



UNIVERSITY DEPARTMENT OF GEOGRAPHY
LALIT NARAYAN MITHILA UNIVERSITY
KAMESHWARNAGAR, DARBHANGA

1.3.1 List and description of the Courses which address the Gender, Environment and Sustainability, Human Values, and Professional Ethics.

Name of the Program: MA (GEO)

SI. No.	Name of the Course/Paper	Paper/Course Code	Offered to	Issues	Description
1	Environmental sustainability & Swachh Bharat Abhiyan	AECC-1	M.A. 1st Sem.	Environmental sustainability	Enrich the knowledge of Environmental sustainability and responsibility conserve natural resources and protect global ecosystems to support health and wellbeing and other important benefits of cleanliness.
2	Environmental Law	SEC-1	M.A. 2nd Sem.	Environmental sustainability	Enrich the knowledge to the students about Environmental impact assessment, different laws to protect land, air, water and soils, legal issues and understanding the implications of environmental laws.
3	Human values and professional Ethics and Gender sensitization	AECC-2	M.A. 3rd Sem.	Human values and professional Ethics and Gender sensitization	Understand the concept, Process and importance of Human values orient about the society, social life, and integrity in personal and public life. Learning the concepts of human values and respect for others provides an in depth understanding of moral awareness and inculcate a sense of socially responsible citizens.

M. A. GEOGRAPHY (SEMESTER - I)

Code -GEO – CC-1 (Core Course- 01) Geomorphology (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Concept of Isostacy: Views of Airy & Pratt
Continental Drift Theory and Plate Tectonics
Theory of Sea Floor Spreading

Unit II Morphogenic Evolution Models of Davis, Penck and King
Models of Slope Analysis
Rejuvenation and Multiple Cycle of Erosion

Unit III Classification and Evolution of: Arid Landforms
Glacial Landforms
Periglacial landforms
Karst landforms

Unit IV Earth Movements: Endogenetic & Exogenetic Force
Folding; Faulting; Land Slides; Earthquake ; Vulcanicity

Unit V Meaning and Scope of Applied Geomorphology
Application of Geomorphology in engineering projects and oil exploration
Morphometric Analysis of Drainage basin – Stream Order, Sinuosity Index and
Drainage Density

CIA 30 Marks

Selected Readings:

1. William, D. Thornbury - Principles of Geomorphology
2. Savindra Singh - Geomorphology
3. Enayat Ahmed - Geomorphology
4. P. Dayal- Geomorphology
5. V. K. Sharma - Geomorphology Earth Surfaces
6. Wooldridge and Morgan - An Outline of Geomorphology
7. R. N. Tikka - Physical Geography
8. P. K. Sen and N. Prasad - An Introduction to the Geomorphology of India
9. D. S. Lal - Physical Geography
10. Cotton - Geomorphology.
11. Sparks, B.W., Geomorphology.
12. Steers, J.A., Unstable Earth.
13. Strahler, A.H. & Strahler, A.H., Elements of Physical Geography.
14. Von Engeln., Geomorphology.
15. Daly: Our Mobile Earth

Code - GEO –CC- 2 (Core Course-02) Climatology and Oceanography (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Composition and Structure of Atmosphere
 Insolation; Heat Budget and Heat Balance

Unit II Winds: Permanent and Local
 Airmasses: Characteristics and Classification
 Fronts, Types of Fronts and associated Weather Conditions
 Techniques of Weather Forecasting
 Cyclones and Anticyclones

Unit III	Theories of climatic change and Evidences and Causes of Climatic Change Climatic Classification: Koppen, Thornthwaite , Trewartha Global Warming: Causes and Consequences El-Nino and La-Nina phenomena in Indian context
Unit IV	Oceanography: Relief Features of Ocean Floor Bottom Relief of Indian and Atlantic Ocean Submarine Canyons
Unit V	Salinity and Ocean Currents Theories of Origin of Tides Coral Reef: Types and Theories
CIA 30 Marks

Selected Readings:

1. Savindra Singh – Climatology
2. D. S. Lal – Climatology
3. A. Miller – Climatology
4. E. Aguado E. and J. E. Bent: Understanding Weather and Climate
5. Alka Gautam – Jalvayu Abum Samudra Vigyan
6. Sharma & Vatal – Oceanography for Geographers
7. Blair, T.A., Climatology-General and Regional.
8. Chorley, R.J. & Barry, R.G., Atmospheric Weather and climate.
9. Donn, W.L.. Meteorology.
10. Kendrew, W.G., Climates of the Continents.
11. Mather, J.R.. Climatology: Fundamental and Applications, 1974.
12. Rama Sastry, A.A., Weather & Weather forecasting.
13. Rumsey, G., Climatology and the world's climate.
14. Stringer., Foundation of Climatology.
15. Stringer., Techniques in Climatology
16. Trewartha, G.T., An Introduction to Climate.
17. Davis, R.J.A. 1986, Oceanography – An Introduction of the Marine Environment, Win C. Brown, Iowa.
18. Murray, S.J., 1913, Ocean, A General account of the Science of the sea, Thorton Butter Worth, London.
19. Siddhartha, K. 1999, Oceanography, A Brief Introduction, Kisalaya Pub. Pvt. Ltd., New Delhi..
20. Stahler, A. N. Stahler A.M., 1997, Geography and man's Environment, John Wiley and Sons, New York.
21. Thurnman, H.V., 1978, Introduction to oceanography, Charles E. Merrill Pub. Co., London.
22. Weyl, P.K. 1970, Oceanography an Introduction of the Marine Environment, John Wiley and Sons Ltd., London

**Code - GEO – CC-3 (Core Course-03)
History of Geographical Thought (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit – I Contribution by Greek and Roman Scholars with special reference to Eratosthenes, Herodotus, Aristotle, Strabo, Ptolemy
Contribution by Arab scholars
Development of Geographical ideas in Ancient India

Unit II Dualism in Geography: Determinism vs Possibilism, Physical vs Human, Systematic Vs Regional; Development of Geography during 19th century
Concept of Space- Absolute, Relative and Abstract
Development of Geography in India

Unit III Positivism and Pragmatism
Paradigms and Paradigm Shift
Quantitative Revolution: Merits and Demerits.
Models – Definition and Types

Unit IV Applied Geography
Behavioural Geography
Radical Geography
Humanistic Geography

Unit V Structuralism
Functionalism
Feminism
Post-Modernism

CIA 30 Marks

Selected Readings:

1. Johnston R. and Sidaway J. (1997) Geography and Geographers
2. Richard Pee (1998) Modern Geographical Thought
3. Milton E. Harvey & Brian P. Holly (ed.) (1989): Themes in Geographical Thought
4. D. Harvey (1969) Explanation in Geography
5. R. Doi (2009) Geographical Thought
6. M. Hussain (2004 rep) Evolution of Geographical Thought
7. S. Adhikari (2009 5th Ed.)Fundamentals of Geographical Thought
8. R. D. Dikshit (2002): Geographical Thought: A Conceptual History of Ideas
9. Jagdish Singh (2000) Bhaugolik Chintan Ka Mool Adhar (Hindi)
10. Kaushik (2009) Bhaugolik Chintan avam Bidhitanta (Hindi)
11. V. K. Srivastava (2002) Bhaugolik Chintan Ka Adhar (Hindi)
12. Bansal (2008) BhaugolikChintan (Hindi)
13. Lalit Raina (2008) Geographical Thought (English)
14. Ali, S.M., Arab Geography, AMU., Press, Aligarh.
15. Anuchin, V.. Directions in Geography.
16. Claval, P., Epistemology and History of Geographical Thought, in progress in Human Geography, Vol.4.
17. Dickinson, R.E., The Making of Modern Geography.
18. Davis, V.K., Conceptual Revolution in Geography.

**Code - GEO –CC-4 (Practical) (Core Course-04)
Representation and Analysis of Statistical Data (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

In the End Semester Examination questions will be set preferably from each unit out of which candidates are required to answer any three questions.

Each Question will carry 20 marks. ($20 \times 3 = 60$ marks)

Practical record and viva voce will comprise 10 marks

Unit I	Population Data - Pie Diagram, Proportionate Circle, Spherical Diagram
Unit II	Climatic Data - Wind Rose, Foster's Climograph, Multiple Line Graph, Interpretation of Weather maps and Topographical maps
Unit III	Economic Data – Band Graph, Traffic Flow Diagram Density of Population – Choropleth and Isopleth Method
Unit IV	Statistical data - Correlation, Regression and Nearest Neighbor Analysis
Unit V	Practical Record and Viva-Voce
CIA30 Marks

Selected Readings:

1. Monkhouse and Wilkinson - Maps and Diagrams
2. Mahmood, Aslam, "Statistical Methods for Geographical Studies"
3. Campbell, J., *Introductory Cartography*, Prentice Hall, Inc., Englewood Cliff, New Jersey, 1984.
4. Cuff, D.J., & Mattson, M.T., *Thematic Maps, their Design and Production*, Methuen, New York, 1982.
5. Robinson, A.H. & others., *Elements of Cartography*, John Wiley and Sons, New York (New edition).
6. Archer, J.E., & Dalton, T.H., *Fieldwork in Geography*, London.
7. National Atlas and Thematic Maps Organization (NATMO): *National Atlas of India*, Calcutta.
8. Monkhouse, F.J., *Maps and Diagrams*, Methuen & Co., London, 1967.
9. डॉ जॉ शर्मा प्रयोगात्मक भूगोल की रूपरेखा
10. डॉ चतुर्भुज मानोदिया एवं अंदामालजैन-मानविक्रीकरण एवं प्रायोगिक भूगोल
11. डॉ शमि शमि शिंहा एवं डॉ शीमावाला-उच्चकार्टोग्राफी
12. Sarkar, A. 2015. *Practical Geography: A Systematic Approach*, 3rd ed, Orient Blackswan Private Ltd.
13. Singh, R.L., Singh, R.P.B. 2008. *Elements of Practical Geography*, Kalyani Publishers.

M. A. GEOGRAPHY (SEMESTER - II)

Code - GEO – CC-5 (Core Course-05) Regional Planning and Rural Development (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I	Regions: Concept and Typology Formal and Functional Region Planning Process – Sectoral, Temporal and Spatial Dimensions
Unit II	Special Purpose Planning Regions in India: River Valley Regions Metropolitan Region Problem Regions – Hilly Regions, Tribal Regions
Unit III	Indicators of Development Concept of Planning Region and Methods for Delineation of Regions Regional disparities in India Need for Regional Planning in India Regional Development in India – Problems and Prospects.
Unit IV	Concept of Multi Level Planning Role of Panchayati Raj Institutions in Rural Development Defining Development and Rural Development; Gandhian approach to rural development
Unit V	Area Based Approach to Rural Development: Drought Prone Area Programme, PMGSY Target Group Approach MGNREGA, Jan Dhan Yojana and PURA Health Care Planning and Policies in India
CIA 30 marks

Selected Readings

- 1.Bhatt, L.S., 1973, Regional Planning in India, Statistical Publishing Society, Calcutta.
2. Chandana, R.C., 2000, Regional Planning, Kalyani Publishers Ludhiana.
3. Chand, M., Puri, & V.K., 1983, Regional Planning in India, Allied Publishers, New Delhi.
4. Friedman,J.,&Alonso,W,1967 Regional Development and Planning-A Reader,MIT Press, Cambridge Hars.
5. Glasson, 1980, Regional Planning, Hutchinson, London.
6. Glikson, A., 1955, Regional and Development, Netherlands, Universities Foundation of International Corp, London.
7. Mishra, R.P., 1969, Regional Planning Concepts, Techniques and Policies, University of Mysore,Mysore.
8. Mishra R.P, et.al., 1974, Regional Development and Planning in India, Institute of Development Studies, Mysore.
- 9.Rao, V.L.B., 1960, Regional Planning, Asia Publishing House, New Delhi.
- 10.Kant Surya et.al (eds): Reinventing Regional Development, Rawat Publication, Jaipur and N.Delhi.
- 11.श्रीवास्तव शर्मा एवं चौहान-प्रादेशिक नियोजन एवं संतुलित विकास
- 12.Singh, K., Rural Development, SAGE

Code - GEO – CC-6 (Core Course-06)

Environment and Disaster Management (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Meaning and Scope of Environmental Geography, Environmentalism

Ecology and Dynamics of Ecosystem

Types of Ecosystem- Marine and Terrestrial

Unit II Environmental Degradation: Causes and Effects

Pollution - Air Pollution, Water Pollution, Soil Pollution

Biodiversity Hotspot in India, Conservation: Ex-Situ & In-Situ, IUCN- Red DataBook

Unit III	Global Warming – Causes and effects Sea-level changes Ozone depletion Climatic changes
Unit IV	Environmental Hazards and Disasters: Flood and Droughts in India; International Environmental Treaties: The Stockholm Conference, Earth Summit, Kyoto Conference, Convention on Biodiversity: Agenda 21, SDG, Paris Agreement National Action Plan on Climate Change in India
Unit V	Disaster – Man-made disasters, their types – Technological and Industrial Disasters. Man-made disasters – Examples from India Mapping the Disasters
CIA 30 Marks

Selected Readings:

1. Gaur, S., and Chandrashekhar, T., 2006, Global Environmental Crisis, Book Enclave, Jaipur.
2. Chandna, R.C., 1998, Environmental Awareness, Kalyani Publishers, New Delhi.
3. Gupta, P.D., 2003, Environmental Issues for the 21st Century, Mittal Publications, New Delhi.
4. Morris, D., Freeland, J., Hinchliff, S., Smith, S. (ed.), 2003, Changing Environments, Pd. John Wiley and Sons Ltd., The Open University, U.K.
5. Park, C.C., 1980, Ecology and Environmental Management, Butterworths, London.
6. Radha, S., and Sankhyan, A.S., (ed.), 2004, Environmental Challenges of the 21st Century, Deep Publications, New Delhi.
7. Rasure, K.A.. 2007, Environment and Sustainable Development, Serials Publications, New Delhi.
8. Saxena, H.M., 2006, Environmental Studies, Rawat Publications, Jaipur.
9. Singh, S., 1991, Environmental Geography, Prayag Publication, Allahabad.
10. Strahler, A.N., and Strahler, A.M., 1997, Geography and Man's Environment, John Wiley and Sons, New York.
11. Taj, B., Murphy, P. and Rana, P.S., 2007, Environmental Impact Assessment, An Indo – Australian Perspective, Bookwell New Delhi.
12. Verma, S. B. and Shiva, K.S.,(ed.), 2005, Environmental Protection and Development, Deep Publications, New Delhi.
13. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
14. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Pub. , New Delhi.
15. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
16. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.
17. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
18. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
19. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.

Code - GEO – CC-7 (Core Course-07)
Resource and Economic Geography (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Factors affecting Economic activities
Natural Resources: Conservation and Management with special reference to Water Resources and Biotic Resources
Energy Resources: Conventional & Non-Conventional
World Energy Crisis

Unit II Von Thunen's Model of Land use Planning
Crop Diversification, Agricultural Productivity
Crop Combination Region: Weaver, Doi & Rafiullah
Food Production and Food Security

Unit III Distribution and Production in the World: Iron, Copper and Atomic minerals
Industrial regions of USA and Japan

Unit IV Weber's Model and Smith's Model of Industrial location
Iron and Steel Industry of the World with special reference to China and India
Petro-Chemical Complexes with Reference to India

Unit V World Trade Theories and Pattern
Impact of Globalization on World Economy
Role of WTO in World Trade
Concept of Export Processing Zone and SEZ (Special Economic Zone)

CIA 30 marks

Selected Readings:

1. Alexander, J. W. & Hartshorne, T. A. (1995): Economic Geography.
2. Hussain Majid, Economic Geography
3. Guha, J. L., & Chattoraj, P. R. (1998): A New Approach to Economic Geography: A Study of Resources
4. Singh, J & Dhillon, S. S. (1984) Agricultural Geography, New Delhi, Tata McGraw Hills.
5. Boesch, H., A Geography of world Economy.
6. Brian, J.L., Berry et al., The Geography of Economic Systems.
7. Barlow, M.H. & R.G. Newton., Patterns and Processes in Man's Economic Environment.
8. Chisholm, M., Geography and Economics.
9. Jones, C.F., Economic Geography.
10. Grigg, D.B., Agricultural Systems of the World: An Evolutionary.
11. Lloyd, P. & P. Dickens., Location in Space; A Theoretical Approach to Eco. Geo.
12. Strahler, A.N. & A. Strahler., Geography and Man's Environment.
13. Thoman, R.S. & E.C. Conkling., The Geography of Economic Activity.
14. Thoman, R., "Econ.Geog." in International Encyclopaedia of S.Science.
15. Miller, E. & E. Willard., A Geography of Manufacturing.
16. Mc. Cart, H. & J.B. Lindberg., A preface to Economic Geography.
17. Von Royen, W., Fundamentals of Economic Geography.
18. William Von Royen, et. al., Fundamentals of Economic Geography.
19. Zimmerman, E.W., World Resources and Industries.
20. Hartshorn, T.A., Economic Geography.
21. Majid Husain, Economic Geography

**Code - GEO CC-8 (Core Course-08)
Geography of India (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below**Part – A**

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I India – Relief and Structure; Peninsular and Himalayan Drainage
 ↘Origin and Mechanism of Indian Monsoon
 Soils of India: Their types, Soil Erosion and Conservation

Unit II	Forest Resources in India Sources of Power: Coal, Petroleum and Hydro-electricity, Non Conventional Sources of Energy
Unit III	Industrial Regions of India Industrial Policy of India: Concentration and Dispersal Agricultural Revolutions in India – Green, Blue, Yellow and White
Unit IV	Human Resources and Social well being: Social well- being and its indicators Human Development Index (HDI) Food Problems and Food Security in India Cultural Regions of India
Unit V	Spatial distribution of Tribes, Major Linguistic Groups and Ethnicity, Social and Gender inequality in India
CIA 30 Marks

Selected Readings:

1. Spate O. H. K. & Learmont- Geography of India & Pakistan
2. Ramamoorthy&GopalKrishnam - Geography of India
3. Singh, Gopal - Geography of India
4. Singh, Jagdish - INDIA: A Comprehensive Systematic Geography
5. Puri, G.S., Indian forest Ecology, New Delhi.
6. Ray Chaudhary, S.P. Land and soil, New Delhi
7. Krishnan, M.S.. Geology of India and Burma
8. Das, P.K., The Monsoon, New Delhi
9. Wadia, D.N., Geology of India, London.
10. चतुर्भुज मर्मारिया - भारतकाभूगोल
11. चौहान बी० एस० एवं गौतमअलका - भारत : A Geography of India
12. सिंह ए गोपाल- भारतकाभूगोल

Code - GEO – CC-9 (Practical) (Core Course-09)
Cartographic Techniques (5 Credits)

Time: 3 Hours (ESL)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

In the End Semester Examination questions will be set preferably from each unit out of which candidates are required to answer any three questions.

Each Question will carry 20 marks. ($20 \times 3 = 60$ marks)

Practical record and viva voce will comprise 10 marks

Unit I	Cartograms: Hypsographic, Climographic and Altimetric Frequency Curve
Unit II	Relief Profiles: Serial, Superimposed, Composite and Projected Slope Analysis by: Smith, Henry and Wentworth Methods
Unit III	Map Projections: Mercator's, Sinusoidal, Gall's and International Projection
Unit IV	Interpretations of Aerial Photographs, Satellite Imagery Geological section and Interpretation of Geological Maps
Unit V	Practical Record and Viva-Voce
CIA30 Marks

Selected Readings:

1. Monkhouse and Wilkinson - Maps and Diagrams
2. Mahmood, Aslam, "Statistical Methods for Geographical Studies"
3. Campbell, J., Introductory Cartography, Prentice Hall, Inc., Englewood Cliff, New Jersey, 1984.
4. Cuff, D.J., & Mattson, M.T., Thematic Maps, their Design and Production, Mathuen, New York., 1982.
5. Robinson, A.H. & others., Elements of Cartography, John Wiley and Sons, New York (New edition).
6. Archer, J.E., & Dalton, T.H., Fieldwork in Geography, London.
7. National Atlas and Thematic Maps Organization (NATMO): National Atlas of India, Calcutta.
8. Monkhouse, F.J., Maps and Diagrams, Methuen & Co., London, 1967.
9. Singh and Singh - Practical Geography
10. Spurs S.H., Photogrammetry & Photo Interpretation, New Delhi., 1960.
11. Stershew, A.I., Aerial Photography.
12. Tomar, M.A. & Maslakar, A.R., Aerial Photographs in Landuse & Forest Survey, Dehra- Dun,
13. Thomas, E.A., Interpretation of Aerial Photographs, Minnesota.
14. Usill, G.W. (Revised by Hearn, G.S.G) Pract. Surveying, London, 1960.
15. White, L.P., Aerial Photography & Remote Sensing for Soil Survey.
16. Campbell, James, B., Introduction to Remote Sensing- 2nd Edi. Taylor & Francis, London
17. Platt and Charliner – Simple Geological Structures
18. डा० जे० पी० शर्मा-प्रयोगात्मकभूगोल की रूपरेखा
19. डा० पी० आर० चौहान-प्रयोगात्मकभूगोल
20. डा० चतुर्भुजमायोरिया एवं ऊदामलजैन-मानचित्रांकन एवं प्रायोगिकभूगोल
21. डा० हीरालाल प्रयोगात्मकभूगोल
22. डा० एम० एम० पी० मिन्हा एवं डा० सीमाबाला-उच्चकार्टोग्राफी
23. सिंह जगदीस और वी. पी. राव - भौमिकीय मानचित्रों की रूपरेखा

M. A. GEOGRAPHY (SEMESTER – III)
Code - GEO – CC-10 (Core Course-10)
Quantitative Techniques and Research Methodology (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Quantitative Methods in Geography: Merits and limitations, Research types and Methodology, Research Problems and Research Design, Review of Literature

Unit II Data collection and classification, Questionnaire and Schedules, Sampling Types – Random, Stratified and Purposive.

Unit III Hypothesis: Concept and Types, Procedure for Hypothesis Testing, Chi-Square Test, Student's 't' Test

Unit IV Correlation Coefficient Techniques-Pearson and Spearman, Simple Linear Regression Analysis, Analysis of Variance (ANOVA), Multivariate Analysis-Importance and its Application

Unit V Models and Analogue, Types of Model, Gravity Potential Model, Population Potential Model

CIA 30 Marks

Note: Use of MS-EXCEL shall be promoted during the classroom teaching

Selected Readings:

1. Mahmood, Aslam, "Statistical Methods for Geographical Studies"
2. Koshari, K. C., "Research Methodology in Social Sciences"
3. Suleman, M., Research Techniques and Methods in Social Sciences
4. Adhikari, S. (2005): Fundamentals of Geographical Thought, Allahabad
5. Chorley, R. J. & Haggett, P. (ed.) (1967): Models in Geography, London

6. Hartshorne, R. (1994 Indian Print): The Nature of Geography, Jaipur, Rawat Publication
7. Harvey: Explanation in Geography
8. Kaushik D., S. D. (2001) Bhougolik chintan aur Vidhitantra (Hindi)
9. Hammond / Mc Cullah., Quantitative Techniques in Geography, Oxford, 1974.
10. Gregory, S., Statistical Method for Geography, Longman, 1975.
11. Berry, B.J.L., & Marble, D.F., Spatial Analysis: A Reader in Statistical Geography, New Jersey, 1968.
12. Cole, J.P., & King, C.A.M., Quantitative Methods in Geography, New York, 1968.
13. King, L.J., Statistical Analysis in Geography, New Jersey.
14. Johnson, R.J., Multivariate Statistical Analysis in Geography, 1978.
15. Elhance, D.N., Elementary Statistics.
16. Pal, S.K., Statistical Methods in Geography.
17. Alvi, Zamiruddin., Statistical Geography.

**Code - GEO – CC-11 (Core Course-11)
Remote Sensing and Geographical Information System (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Meaning and Definition of Remote Sensing, Historical Development, Significance and Utility of Remote Sensing in Geography.

Unit II Remote Sensing Platforms, Geo-Stationary and Sun-Synchronous Satellites: LANDSAT, IRS, and QUICK- BIRD Series.

Unit III Sensors and Resolution, Interpretation of Aerial Photographs and Satellite Imagery, Digital Elevation Model (DEM)

Unit IV Concept and Principles of GIS, Elements of GIS, Nature and Source of Data Projection and Georeferencing, Digital cartography.

Unit V GIS Data Structure: Raster Vs. Vector Data structure, G.P.S.: Concept and Applications, Application of Remote Sensing and GIS : Land Information System, Urban Management and Disaster Management.

CIA 30 marks

Selected Readings:

1. Avery, T. E. (1962): Interpretation of aerial photograph. Minneapolis.
2. Dury, G. M. (1952): Map Interpretation
3. Cunam, R. J. (1985): Principles of Remote Sensing.
4. Lillesand, T. M. & Kiefer, R. W. (1979): Remote Sensing and Image Interpretation. New York.
5. Sabins, F. F. (1997): Remote Sensing and Interpretation. New York.
6. Campbell, J. B. Introduction to Remote Sensing, London.
7. Fraser Taylor, D. R. (1991): Geographical Information System, London.
8. Devidatt Chauniyal, Sudoor Samvedan evam Bhaugolik Soochna Pranali.
9. Siddiqui. An Introduction to Geographical Information System.
10. American Society of Photogrammetry: Manual of Photographic Interpretation , Banta Pub. Co., Wisconsin, 1960.
11. Barett, E.C. & Curtis, L.F., Introduction of Environ. Remote Sensing, 1976.
12. Hord, R.M., Remote Sensing: Methods and Applications, N.Y., 1986.
13. Lender, D.R., Aerial Photographic, Mc Graw Hill, N.Y., 1960.
14. Luder, D., Aerial Photography Interpretation: Princ. and Appl., McGraw Hill, New York., 1959.
15. Lilles & Kiefer, Remote Sensing & Image Interpretation.
16. Reeves, R.G.(Ed.) Manual of Remote Sensing (Vol.2), Virginia, 1975.
17. Smith, H.T.V., Aerial Photographs & their Applications, New York, 1943.
18. Spurs S.H., Photogrammetry & Photo Interpretation, New Delhi., 1960.
19. Stershew, A.I., Aerial Photography.
20. Tomar, M.A. & Maslakar, A.R., Aerial Photographs in Landuse & Forest Survey, Dehra Dun.
21. Thomas, E.A., Interpretation of Aerial Photographs, Minnesota.
22. Usill, G.W. (Revised by Hearn, G.S.G) Pract. Surveying, London, 1960.
23. White, L.P., Aerial Photography & Remote Sensing for Soil Survey.

**Code - GEO – CC-12 (Core Course-12)
Human and Social Geography (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

C C-12
Human Geog. & Social Geog.

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part - C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I

Meaning, Definition and Scope of Human Geography
Approaches to Human Geography, Critical Human Geography
Growth, Distribution and Density of World's Population
Migration: Causes and Consequences

Unit II

Human Settlement: Types and Patterns of Rural Settlements.
Processes and Pattern of Urbanization in the World. (Urbanization and Related problems)
Primate City & Rank-Size Rule
Megacities, Global cities & Edge cities

Unit III

Meaning and Scope of Social Geography
Cultural Evolution of Man
Major Human Races in the World- Negroid, Mongoloid, Caucasoid
Major World Religions: Their Origin, Diffusion and Spatial Distribution.
Major World Languages: Their Origin, Diffusion and Spatial Distribution.

Unit IV

Concept of Social Justice and Social Well-being.
Social Structure, Process and Social Pattern.
Components of Quality of Life and its Spatial Pattern
Globalization and Social Transformation.

Unit V

Spatial Distribution of Social Groups in India:
Tribes, Caste, Religion and Language

CIA

..... 30 Marks

Selected Readings:

1. An Introduction to Social Geography, Emery Jones and John Eyles
2. Cultural Geography – Mike Crang
3. Sociology and Social Anthropology – M. S. Golal
4. Social Geography – A. Ahmad
5. Social Geography – Majid Husain

6. Social Geography – Ruth Panelli
7. Rural Sociology in India – A. R. Desai
8. Readings in Social Geography – Emery Jones
9. Human Geography – Paul. L. Knox, S. A. Marston
10. International Encyclopedia of Geography, Vol. VIII (Social Geography) – Subhash Mehtani, Amarjit Sinha, Common Wealth Publication Pvt. Ltd., New Delhi
11. Cultural Geography: Form & Process – Neelam Grover and Kashi Nath Singh, Concept Publishing Company, Delhi
12. Social Geography of India – Ashok Kumar, Anmol Publications, New Delhi
13. सांस्कृतिक भूगोल – श्रीकान्तदीक्षित एवंरामदेव त्रिपाठी, वसुन्धराप्रकाशन, गोरखपुर
14. सामाजिक भूगोल – डॉ एस० डी० मौर्य
15. सांस्कृतिक भूगोल – इन्द्रा सिंह, युनिवर्सिटीपब्लिकेशन, नयीदिल्ली
16. सांस्कृतिक भूगोल – गायत्री प्रसाद

Code - GEO – CC-13 (Core Course-13)
Land use and Agriculture Geography (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100
 ESE : 70 Marks
 CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Agriculture and Agricultural Geography
 Origin and development of Agriculture
 Model of Landuse : Von Thunen, Jonassan

Unit II	Landuse Survey and classification: U. K. and India Landuse pattern in India Land capability classification Planning of Landuse in India
Unit III	Factors influencing Agricultural Pattern Innovation and Technology in Agriculture Agricultural Systems of the world Delineation of Agricultural regions
Unit IV	Measurement of Agricultural productivity and efficiency Crop-combination and Crop diversification Methods of Delineating Crop combination region: Weaver & Rafiullah
Unit V	Green Revolution and White Revolution in India Cropping pattern and Agro-climatic regions of India Agricultural problems and policies, Food Security in India
CIA 30 Marks

Selected Readings:

1. Hussain,Majid – Agriculture Geography
2. Singh J. & Dhillon, S. S. – Agriculture Geography
3. B. S. Negi–KrishiBhugol
4. Sharma , B. L. – KrishiBhugol
5. Wrigley – Tropical Agriculture
6. Ali Mohammad – Studies in Agriculture Geography
7. Krishna, D. – The New Agricultural Strategy
8. Dutta and Sundaram–Indian Economy
9. Kumar, Pramila and Sharma, S.K. : Krishi Bhoogol
10. Smith, T.P. Bayliss: The Ecology of Agricultural Systems
11. Morgan, W.B. and Norton J.C.: Agricultural Geography
12. Singh, B.B.: Krishi Bhoogol
13. Symons, I.: Agricultural Geography
14. Shafī, M: Agricultural Geography
15. Tiwari, R.C. and Singh, B.N.: Krishi Bhoogol

Code - GEO – CC-14 (Practical) (Core Course-14)
Maps and Surveying (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

In the End Semester Examination questions will be set preferably from each unit out of which candidates are required to answer any three questions.

Each Question will carry 20 marks. ($20 \times 3 = 60$ marks)

Practical record and viva voce will comprise 10 marks

Unit I Survey by Levelling instrument
Prismatic Compass and Theodolite

Unit II Types of Maps, Techniques of Map Making,
Data Representation on Maps: Pie, Bar, Line Graph

Unit III Digital Image Processing
Georeferencing using GIS
Digitization of Maps

Unit IV Field Study Report/ Excursion

Unit V Practical Record and Viva-Voce

CIA 30 Marks

Note: Departments are requested to introduce open source software like Q GIS

Selected Readings:

1. M. M. P. Sinha & Seema Bala– Advanced Cartography (mPdkVksZxzkQh)
2. Kanetkar – Surveying and leveling Vol. I & II
3. Punamia- Surveying Vol. I, II & III
4. J. P. Sharma – ç;ksxkRed Hkwxksy dh :ijs[kk
5. Punmia, B.C., Surveying and Leveling, Vol I.
6. Alvi, Zamiruddin, A Text Book of Surveying
7. Basak, N.N. 2017. Surveying and Levelling, 2nd ed, McGraw Hill Education.
8. Bolton, T. 2009 (reprint). Geological Maps: Their Solution and Interpretation, Cambridge Univ. Press.
9. Kanetkar, T.P., Kulkatni, S.V. 1988. Surveying and Levelling, Part I, Pune Vidyarthi Griha Prakashan.
10. Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams
11. Robinson, A.H., Morrison, J.L., Phillip, C.M., Kimerling, A.J., Guptill, S.C. 1995. Elements of Cartography, 6th ed. Wiley.
12. Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan Private Ltd.
13. Singh, R.L., Singh, R.P.B. 2008. Elements of Practical Geography, Kalyani Publishers.
14. Siddiqui, An Introduction to Geographical Information System
15. Tomlin, C.D. . GIS and Cartographic Modelling , Prentice Hall

M. A. GEOGRAPHY (SEMESTER – IV)
Code - GEO – EC-1 A (Elective Course-01)
Urban Geography (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit – I Definition and Scope of urban geography, Development of urban geography in India
 Urban ecology and Urban System
 Basis of urban functions and functional classification of towns

Unit II Rank-Size Rule and Primate City
 Urban hierarchy
 Million Cities and Mega Cities
 Concept of Megalopolis and Metropolitan regions

Unit III Concept of urban morphology
 Theories of urban landuse – Burgess, Hoyt, Harris and Ullman
 Concept and characteristic of CBD
 Conurbation, Urban Agglomeration in context of India

Unit IV Trend of Urbanization in India and the World
 Concept of City region
 Concept of Umland
 Rural urban fringe

Unit V Urban problems with reference to slums
 Urban poverty
 Urban planning policies in India
 Smart city concept

CIA 30 Marks

Selected Readings:

1. Carter, H. (1972) The Study of Urban Geography, Arnold Heinemann
2. Geddes, P. (1968) Cities in Evolution, Benn Publisher.
3. Hall, P. (1992) Urban & Regional Planning, Routledge, London
4. Johnson, J. (1972) Urban Geography: An introductory Analysis, Germ Area
5. Mayer & Kohn (1959) Readings in Urban Geography, Chicago Area
6. Scott, J A. (2001) Global city Region, Oxford University area, U.K.
7. Sinha M. M. P. & Seema Bala: Nagariya Bhoogol (Hindi)
8. Bansal: Nagariya Bhoogol (Hindi)
9. Alam, S.M., Hyderabad-Secunderabad Twin Cities, Asia Publishing House, Bombay.
10. Berry, B.J.L and Horton, F.F., Geographic perspectives on Urban Systems, Prentice Hall, Englewood Cliff, New Jersey, 1970.
11. Beaujeu Garnier, J., Chabot, G., Urban Geography, London, 1969.
12. Dickinson, R.E., 1964., City and Region, Routledge, London.
13. Gibbs, J.P., Urban Research Methods, New Jersey, 1961

Code - GEO – EC-1 B (Elective Course-01) Political Geography (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit – I Meaning and scope of Political Geography;
Approaches to Political Geography; Functional and Unified Field Theory Approaches
Geopolitics; Classical Geopolitics and Critical Geopolitics

Unit- II Geopolitical World Order: Origin and Cessation of cold war;
Global Strategic Views: H. J. Mackinder, N G Spykman,
Geopolitics of Asia-Pacific

Unit- III	Concept of Nation and State Land-Locked States Frontiers and Boundaries Maritime Boundaries
Unit -IV	Changing Political map of India: State re-organization Geographical Bases of Indian Federalism River water Disputes – International and National
Unit- V	Sino-Indian Border Dispute Kashmir Problem Geopolitics of Indian Ocean: Sino Indian Rivalry Regionalism in India and Regional Organisation Geopolitical codes of India

CIA - 30

Selected Readings:

1. John R. Stuart (1982) - An Introduction to Political Geography
2. Richard Muir (1995) - Modern Political Geography
3. Bergman K. Edward (1975) - Modern Political Geography
4. Lucie Carlson (1971) - Geography and World Politic
5. S. B. Cohen (1968) - Geography and Politics in a Divided world
6. N. J. G. Pounds (1972) - Political Geography
7. I. M- Alexander (1963) - World Political Systems
8. P. J. Taylor & C. Flint: (2004 India. Ed) - Political Geography
9. R. D. Dikshit (1982) - Political Geography
10. S. Adhikari (1997) - Political Geography
11. B. L. Sukhwal (1985) - Modern Political Geography of India
12. S. Adhikari (2008) - Political Geography of India: A contemporary Perspective.
13. G. Parkar (1998) - Geopolitics: Past, Present and Future.
14. S. K. Dikshit (2006) - Political Geography and Geo-politics
15. Hari Mohan Saxena (2009) - Political Geography
16. S. Adhikari and Ratan Kumar (2010) -Political Geography

**Code – EC-1 C (Elective Course-01)
Population Geography (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

EC.-OIC.
Population Geography

Part - A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part - C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I	Nature and Scope of Population Geography, Historical development of Population Geography, Relationship with Demography, Sources of Population Data: The Census, vital registration and other sources.
Unit II	Population distribution, growth and determinants: Pre-historic, ancient, medieval and modern period; Theories of Population Growth: – Malthus, Marx and Demographic Transition
Unit III	Population Dynamics: <u>Fertility-measurement</u> ; Mortality measurement, determinants and distribution; Migration: Brief history, trends and pattern of international migration, migration in India, Indian Diaspora.
Unit IV	Population Regions: Typology of population regions, Ackerman scheme of population resource region. <u>Human security</u> - economic, food and health.
Unit V	Growth and distribution of population in India Population composition of India Internal migration in India Trends of urbanization Urban problems
CIA	- 30

Selected Readings:

1. Chandana, R. C. – A Study in Population Geography
2. Ghosh, B. N. – Population Geography
3. Hiralal – Jansankhya Bhoogol
4. Bhende and Kantkar – Population Studies
5. Singh, R. L. – Practical Geography
6. Sharma J. P. Prayogic Bhoogol Ki Rooprekha (Hindi)

7. Bhende, A.A. & Kanitkar, (2014), Principles of Population Studies, Himalayan Pub. H., Mumbai.
8. Bogue, D. J., Principles of Demography, New York, 1969.
9. Chandna, R.C., Geography of Population: Concepts Determinants and Pattern, Kalyan Pub. Ludhiana, 2014.
10. Clarke, J.I. Population Geography, Oxford, 1981.
11. Hassan M.I., Population Geography, Rawat Pub. Jaipur, 2008.
12. Jhingan M.L. Bhatt B.K. and Desai, J.N. Demography, Vrid Pub. Delhi, 2006
13. Khullar D.R., India: A comparative Geography, Kalyan Pub. Ludhiana, 2014.
14. Mandal, R.B. Uyanga J and Prasad H., Introductory Methods in Population geography, Concept Pub. Co. New Delhi-2007.
15. Maurya S.D., Population Geography, Pravalika Pub. Allahabad, 2014.
16. Newbold, K.B.- Population Geography: Tools and Issues, Rawat Pub. Jaipur, 2012.
17. Palmore, J.A. and Gardner R.W. Measuring, Mortality, Fertility and Migration: A Self Teaching Guide to Elementary Measures. The East-West Centre, Honolulu, 1987.
18. Poston, Jr D.L. and Bouvier L.F., Population and society: An Introduction to Demography, Cambridge Uni. Press, New York, 2010.
19. Premi M.K. and Das D.N., Population of India 2011, B.R. Pub. Delhi, 2012.
20. Sriniwas,K. Basic Demographic Techniques and Applications, Sage Pub. New Delhi, 1998.
21. Trewartha, G.T.,A Geography of Population: World Patterns, NY, 1969.

Code- GEO –EC-1 D (Elective Course-01)
Geology of India (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Ec - 1D .
Geology of India

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

- Unit I** Definition, scope and function of Geology, Principles of correlation, Standard Stratigraphic scale, Indian Stratigraphic scale.
- Unit II** Origin, geographical distribution and lithological characteristics of Dharwar system, Vindhyan system, Gondwana system and Deccan Lava system.
- Unit III** Classification, mode of occurrence and distribution of the following minerals with special reference to India – Iron ore, Mica, Bauxite and Copper
- Unit IV** Classification mode of occurrence and distribution of energy resources in India: Coal, Petroleum, Uranium and Thorium
- Unit V** Rocks and mineral association, form, structure and classification of igneous rocks, Origin and types of sedimentary rocks, Process of metamorphism, Types and characteristics of metamorphic rocks.

CIA – 30

Selected Readings:

1. Wadia, D. N. – Geology of India
2. Mukharjee, P. K. – Physical Geology
- 3rd D. P. Singh – भारतका भूवैज्ञानिक परिचय
4. Meher D. N. Wadia – Minerals of India
5. Gokhale and Rao – Minerals of India
6. Platt and Charliner – Simple Geological Structures
- 7th Karna, N. N. – मरल भूवैज्ञानिक संरचनाएँ
- 8th Singh, Jagdish & B. P. Rao – भौमिकीय मानचित्रों की रूपरेखा

Code- GEO –EC-1 E (Elective Course-01)
Settlement Geography (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Geo. EC-1E Elective Course
Settlement Geography

Part - A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part - C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Meaning and Scope of Settlement Geography
Development of Settlement Geography in India
Evolution of Settlement in the Middle Ganga Valley
Types of Rural settlement in India

Unit II Old Sites of Settlements and Nomenclature
Development of Different forms of Rural settlements
Morphological features of Rural Settlements
Problems of rural settlements

Unit III Rural house types in different geographical environment in India
Rural – Urban continuum
Rural Service centres
Hierarchy of settlements

Unit IV Locational and functional features of urban settlements
Morphological features of Indian cities
Problems of Indian urban centres
Problems of slums in India

Unit V Planning of Rural settlements
Planning of urban settlements
Metropolitan region
Planned urban centres of India

CIA 30 Marks

Selected Readings:

1. Hopkinson, D. (1989) Geography of Settlement, Oliver & Boyd
2. Hudson, F. S. (1970) Geography of Settlement, Mackold&Erau.
3. Singh, R. L. (Ed.) Rural Settlements in Monsoon Asia
4. Carter, H. (1972) The Study of Urban Geography, Arnold Heinemann

5. Misra, R. P. & K. Misra (Ed.) Million Cities of India, Nice Publisher
6. Singh, R. Y. : An Introduction of settlement Geography
7. Ghosh, S. : Settlement Geography
8. Sinha, V.N.P., Verma U., & Sahay A.- Introduction to Settlement Geography

**Code- GEO -EC-1 F (Elective Course-01)
Advance Cartography (5 Credits)**

Time: 3 Hours (ESE)

Full Marks: 100

ESE : 70 Marks

CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit –I	Brief history of cartography and its present status; Fundamentals of computer based cartography and its application; Thematic maps –types and their use.
Unit-II	Mathematical construction and characteristics of the following map projections – Conical Equal- Area with one standard parallel (Lambert's V); Gnomonic projection (Equatorial Case); Stereographic projection (Equatorial Case); Cassini's Projection
Unit III	Principles of triangulation Survey; Measurement of base-line in triangulation survey. Definition and characteristics of the following astronomical terms – Azimuth, Right Ascension, Hour Angle, Star at elongation, Altitude, Declination.
Unit IV	Brief history and basic principle of Photogrammetry; Types and scales of aerial photographs. Interpretation of aerial photographs.
Unit V	Brief history of satellite remote sensing; Concept of remote sensing; Development of remote sensing in India; Elements of the interpretation of satellite imageries.
CIA 30 Marks

Selected Readings:

1. F. J. Monkhouse – Maps & Diagrams & H. R. Wilkinson
2. Sinha, M. M. P. & Bala, Seema – Advanced Cartography, Sharda Publication, Allahabad
3. Kanetkar – Surveying and leveling Vol- II
4. Punmia, B. C. – Surveying Part II & III
5. Sarkar, A. - Practical Geography: A Systematic Approach, Orient Blackswan Private Ltd.
6. Singh, R.L. and Singh, R.P.B. - Elements of Practical Geography, Kalyani Publishers, New Delhi
7. Maltiar, K.K. and Maltiar, S.R. – Concept of Cartography, Remote Sensing and G.I.S. – Rajesh Publication, New Delhi
8. Devis, R.E., Foote, F.S. and Kelly, J.W. – Surveying : Theory and Practice
9. Misra, R. P., Singh, R. B., Misra, Brijesh and Pandey, Anupam – Fundamentals of Cartography. Concept Publishing Company Pvt. Ltd., New Delhi
10. Narayan, L.R.A. - Remote Sensing and its Application, Universities Press, Hyderabad
11. Venkatramaiah, C. -Textbook of Surveying, Universities Press, Hyderabad
12. Joseph, George – Fundamentals of Remote Sensing, Universities Press, Hyderabad
13. Fazal, S. – Remote Sensing Basics, Kalyani Publishers, Ludhiana
14. Lillesand, T.M., Kiefer, R.W. and Chipman, J.W. – Remote Sensing and Image Interpretation, Wiley India Pvt. Ltd., New Delhi

GEO – EC-2 Elective Course – 02
Dissertation /Project Work (5 Credits)

Full marks-100
ESE- 70
CIA- 30

Students have to prepare a Dissertation / Project work based on Socio-Economic survey.

The topic will be approved by departmental council.

ESE will consist of total of 70 marks, out of which, 45 marks will be on a written test and 25 marks for Viva Voce on dissertation. CIA will comprise of written test, Presentation and brief summary of report.

Students have to submit one copy of dissertation/ Project work report prior to the commencement of the semester examination

Unit I Procurement of a topographic map of 1:50,000 to 1:25,000 scale to study the settlements selected in its regional setting

Unit II Collection of demographic, social & economic data of the village/town from Census Reports to study the temporal changes in the profile of such characteristics.

Unit III	Selection of sampling site, defining sampling size, and conducting socio-economic survey at households level with a self- structured questionnaire and supplementing the information by personal observations and perceptions.
Unit IV	Based on results of the land-use and socio-economic survey of the households, preparation of a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.
CIA 30 Marks

Selected Readings

1. Gregory, S. 1980. Statistical methods and the Geographer. Longman, London
2. Mahmood, A. 2008. Statistical Methods in Geographical Studies. Rajesh Pub., New Delhi.
3. Ibrahim, R. 1992. Socio-Economic Profile of Mewat. Radha Publishers, New Delhi.
4. Robinson, A.H., et.al. 1995(6th edition). Elements of Cartography. John Wiley , New York.
5. Raisz, E. 1962. Principles of Cartography. Mc Graw Hill, New York.

**Code- Discipline Specific Elective -DSE-01 (201-CC)
Regional Planning and Rural Development (5 Credits)**

Time: 3 Hours (ESE)	Full Marks: 100
	ESE : 70 Marks
	CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Part – A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part – C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Regional Planning: Concept, Merits and Limitation
 Planning Process – Sectoral, Temporal and Spatial Dimensions
 Concept of Planning Region and Methods for Delineation of Regions

Unit II Special Purpose Planning Regions in India:
 River Valley Regions
 Metropolitan Region
 Problem Regions – Hilly Regions, Tribal Regions

Unit III	Indicators of Development Regional disparities in India Need for Regional Planning in India Regional Development in India – Problems and Prospects.
Unit IV	Concept of Multi Level Planning Role of Panchayati Raj Institutions in Rural Development Defining Development and Rural Development; Gandhian approach to rural development
Unit V	Area Based Approach to Rural Development: Drought Prone Area Programme, PMGSY Target Group Approach: SJSY, MGNREGA, Jan Dhan Yojana and PURA Provision of Services- Physical and Socio-Economic Access to Elementary Education and Primary Health Care and Micro Credit
CIA 30 marks

Selected Readings

- 13.Bhatt, L.S., 1973, Regional Planning in India, Statistical Publishing Society, Calcutta.
14. Chandana, R.C., 2000, Regional Planning, Kalyani Publishers Ludhiana.
15. Chand, M., Puri, & V.K., 1983, Regional Planning in India, Allied Publishers, New Delhi.
16. Friedman,J.& Alonso,W,1967 Regional Development and Planning-A Reader,MIT Press, Cambridge Hars.
17. Glasson, 1980, Regional Planning, Hutchinson, London.
18. Glikson, A., 1955, Regional and Development, Netherlands, Universities Foundation of International Corp. London.
19. Mishra, R.P, 1969, Regional Planning Concepts, Techniques and Policies, University of Mysore,Mysore.
- 20.Mishra R.P, et.al., 1974, Regional Development and Planning in India, Institute of Development Studies, Mysore.
- 21.Rao, V.L.B., 1960, Regional Planning, Asia Publishing House, New Delhi.
- 22.Kant Surya et.al (eds): Reinventing Regional Development, Rawat Publication, Jaipur and N.Delhi.
- 23.श्रीवास्तव शर्मा एवं चौहान-प्रादेशिक नियोजन एवं संतुलित विकास
- 24.पदहीए ज्ञणए ल्लतंस कमअमसवचउमदजएै ल्ल

Code- Generic Course-GE-01 Geography of Bihar (5 Credits)

Time: 3 Hours (ESE)

Full Marks: 100
ESE : 70 Marks
CIA : 30 Marks

The questions for End Semester Examination Comprises of three parts as mentioned below

Generic Course GE - 01.
Geography of Bihar. (5 credits)

Part - A

Ten objective type Questions - All questions to be answered (Questions shall be selected from the whole syllabus preferably two questions from each unit) $10 \times 2 = 20$ marks

Part-B

Five short Answer Questions – Four questions to be answered (Questions shall be selected from the whole syllabus preferably one question from each unit) $4 \times 5 = 20$ marks

Part - C

Five long answer Questions -Three questions to be answered. (Questions shall be selected from the whole syllabus preferably one question from each unit) $3 \times 10 = 30$ marks

Unit I Historical Account of Bihar as a State,
Geological Formation and Landforms, Physiographic Divisions, Drainage, Soils,
River Valley Projects: Gandak, Kosi and Sone

Unit II Climate: Regional Variation in Rainfall and Temperature, Seasonal Variation of
Rainfall and Temperature
Flood and Drought Prone Areas, Wet Land Areas

Unit III Landuse and Agriculture: Landuse Pattern, Agricultural Infrastructure, Agricultural
Seasons, Food Crop, Cash Crop, Development and Prospect of Horticulture, Aquaculture,
Floriculture, Herbal Plants, Pisciculture, Agricultural Regions

Unit IV Industries: Agro Based Industries, Small and Cottage Industries,
Prospects of Food and Fruit Processing Industries,
Industrial Regions

Unit V Population and Settlement: Population Attributes- Growth, Distribution, Occupation,
Age and Sex Ratio.
Evolution of Settlement: Types and Pattern,
Morphological Features, Rural Dwellers

CIA – 30

Selected Readings:

1. M.S. Pandey- Historical Geography and Topography of Bihar
2. Ahmed, E. – Bihar- Physical, Economic and Regional Geography
3. Sinha, VNP and Nazim Md.- Bihar:Land and People
4. Sharma, N. Bihar Ka Bhugol (Hindi)