recommended

1. Government of India 2004. Disaster Management in India – A Status Report. Ministry of Home affairs, National Disaster Management Division, New Delhi.
2. Gupta , K. C. Disaster Management in India. Allied publishers, New Delhi.
3. Kapur, A. 2010. Vulnerable INDIA – A Geographical Study of Disasters. SAGE Publications India PVT LTD, New Delhi.
4. Murthy, D B N 2007. Disaster Management: Text and Case studies. Deep & Deep Publications, New Delhi.

Websites

www.gisdevelopment.net/technology/gis/techgi0030pf.htm

www.unisdr.org/eng/country-inform/reports/India-report.pdf

www.newindigo.eu/India/info/space.html

GEO D01: Principles and Applications of Remote Sensing and Geographical Information System

Section-A

Historical development of remote sensing as a technology-Relevance of remote sensing in Geography-Concepts and basics: Energy source, energy and radiation principles, energy interactions in the atmosphere and earth surface features, remote sensing systems: platforms, sensors and radiation records. Air photos and photogrammetry: Elements of photographic system: types, scales and ground coverage. resolution. radiometric characteristics, films, filters, aerial cameras, film exposures, geometric fundamentals of photogrammetry: elements of vertical photographs, relief displacement, image, parallax, stereoscopic, orthophotos, airphoto interpretation: shape, size, pattern, tone, texture, shadows, site.

Section-B

Satellite Remote sensing: platforms LANDSAT, SPOT. NOAAVHAR, RADARSAT, IRS, INSAT: Principles and geometry of scanners and CCD arrays, orbital characteristics and data products-MSS.TM.LISS I & II.SPOTPLA & MLA.SLAR. Image processing: types of imagery, techniques of visual interpretation, ground verification, transfer of interpreted thematic information to base maps-digital processing: rectification and restoration, image enhancement,-contrast manipulation, classification supervised and unsupervised, post-

classification analysis and accuracy assessment, microwave sensing: interpretation of SLAR imageries, elements of passive microwave sensing.

Section-C

Applications: Air and Image interpretations and mapping landuse and land cover. land evaluation, urban landuse, landform and its processes, Weather studies and studies of water resources; integration of Remote sensing and GIS.-remote sensing and hazard management, remote sensing and environmental management.

Books Recommended

1. American society of Photogrammetry: Manual of Remote sensing. ASP, Falls Church, V.a.1983.
2. Barrett E.C.and L.F.Curtis: Fundamentals of Remote sensing and Air photo Interpretation, Mcmillan, New York,1992.
3. Compbell J.: Introduction to Remote Sensing, Guilford, New York 1989.
4. Curran,paul J.: Principles of Remote Sensing,Longman,London,1985.
5. Hord R.M.Digital image processing of Remotely Sensed Data,Academic,New York,1989.
6. Luder D.: Aerial photography Interpretation: Principles and Application McGraw Hill.New York.1959.
7. Pratt W.K.Digital Image Processing,willey,New York,1978.
8. Rao D.P.(eds.):Remote Sensing for Earth Resources.Association of Exploration Geophysicist.Hyderabad.1988.
9. Thomas M.Lillesand and Ralph W.Kefer.Remote Sensing and image interpretation.John wiley & Sons.New York,1994.

GEO D02: Urban Geography

Section-A

Aims and scope of Urban Geography, Factors affecting the growth of town during Neolithic period, Greek and Roman Period. Dark Ages, Medieval period Renaissance period, Industrial Revolution. and Modern times, Chief characteristics of the town of each period. Trends of urbanisation in the world. Urbanisation in India since 1901 and its problems. Census of India, definitions of urban centres. Chief characteristics of modern town, City conurbation Metropolitan and Megapolis. Spatial pattern and distribution of urban centres. Types of cities-Central placed. Transport foci and centres of specialised services.

Section-B

Classification of cities based on functions. Urban Rank-Size relationship. The Basic and Non-Basic concept of Urban economic functions and its Urban hierarchy based on functions. Urban Morphology. Unplanned growth of towns. Urban plans. Morphology of Indian cities. Functional structure of towns, Chief characteristics of C.B.C.Residential area, and other functional areas Theories and Models of urban structure.

Section-C

Centrifugal and Centripetal forces in Urban Geography. Development of suburbs, rural, urban fringe, satellite towns, ring towns, sphere of urban influence (Umland) and its delimitation. Principles of Town planning, Preparation of a Master plan, Study of Master plan of Jaipur, Principles of Regional planning.

Books Recommended:

1. A.E.Smailes: The Geography of Towns.(Hutchinson,University Library, London).
2. Abercrombie: Town and Country-Planning(Oxford University,Press London)
3. Cornsuh,V.: The Sociology of City Life.
4. Dickinson,R.E.: City Region and Regionalism.(Routledge and Kegan Paul London).
5. Dikinson R.E.: The West European City.(Routledge and Kegan Paul, London).
6. Geddas: Study in City Development.
7. Herrold M.Mayer: Readings in Urban Geography,(Central Book Depot,Allahabad).
8. Mumford.L.: City Development (Socket,Waburg,London).
9. N.V.Sovani: Urbanization and Urban India.(Asia publishing House,Bombay).
10. P.C.Malhotra: Survey of Bhopal City and Bairagarh (Asia publishing Bombay)
11. R.L.Singh: Bangalore as Urban Survey,(National Geographical Society of India,B.H.U.,Varansi).
12. Shah Manzoor Alam: Hyderabad and Secuderabad,Twin City Studies in Urban Geography(Allied Published,Delhi).
13. Singh,R.L.: Banars A study in Urban Geography (Student Friends, Allahabad).
14. Taylor G.: Urban Geography,(Muthuen and Co.,London).
15. V.K.R.V.Rao: Socio-Economic survey of Greater Delhi,(Asia Publishing Bombay).
16. V.L.S.Prakash Rao: T Gowns of Mysore state (Statistical Publishing House,Calcutta).

GEO E01: Political Geography**Section-A**

Definition, Scope and Development of Political Geography:

Definition and Scope of Political Geography: its Relation with other social sciences.Geopolitics and German School of Thought.Development of Political Geography-Concepts of Mackinder, Spykman, Meining, Hooson, De Seversky, World's geostrategic regions.

Methodology:

The Functional Approach in Political Geography by Hartshorne, The Unified field Theory of political Geography by B.S.Jones.

Section-B

State Temporal and spatial Attributes, Resources:

The Elements of the State: Territory, Population, Organization and Power,The Heart of The State: core Areas.The Focus: Capital City.

Frontiers and Boundaries: Concepts and Classification

Frontiers, Boundaries and Buffer Zones, Classification of Boundaries Changing Concept, The concept of Territorial sea and Maritime Boundaries, Landlocked States: Problem of Access. Growth of Nations and Disintegration of Empires: Unitary and Federal States, The Dying Colonialism and Resurgent Nationalism, Supernationalism: Form State of Blocks.

Section-C

Extending Dimensions of Political Geography

The Politics and Transportation, the Geography of Foreign Aid & Economic Development, Emergence of Third World Block, Politico-Geographical Study of India, Political Geography of Administration.

The Politico-Geographical Implications of Space Research.

The Function and Methods of Electoral Geography: Electoral Studies in Political Geography, Conceptual Model of the Voting Decision, Operationalisation of Conceptual Decision, Garrymending in Relation to India.

Books Recommended

1. Alexander J.L.M.: World Political Patterns (John Murray and co., London).
2. Bergman, Edward E.: Modern political Geography W.M.C Brown company publishers Jawa.
3. Boggs, S.W.: International Boundaries (Columbia University press, New York).
4. Borman, I.: The New World-Problem in political Geography, (World co., Yonkers, on Hudson).
5. Corne: Background to political Geography.
6. Dikshit, R.D.: Political Geography, A contemporary perspective, Tata McGraw Hill Publishing Co., Ltd., New Delhi.
7. Fairgreive, J.: Geography and World Power (University of London press, London)
8. East, W.G. and Moodie, A.E.: The Changing world (George G. Harrap and co., London)
9. East, W.G. and Spate O.H.K.: The Changing Map of Asia, (Methuen and Co., London)
10. Fawcett, C.B.: Frontiers, study in political Geography (Oxford University press, Oxford)
11. Fitzgerald W.: New Europe (Methuen and Co.)
12. Fitzgibbon, R.H.: Global politics (University of California press, Parkdale).
13. Goblet, Y.M.: Political Geography and World Map. (George philips and co., London).
14. Golby, C.C.: The Geographic Aspect of International Relations (University of Chicago press Chicago)
15. H. Jeo Blij: Systematic political Geography (John Wiley and Sons, New York)
16. Horradin, J.F.: An outline of political Geography (Alfred A. Knob, New York).
17. Huntington, E.: World power and Evolution (Yale university press, New Haven).
18. Moodie, A.E.: Geography Behind politics (Hutchinson's University Library, London).
19. Percy, C.E. et al.: World political Geography (Thomas Y Crowell Co., New York)
20. S.B. Cohen: Geography and politics, Divided world (Methuen and Co., London).
21. Spengler, O.: The Decline of the west (Alfred A. Knob and co., New York)
22. Strasz, R.H.: Geopolitics-The struggle for space and power (G.P. Pitman's and Sons, New York)
23. Strasz, R.H. and: International Relations (McGraw Hill Book Co., New York)
24. Stykman, N.J.: The Geography of place, (Harcour Brace, New York)
25. Sukhwai, B.L.: India-A political Geography. Allied publishers. New Delhi.
26. Valkenburg, S.V. and Stz. C.L.: Elements of political Geography, second Edition (Eastern Economy Edition, Prentice Hall and co., Ltd.)

27. W.A. Douglass Jackson: Politics and Geography Relationship (Prentice Hall, New York).
28. Wegert A.W. and: Principles of political Geography (Appleton century draft Inc., New York).
29. Weigert, H.W. Stefransov, V. and Harrison, R.E.: New Compass of the world Macmillan and Co., New York.
30. Whittlesey, D.: The Earth and state (Henry Holt and Co., New York).

GEO E02: Advanced Geomorphology

Section-A

Nature and scope of Geomorphology, Fundamental concepts-Geological structures and landforms, uniformitarianism, multicyclic and polygenetic evolution of landscapes, concept of threshold, Environmental change-climatic change and geochronological methods-documentary evidence, artifacts, major horizons, dendrochronology, pollen, thermoluminescence.

Earth movements-epeirogenic, orogenic and cymatogenic earth movements. Forces of crustal instability, isostasy, plate tectonics, seismicity, vulcanicity, orogenic structures with reference to the evolution of Himalaya.

Section-'B'

Orogenic Processes: Concept of gradation, Agents and processes of gradation, causes, types and classification of weathering, mass movement erosional, and depositional processes and resultant landforms and soil formation, slope evolution: slope decline, parallel retreat and slope replacement and dynamic equilibrium models. Geomorphic processes, dynamics of fluvial, glacial, Aeolian, marine, and karst processes and resulting landforms complexities in geomorphological processes, Erosion surfaces-techniques of identification and correlation.

Section-C

Applied geomorphology-application of geomorphic mapping, terrain evaluation. Digital Elevation Model (DEM) and Triangulated Irregular Network (TIN) unit, land capability and land suitability classification, hydro-geomorphology, urban geomorphology, environmental geomorphology, geomorphic hazards.

Books Recommended

1. Chorley, R.J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
2. Cooke, R.U. and Doornkamp, J.C.: Geomorphology in Environmental Management-A introduction, Clarendon Press, Oxford, 1974.
3. Dury, G.H.: The Face of the Earth, Penguin Harmondsworth, 1959.
4. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinhold, New York, 1986.
5. Garner, H.F.: The origin of landscape-A Synthesis of Geomorphology, Oxford University Press, London, 1974.
6. Goudie, A.: The Nature of the Environment, Oxford & Blackwell, London 1993.
7. Mitchell, C.W.: Terrain Evaluation, Longman, London, 1973.

8. Ollier, C.D.: Weathering Longman; London, 1979.
9. Pitty, A.F. Introduction to Geomorphology, Methuen, London, 1971.
10. Sharma, H.S. (ed): Perspectives in Geomorphology, Concept, New Delhi, 1980.
11. Singh, S.: Geomorphology, Prayag Publication, Allahabad, 1998.
12. Skinner, B.J & Porter, S.C.: The Dynamic Earth John Wiley, New York, 1995.
13. Sparks, B.W.: Geomorphology, Longman, London, 1960.
14. Stoddart, D.R. (ed): Process and Form in Geomorphology, Routledge, New York, 1996.
15. Thornbury, W.D. Principles of Geomorphology, John Wiley, New York, 1960.

GEO F01 Applied Geography

Section-A

Principles and methods, Nature and scope. Application of geographical methods of survey and analysis to contemporary, physical, socio-economic and political problems with special reference to problems of Agriculture, Population and settlements.

Section-B

Geographical application of distinctive economic principles including the evolution of geographical mapping of production. Specialisation of areas. Land classification, agricultural land use in India and other countries.

Section-C

Principles of urban land use planning. Delimitation of urban-fields. Functional zoning of urban land problems of expansion of urban centres. Meaning of communication and their relation to towns.

Books Recommended

1. E.W. Zimmerman: World Resources and Industries.
2. Freeman, T.W.: Geography and Planning.
3. Graham: Natural Principles of Land Use.
4. Stamp, L.D.: History of Land Use in Arid Regions.
5. Stamp, L.D.: The Land of Britain. Its Use and Misuse.
6. Stanp L.D.: Applied Geography.
7. Stapledon, R.G.: The Land of Tomorrow.

GEO F02 Regional Planning

Section-A

Regional planning: Term, Task, Scope and objective, Specific problems: task and scope of regional planning in developing countries, Principles and Determination of Regional planning, Importance of the density, distribution and development of population for regional planning.

Section-B

Significance of the term 'Integration'(Political, Economic, social and spatial) for regional planning.

Importance of the political system for regional planning, Significance of the factor, adaptation of developments of different social classes of the opulation for regional planning.

Section-C

Methods of Regional planning:

Factor Analysis, Comparative Cost-analysis, Industrial complex and analysis, Shift analysis.

GEO G01 Geography of Water Resource

Section-A

Water as a focus of geographical interest, inventory and distribution of world's water resources(surface and subsurface);world hydrologic cycle: quantitative estimates; water storages. Glaciers, river channels, lakes and reservoirs, soil moisture, ground water.

The basic hydrologic cycle precipitation: potential evapotranspiration and interception losses;runoff.

Water demand and use: methods of estimation-agricultural industrial and municipal uses of water.

Agricultural use of water: estimation of crop-water requirement:soil-water-crop relationships; water balance and drought; major and minor irrigation: methods of distribution of water to farms; water harvesting techniques, soil water conservation.

Section-B

Irrigation-water logging, salinity and alkalinity of soil-over exploitation of ground water, land subsidence, saline water intrusion. Water quality parameters, water pollution over and ground water-fluoride and arsenic.

Industrial use of water: methods of estimation; demand for water in the industrial factor of India.

Municipal use of water: general trends in water supply to the urban and rural communities in India. Internal navigation, hydro power and recreation.

Section-C

Problems of water resource management Floods-magnitude/ frequency, structural and non structural adjustment of flood hazards; embankments, reservoirs, channel improvement, soil conservation, afforestation, flood forecasting, evacuation, floodplains; land use regulation and insurance. Case studies of major floods.

Droughts- occurrence, major drought management with reference to Rajasthan.

Conservation and planning for the development of water resources-social and institutional considerations; integrated basin planning conjunctive use of surface and ground water resources; watershed management; international and inter-state river water disputes and some case studies.

Books Recommended

1. Agrawal, Anil and Sunita Narain: Dying wisdom: Rise, Fall and potential of India's Traditional water Harvesting System. Centre for science and Environment, New Delhi, 1997.
2. Economic and social commission for Asia and the Pacific United Nations: Guidelines for the preparation of National Master water plans, 1989.
3. Govt. of India, Ministry of Agriculture Report of the Irrigation Commission Vol. I to IV, New Delhi, 1972.
4. Govt. of India, Ministry of Energy and Irrigation, Rashtriya Barh Ayog (Report-National Commission of Floods. Vol. I and II, New Delhi, 1980.
5. Gulhati, N.D.: Development of Inter-state Rivers: Law and practice in India. Allied Pub., Bombay, 1972.
6. International water Resource Association and Central Board of Irrigation & Power; Water for Human Needs, Vols. I to V proceedings of the second world congress on water Resources, 12-16 December, New Delhi, 1975.
7. Jones, J.A.: Global Hydrology: Processes, Resources and Environmental Management, Longman, 1997.
8. Kates R.W. and Burton, I. (ed.): Geography, Resources and Environment, Ottawa, 1980.
9. Krutilla, John V. and Eckstein, O.: Multiple purpose River Development: Studies in Applied Economic Analysis, John Hopkin's press, Boston, 1958.
10. Law, B.C. (ed.) Mountains and Rivers of India IGU National Committee for Geography, Calcutta, 1968.
11. Matter, J.R., Water Resources Distribution, Use and Management, John Wiley, Marylane, 1984.
12. Michael, A.M.: Irrigation: Theory and practices, vikas publishing House Pvt. Ltd., New Delhi, 1978.
13. Newson, M. Land, Water and Development River Basin systems and their sustainable Management. Routledge, London, 1992.
14. Pareira, H.D.: Land use and water Resources, Cambridge university press, Cambridge, 1973.
15. Rao, K.L.: India's Water Wealth orient Longman, New Delhi, 1979.
16. Singh, R.A. and Singh, S.R.: Water Management: Principles and Practices, Tara Publication, Varanasi, 1979.
17. Smith, K.: Water in Britain: A study in Applied Hydrology and Resource Geography. McMillan, London, 1972.
18. Tebbutt, T.H.Y. (ed.): Advances in water Engineering Elsevier Applied science Pub., London 1985.
19. Tideman, E.M. Watershed Management: Guidelines for Indian Conditions, Omega, New Delhi, 1996.
20. Todd, D.K.: Ground water Hydrology, John Wiley, New York 1959.
21. U.S.D.A. : The Year Book of Agriculture : Water, Oxford and I.B.H. Publishing Co., New Delhi, 1955.

22. Verghese, B.G.: Water of Hope: Integrated water Resource Development and Regional Co-operation within the Himalayan-Ganga-Brahmaputra-Barak Basin, Oxford IBH, New Delhi, 1990.

White, G.F.L.: Environmental Effects of Complex River Development, Westriver press, Boulder, Colorado, 1977.

GEO G02 Agricultural Geography

Section-A

Concept, origin and dispersal of agriculture.

Physical factors: Relief, slope, soils, water-its availability and quality climate (rainfall, temperature, sun shine, humidity, winds).

Economic factors: Land tenure, transport, marketing and trade, prices, level of mechanization, labour, capital fertilizers, irrigation, sources of energy in agriculture, size of holdings & agriculture.

Water-Water resources, quality, criteria of water of irrigation, water requirement of important crops. Adverse effects of irrigation and their control.

Types of agriculture shifting cultivation, plantation, agriculture, Mediterranean type, collective and state farming extensive and intensive agriculture and their characteristics.

Section-B

Agricultural land use: concept and history, land use surveys, land classification: need and basis of land classification, British pattern, American pattern, Indian pattern, land capability.

Model in agricultural land use Von Thunen's agricultural location theory. Green revolution in India. Dairy development, Agro forestry: importance, status and scope in India.

Section-C

Measurements of the levels of agricultural development-Concept and methodology. Agricultural regionalization-Concept, methods of delimitation Traditional and statistical methods. Crop-ranking, Crop-combination regions-meaning; need and methodology, (Detailed study of Kendal's Weaver's Crop-Diversification, Concentration.

Agricultural efficiency-concept, methods of measurement, Agro-climatic zones of India with special reference to Rajasthan.

Books Recommended

1. Ali Mohammad: Situation of Agricultural Geography, Rajesh publication, New Delhi, 1981.

2. Ali Mohammad: Situation of Agricultural, Food and Nutrition in Rural India, Concept Publishing Co., Delhi.
3. Ali Mohammad: Dynamics of agriculture Development in India, Concept publication Co., Delhi.
4. ICAR: Soil and water Conservation Research (1956-71).
5. ICAR: Soil Conservation of India
6. Kostowickie, Z.: Agricultural Typology, Polish Academy Warsaw.
7. Noor Mohammad, Agricultural Land use in India, Inter-India public, Delhi.
8. Singh P.P., Govind Raju, K.C. and others: New seeds Adoption and yield, sterling publication Pvt. Ltd., New Delhi.
9. Singh, Jasbir: Agricultural Atlas of India, Vishal Publishers.
10. Singh, Jasbir: Agricultural Geography of Haryana.
11. Singh, R.L. (Ed.): Applied Geography, BHU Press, Varanasi.
12. Symon Lesin: Agricultural Geography, G. Gell and Sons Ltd., London, 1967.

GEO H01: Industrial Geography

Section-A

Location factors in manufacturing, concept of optimum location. Significance of cost and price. The Least Cost School and the Transport cost school. The Market Areas school, the Marginal Location school, the Behavioural School. New Trends in industrial Geography. Testing Location Theory, Empirical studies, Significance of Enterprise and Firm.

Section-B

Important Industrial Regions of India. Formation of Industrial Regions, Industrial Regions in India. Study of the following regions: The Hooghly side Industrial Regions, The Damodar Valley Industrial Regions, The Ruhr Basin Industrial Region, The Great Lakes Industrial Region.

Section-C

Influence of power and Geographical Inertia in Manufacturing Industries: The Textile Industry, Multi-locational industries, Iron and steel, Market Oriented Industries, The Pulp and Paper. Furniture, Foot lose Industries. Automobile, Building, Raw Material Oriented Industries. copper.

Books Recommended

1. Lloyd and Dicken: Location in Space: A theoretical Approach to Economic Geography.
2. M.C. Cart and Lindberg Hodder and Lee Economic Geography: A preface to Economic Geography.
3. Smith, D.E. Cox K.P. Man: Industrial Location. A Economic, Geographical Analysis Location and Behaviour- An Introduction to Human Geography.
4. Riley, R.C.: Industrial Geography, 1973 Chalton and Windus, London.
5. Alexanderson Gnnar: Geography of Manufacturing (Englewood Cliffs, N.J.).
6. Alexander, J.W. : Economic Geography (Prentice Hall, New York).
7. Bengston, N.A.: Fundamentals of Economic Geography (Prentice Hall, New York).

8. Besoh, H.: A Geography of world Economy (D. Van Nostrand).
9. Britton, John. N. H.: Regional Analysis and Economic Geography (G. Bell and Sons, London).
10. Estall, R. C. and Buchanan, R. O.: Industrial Activity and Economic Geography (Hutchinson and Co., London).
11. Ghose, B. C.: Industrial London.
12. Hoover, E. M.: The Location of Economic Activity, (Mc Graw Hill Books Co. New York).

GEO H02: Biogeography

Section-A

Meaning and scope of Bio-geography, History of Zoo-geography and plant geography. Plant and Animal Ecology, Ecosystems-with special reference to mountain and desert. Energy flow in ecosystem.

Plant response to environment, the habitat and climatic factors, Taxonomic and Ecological classification of plant. Ecological succession. concept of Biome, Ecotone and community. Factors controlling forest distribution. Characteristics and distribution of tropical forest and grassland.

Section-B

Origin of Fauna and Flora, Taxonomic classification of animals, Animals classification according to general characteristics of Environment. Barriers to distribution and means of dispersal of terrestrial animals. The effect of environment selection on animal distribution of animal; graphical isolation distribution of Animals: The Zoo-Geographical region.

Section-C

Aquatic environment and life, Marine and fresh water fauna Distribution of world fisheries in India. Conservation of natural resources: Forests and wild life and their management and conservation (with reference to India). Process of desertification, its consequences and management principles. Environmental pollution, courses and control with special reference to air and water. Bio-Geo-chemical cycles.

Books recommended

1. Robinson, H.: Biogeography, Else, Mc. Donald and Evans London 1982.
2. Odum, E. P.: Fundamentals of Ecology, W. B. Sanders.
3. Mathur, H. S.: Essentials of Biogeography, Pointer Publishers, Jaipur, 1988.
4. Newbegin: Plant and Animal Geography.
5. Alar Schmid: Economical Animal Geography.
6. Cline: Foundation of plant Geography.
7. G. Ponal: The Geography of flowering plants.
8. Newbegin: Animal Geography.
9. Darlington: Zoo-geography
10. Schimper: Plant Geography
11. Morris, J. Soloman: Better plant Utilisation in India. A Blue print of Action (I. S. Calcutta)
12. S. L. Hora: Fundamental coception of Zoo-geography (NGSI, Banaras)

13. S.L.Hora:Torrential fishes and the significance of their distribution in geographical studies NGSi,Banaras.
14. M.L.Roonwal:Geographical and Geological causes of the Migration of Animals(NGSI,Banaras)