Department of Geography,MLSU
M.A./M.Sc. CBCS Syllabus session 2017-18

Sno	Course Code	Title of the Course	L-T-P	No.of Credits	Max.Marks 100		
					Univ.Exam	Int. Exam	TOTAL
I semester							
1	M1GEOG1-CT01	: Geographical Thoughts	3-1-0	4	80	20	100
2	M1GEOG2-CT02	: Geomorphology	3-1-0	4	80	20	100
3	M1GEOG3-CT03	: Economic Geography	3-1-0	4	80	20	100
4	M1GEOG4-CT04	: Climatology and Oceanography	3-1-0	4	80	20	100
5	M1GEOG1-CP01	*PRAC : Surveying & Leveling*	0-0-8	4	100		100
6	M1GEOG2-CP02	*PRAC : Air-Photo Interpretation*	0-0-8	4	100		100
II semester							
1	M2GEOG1-CT05	: Geography of India	3-1-0	4	80	20	100
2	M2GEOG2-CT06	: Geography of Resources	3-1-0	4	80	20	100
3	M2GEOG3-CT07	: Regional Development and Planning	3-1-0	4	80	20	100
4	M2GEOG4-CT08	: Political Geography	3-1-0	4	80	20	100
5	M2GEOG1-CP03	*PRAC : Cartography- I **	0-0-8	4	100		100
6	M2GEOG2-CP04	*PRAC : Basics of Remote Sensing and Image Interpretation*	0-0-8	4	100		100
7	M2GEOG1-Skill 01	*Skill : Digital Cartography*	0-0-4	2	100		100
	** Cartography I : Techniques of Climatic Data Analysis,Geomorphology*						
III semester							
1	M3GEOG1-CT09	:Agricultural Geography	3-1-0	4	80	20	100
2	M3GEOG2-CT10	: Urban Geography & Planning	3-1-0	4	80	20	100
3	**Elective: Any one of the following**						
	M3GEOG3-ET11-A	:Environmental Geography	3-1-0	4	80	20	100
	M3GEOG3-ET11-B	: Geography of Rajasthan	3-1-0	4	80	20	100
4	**Elective: Any one of the following**						
	M3GEOG4-ET12-A	:Cultural Geography	3-1-0	4	80	20	100
	M3GEOG4-ET12-B	:Transport Geography	3-1-0	4	80	20	100
5	M3GEOG1-CP05	*PRAC :Advanced Cartograohy II ***	0-0-8	4	100		100
6	M3GEOG2-CP06	*PRAC : Basics of Geographical Information System*	0-0-8	4	100		100
	*** Advanced Cartography II : Techniques of Demographic Data Analysis and Projections(Mathematical)*						
IV semester							
1	M4GEOG1-CT13	:Industrial Geography	3-1-0	4	80	20	100
2	M4GEOG2-CT14	: Population & Settlement Geography	3-1-0	4	80	20	100
3	**Elective: Any one of the following**						
	M4GEOG3-ET15 - A	: Geographical Research Methodology	3-1-0	4	80	20	100
	M4GEOG3-ET15 - B	:Social Geography	3-1-0	4	80	20	100
4	**Elective: Any one of the following**						
	M4GEOG4-ET16 - A	:Quantitative methods in Geography	3-1-0	4	80	20	100

	M4GEOG4-ET16 - B	:World Geography	3-1-0	4	80	20	100
5	M4GEOG1-CP07	*PRAC :Geospatial Techniques for Applied Geographical Research*	0-0-8	4	100		100
6	M4GEOG2-CP08	*Project work on Natural Resource Management using RSGIS*	0-0-8	4	100		100
7	M4GEOG1-Skill 02	*Skill : Statistical Analysis using Software*	0-0-4	2	100		100

M.A./M.Sc. Geography
First Semester
Paper – I (M1GEOG1-CT01) Geographical Thoughts

Unit – I

a) Definition, Philosophy and nature of geography
b) Scope and Contents of Geography
c) Detailed study of Greek and Roman scholars
d) Nature of Geographical Thoughts in Ancient India

Unit – II

a) Geographical knowledge during the Ancient & medieval period
b) Dark age of Geography
c) The Arabic period
d) Contribution of Varenius and Kant

Unit – III

a) Main characteristics of German school of thoughts- Contribution of Alexander von Humbolt
b) Contribution of Carl Ritter & Ratzel
c) Main characteristics of French school of thought-Contributions of Paul Vidal de la Blache
d) Contribution of Jean Brunhes

Unit – IV

Main characteristics of American school of thoughts-
a) Contribution of W. M. Davis
b) Contribution of Carl O. Sauer
c) Main characteristics of British school of thoughts
d) Changing methods & Technique in Geography.

Unit – V

a) Environmental determinism, possibilism and neo-determinism
b) Concept of Region, , Study of aerial differentiation,
c) Dichotomies in geography, Systematic and Regional, &Qualitative and Quantitative geography
d) Impact of Positivism, Humanism, Radicalism & Behaiouralism in Geography.

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2. Ali, S. M., Arab Geographers, Institute of Islamic Studies
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43. जैन, एस.एम. : भौगोलिक चिन्तन का विकास (साहित्य भवन, आगरा)
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45. माथुर एवं जोशी : भौगोलिक विचारधाराओं का इतिहास (आर.बी.एस. पब्लिशर्स,जयपुर)
46. सिंह, जे. : भौगोलिक चिन्तन के मूलाधार (वसुन्धरा प्रकाशन, नई दिल्ली)
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48. वर्मा एल. एन. : भौगोलिक विचारधाराएँ (राज. हिन्दी ग्रंथ अकादमी, जयपुर)

49. रमेश दत दीक्षित : भौगोलिक चिन्तन का विकास (प्रिन्टिस हाल ऑफ इण्डिया प्राइवेट लिमिटेड, नई दिल्ली)

M.A. /M.Sc. Geography
First Semester
Paper – II (M1GEOG2-CT02) Geomorphology

Unit – I

a) Development in geomorphology
b) Concept & Scope of Geomorphology
c) Development of slopes: approaches to the study of slopes; views of W. Penck, A. Wood and A. N. Strahler
d) Isostary : Concept and Theories

Unit – II

a) Isostasy: concept and Theories Continental Drift Theory and Plate tectonic theories
b) Theories of Mountain building
c) Processes: Weathering Types of weathering
d) Processes: Cycle of Erosion, Views of Davis and Penk

Unit – III

a) Geomorphic processes and landforms – fluvial
b) Geomorphic processes and landforms – glacial and fluvio-glacial
c) River forms and processes – stream flow, hydrographs and flood frequency analysis
d) Geomorphic processes and landforms – eolian

Unit – IV

a) Geomorphic processes and landforms – coastal
b) Geomorphic processes and landforms – karst
c) Submarine relief
d) Geomorphometry: Geomorphology and topographic analysis

Unit – V

a) Extra-terrestrial geomorphology
b) Environmental change – causes, effects on processes and landforms
c) Soil processes and conservation
d) Dams and reservoirs: geomorphic consideration and environmental impact

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M.A./M.Sc. Geography
First Semester
Paper – III (M1GEOG3-CT03) Economic Geography

Unit –I

a) Definitions , Aims and Scope of Economic Geography
b) Approaches and Recent Trends in Economic Geography
c) Classification of Economies – Sectors of Economy, Primary Secondary, Tertiary & Quaternary occupations
d) Relationship between economic activities & environment

Unit –II

a) Location – Importance ,Chirsteller – Central Place Theory
b) Movement & Interaction in the simplified and heterogeneous economic landscape
c) Significance &Elements of Production Cost – Raw materials, Labour, Capital, Technical Knowledge – Spatial variation in Production costs& locational impact
d) Spatial Variation in transportation Cost-location & Structure of transport cost, factors affecting the transportation cost

Unit- III

a) World Agricultural Regionalization – Whittlesey's classification of Agricultural region
b) Subsistence Intensive Agriculture
c) Mediterranean Agriculture & Tropical Plantation
d) Commercial grain farming and Coen region of USA

Unit – IV

a) Major Industrial regions of the World : Study of Great lake industrial region of USA
b) Study of Ruhr Industrial region
c) Study of Industrial region of Ukraine
d) Study of Industrial belt of Japan

Unit - V

a) Means of transportation : Factors affecting the choice of particular means of Transport
b) World pattern of water transportation& Trade : Oceanic Transport routes
c) International trade : Types of trade
d) Economic region of the world

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37. श्रीवास्तव, वी. के. एवं राव, बी. पी. : आर्थिक भूगोल के मूल तत्व (वसुन्धरा प्रकाशन, गोरखपुर)
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39. रजा, एम. एवं सिंह, ए. : संसाधन भूगोल
40. नैगी, बी. एस. : संसाधन भूगोल
41. सिंह एवं सिंह : आर्थिक और संसाधन भूगोल

M.A./M.Sc. Geography
First Semester
Paper – IV (M1GEOG4-CT04) Climatology and Oceanography

Unit-1
Basic Concepts and Atmospheric Phenomenon

a) Nature and scope of Climatology
b) Composition and layered structure of the atmosphere
c) Insolation; Energy balance of the Earth; horizontal and vertical distribution of temperature
d) Atmospheric pressure and pressure belts

Unit-2
Atmospheric Circulation

a) Winds: Forces-PGF, CF, FF
b) Planetary, Periodic and Local winds; Jet Streams
c) Atmospheric Humidity–process and forms of precipitation: types of rainfall; world distribution of rainfall.
d) Air masses and fronts; Tropical and Temperate cyclones

Unit-3

Climate Types and Climate Change

a) Approaches to classification of world climates; Koppen's classifications
b) Major climates of the world: Characteristics of Equatorial, Tropical Monsoon, Savanna, Hot Desert, Mediterranean and Mountain type of climate
c) Ocean atmosphere interaction: El Nino- La Nina; Walker's Circulation & El Nino Southern Oscillation (ENSO)
d) Ozone depletion; Greenhouse effect; Global warming

Unit-4

Oceans-Physical Characteristics

a) Nature and scope of Oceanography
b) Ocean bottom relief; Relief of Indian and Atlantic oceans
c) Ocean temperature and salinity: factors and distribution patterns
d) Coral reefs: Types and theories of formation

Unit-5

Dynamics of Ocean Water and Human-marine Interface

a) Tides :Types, Theories of origin of tides
b) Ocean currents: Currents of Indian, Atlantic and Pacific ocean
c) Marine resources: Food, mineral and energy resources
d) Sea level changes; Human impact on marine communities

References:-

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10.बनर्जी,आर.सी. एव ं उपाध्याय, डी.एस : मौसमविज्ञान (राजस्थान हिन्दीग्रन्थअकादमी, जयपुर)

M.A./M.Sc. Geography
First Semester
Practical -I (M1GEOG1-CP01) Survey & Leveling

Unit – I

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

Unit – II Plane table

a) Use of Plane table in composite surveys and related methods, methods of resectioning
b) General planning of large area plane surveys
c) A composite survey of college campus or village/neighbourhood
d) Drawing of control points and surveyed plan

Unit – III Theodolite and Tacheometer:

a) Theodolite as an instrument of surveying and leveling, adjustment of Theodolite
b) Computation of Theodolite bearings
c) Computation of length of triangles and plotting of control points
d) Telemetry: stadia and tangential

Unit – IV Clinometer

a) Use of Clinometer as instrument of leveling
b) Measuring spot heights
c) Contouring and interpolation of contours
d) Drawing of profiles

Unit – V Dumpy level:

a) Use of Dumpy level as an instrument of leveling and adjustment of the dumpy level
b) Principles: Calculation of difference of level, series leveling, back sights, foresights, intermediate sights
c) Level book and computation of reduced level: Rise and fall and collimation method
d) Plotting of profiles

Note:

1. Candidates will submit following exercise as record work:
   i. Resectioning: 3 exercises of geographical methods of Llano's, Bessel's and trial and error
   ii. Profiles: 2 exercises based on leveling measurements obtained with dumpy level
   iii. Contouring: 1 exercise based on leveling measurements obtained with dumpy level
   iv. Contouring: 1 exercise based on leveling measurements obtained with clinometers
   v. Measuring and plotting reduced levels using tacheometer: 2 exercises
   vi. Triangulation survey based on a minimum of 15 control points using theodolite: 2 exercises including one related to composite survey

vii. Plan of un-surveyed campus/neighbourhood/village area based on composite survey: 1 exercise (10 day's camp)

viii. Thematic maps showing characteristics of the surveyed area: form of built-up area, and building material: 6 exercises

2. All exercises will be based on surveying and leveling work done by the candidates themselves for areas hitherto un-surveyed

References:

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

Distribution of Marks **Total Marks 100**

Paper - I) Practical paper of two hours duration with following pattern (40 marks)

Section – A Very Short answers. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

Practical – Assessed by Internal Examiner

Paper - II) Surveying –**Practical Exam** (60 marks)

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

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

B - Record work – 20 marks

C - Viva-voce – 10 marks

M.A./M.Sc. Geography
First Semester
Practical -II (M1GEOG2-CP02) Air photo Interpretations

Unit – I

a) Definition,
b) Scope
c) Development of aerial photography

d) interpretation techniques

Unit – II

Types and quality of aerial photographs

a) Types of aerial photographs
b) Factors affecting quality of aerial photographs
c) Aerial photographs versus maps
d) Usages of Aerial Photographs in interdisciplinary research

Unit – III

Tools and geometry of air photography and interpretation:

a) Pocket stereoscope and mirror stereoscope
b) Aerial camera, lens and filters
c) Geometry of aerial photographs
d) Stereogram, stereo triplet and mosaic

Unit – IV

Basic air photo measurements:

a) Photographic scale
b) Measuring height of object
c) Calculation of area, number of strips and number of air photos
d) Measuring angles, direction and slope measurement

Unit – V

a) Elements of object identification,
b) Interpretation and mapping of natural landscapes
c) Interpretation and mapping of cultural landscapes
d) field checking

Practical Exercises Practical Exercises

Practical Exercises

Notes:

Students are required to perform one experiment from each unit during examination.

1) Stereo test
2) Orientation of stereo model under mirror stereoscope (1 Exercises)
3) Calculate the Photo base,& flight line. (2 Exercises)
4) Determination of photo/image scale (1Exercises)
5) Determination of heights using single photograph (1Exercises)
6) Objects Identification by Pocket Stereograph (1 Exercises)
7) Interpretation and mapping of natural landscapes :physical aspects, drainage patterns, river basins, and vegetation (8 Exercises)
8) interpretation and mapping of cultural landscapes: land Use, Agricultural Utilisation, field patterns, cultural aspects, settlements and transportation lines (8 Exercises)

One local field trip will be conducted for field verification of aerial photographs of Udaipur city and nearby areas. Students will be required to prepare a Field Report and submit along with the Record Work.

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13. Talbut, A. Essentials of Aerial Surveying and Photo Interpretation
14. Thomas, M. Lillesand and Ralf W. Kefer, Remote Sensing and Image Interpretation, John Wiley and Sons, New York, 1994
15. Tomar, M. S. and A. R. Maslekar, Aerial Photographs in Land use and Forest Surveys, Kishore and Company, Dehradun

Distribution of Marks **Total Marks 100**

Paper I Practical paper of two hours duration in following pattern (40 marks)

Section – A Very short questions. Asked 10 questions, attempt all questions.
Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

Paper II : 60 marks

A.- Test paper Lab exercise – 30 marks (20+10) with three hours duration

i. Practical exercise shall be of three hours duration and of 20 marks and candidates will be required to attempt any 2 exercises out of 4.
ii. The identification of objects (at least 10) on the air photo pairs shall be of 30 minutes duration and will carry 10 marks

B -Record work – 20 marks
C -Viva-voce – 10 marks

M.A./M.Sc. Geography
Second Semester
Paper – I (M2GEOG1-CT05) Geography of India

UNIT I: Physical Aspects

a) Historical/administrative background of India
b) Physical divisions of India
c) Climate: Seasonal variations in climate; Mechanism of Indian Monsoon; Climatic Regionalization by Koeppen
d) Forests: Types and distribution, conservation of forest resources
e) Soil regions; Problem of soil erosion

UNIT II: Human Aspects

a) Population distribution, Growth and Density
b) Population composition,Literacy
c) Tribal population: Distribution pattern and belts
d) Population Problems,Population Policy of India

UNIT III: Economic Aspects: Resource Base

a) Water resources: Status and problems

b) Agriculture : Major characteristics and problems; Green revolution; Agro-climatic regions
c) Minerals: Distribution, production and development potential with special reference to Iron-ore, Manganese, Bauxite and Copper
d) Power resources: Distribution, production and potential with respect to Coal, Petroleum, Natural Gas, Hydel, Solar and Atomic power.

UNIT IV: Industrial Development and Transportation

a) Major industries: Mineral based- Iron & Steel, Cement; Agro based – Cotton Textile, Sugar Industry
b) Industrial Regions of India
c) Industrial Development in Five Year Plans
d) Transportation development-Road, Rail, Air, Ports.

UNIT V: Regionalization and Problems

a) Geographical Regions of India- Outline of scheme proposed by R.L.Singh
b) Resources Regions of the India, V.Nath
c) Regional disparities in socio-economic development in India, Economic region of India, P.Sen Gupta
d) Geographical Problems of India; Cyclones, Earthquake, Floods, Drought

References:

1. Blandford, H. F., Climate and Weather of India, Ceylon and Burma, Meteorological Department of India
2. Brown, C. and Dey, India's Mineral Wealth, Oxford University Press, London
3. Chandrashekhar, S., India's Population: Facts and Policy, Allen and Unwin
4. Chatterjee, S. D., Climatology of India, Calcutta University, Calcutta
5. Chhibber, H. L., India, Part-III, Nand Kishore and Bros
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7. Deshpande, C. D., India - A Regional Interpretation, Northern Book Centre, New Delhi, 1992
8. Drez, Jean and AmartyaSen (eds.), India Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996
9. Dubey, R. N., Economic Geography of Indian Republic, KitabMahal, New Delhi.
10. Farmer, B. H., An Introduction to South Asia, Methuen, London, 1983
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14. Joshi, H., Industrial Geography of India: A Case Study of Fertiliser Industry, Rawat Publication, Jaipur
15. Khullar, D. R., India: A Comprehensive Geography, Kalyani Publishers, Ludhiana, 2000
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18. Kundu, A. and MoonisRaza, Indian Economy: The Regional Dimension, Spectrum Publishers, New Delhi, 1982
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20. Mamoria, C. B., Agricultural Problems of India, KitabMahal, New Delhi
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24. Robinson, Francis, The Cambridge Encyclopaedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan and Maldives, Cambridge University press, London, 1989
26. Shafi, M, Geography of South Asia, McMillan & Co., Calcutta, 2000
27. Singh, G., Geography of India. Atmaram& Sons, Delhi
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33. Wadia, D. N., Geology of India, McMillan & Co., London, 1967
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35. मामोरिया, सी. बी. : भारतकाभूगोल (साहित्य भवन, आगरा)
36. मामोरिया, सी. बी. : भारतकावृहद् भूगोल (साहित्य भवन, आगरा)
37. चौहान, टी. एस. : भारतकाभूगोल (विज्ञान प्रकाशन, जयपुर)
38. सिंह एवं सिंह : भारत एक भौगोलिकसमीक्षा (वसुन्धराप्रकाशन, गोरखपुर)

M.A./M.Sc. Geography
Second Semester
Paper – II (M2GEOG2-CT06) Geography of Resources

Unit – I

a) Meaning ,scope of Resource Geography
b) Approaches and recent trends of Resource Geography
c) Resources : Meaning & Clarification
d) Concepts of Resources

Unit –II

a) Conservation of Resources : Concept & Aims
b) World Distribution ,Production and Problems of conservation of Iron & Manganese
c) World Distribution , production and problems of conservation of Coal, Petroleum & Hydroelectricity
d) Forest& Water Resources : World Distribution ,Utility & Conservation

Unit –III

a) Human as a Sources and a Resources
b) World Distribution , Density and Growth of Human Resources
c) Distribution , Density and Growth of Human Resources of India
d) Population –Resource Equilibrium & Population Resource Region of World

Unit - IV

a) Problems of Resource utilization
b) Resource Conservation and Preservation
c) Problems of Conservation &Trends of Resource Development
d) Planning of conservation of Natural Resources

Unit –V

a) Resource Region -Meaning & determinant elements of resource region
b) Major Resource Region of the World
c) Region of Bounty Resources& Region of Resource Scarcity
d) Indian Resource Region – A Case study of Aravali region

References:

1. Alien, S. W. and Leonard, J. W., Conserving Natural Resources, McGraw Hill
2. Brown, C. and Dey, India's Mineral Wealth, Oxford University Press, London
3. Chatterjee, S. R, Economic Geography of Asia, Allied Book Agency, Calcutta, 1984
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20. रजा, एम. एवं सिंह, ए. : संसाधन भूगोल
21. नैगी, बी. एस. : संसाधन भूगोल
22. सिंह एवं सिंह : आर्थिक और संसाधन भूगोल

M.A./M.Sc. Geography
Second Semester
Paper – III (M2GEOG3-CT07) Regional Development and Planning

Unit – I

a) Concept of space, area and locational attributes
b) Development: concepts and indicators; planning: concept need and levels
c) Region: concept, types and delid ; Planning regions: Planning regions of India

Unit – II

Main themes of regional development theories:

a) Economic growth doctrines and their impact on regional development
b) Theories of transmission of economic growth: G. Myrdal, A.O. Hirschmann, Friedmann
c) Debate on the relevance of development theories: D. Seers, Neo Marxists;
d) Multifaceted paradigms of regional development: Eco-development, sustainable development

Unit – III

Regional planning strategies:

a) Urban-industrial growth pole strategies as a tool of diffusion of modernisation
b) Neo-populist regional development strategies: Integrated rural development, basic need approach, target area and target group approach
c) Multi-level regional planning
d) Peoples participation in the planning process; Panchayati Raj system; role and relationship of Panchayati Raj Institutions (Gram Panchayat, Panchayat Samiti and Zila Parishad) and administrative structure (village, block and district)

Unit – IV

a) Delineating regions for planning: planning regions v/s geographical regions
b) Schemes of regionalization V. Nath, L.S. Bhat, P. Sengupta, territorial production complexes
c) The role of cities and the urbanization process in regional development in India; Planning for supra-urban spaces
d) The state and regional policy in India; the status of regional planning in the Five Year Plans

Unit – V

a) National plans: South East Resource Region Plan and The Western Ghat Plan
b) Administrative machineries of regional planning in India: The Planning Commission, the Town and Country Planning Organization, district level planning
c) Regional social movements in India and their linkages with state regional policy and development strategies
d) The New Economic Policy and its impact on the regional structure and regional planning problems in India

References:

1. Abler, R., et al, Spatial Organization, The Geographer's View of the World, Prentice Hall, Englewood Cliffs, N. J., 1971
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20. Misra, R. P. (ed.), Regional Planning: Concepts, Techniques, Policies & Case Studies, University of Mysore, Mysore, 1969
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M.A./M.Sc. Geography
Second Semester
Paper – IV (M2GEOG4-CT08) Political Geography

Unit – I

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

Unit – II

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

Unit – III

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

Unit – IV

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

Unit – V

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

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23. Sukhwal, B. L., Modern Political Geography of India, Sterling Publishers, New Delhi. 1986
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25. Taylor, Peter and John House, Political Geography: Recent Advances, Barnes and Nobel Books Totowa, New Jersey
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29. भट्टाचार्य, ए.एन. एवं आच्छा, एस. एल : राजनीतिक भूगोल (राजस्थान हिन्दी ग्रन्थ अकादमी जयपुर)
30. दीक्षित, आर. डी. : राजनीतिक भूगोल – समसामयिक परिदृप्टि (प्रेन्टिस हॉल आफ इण्डिया)
31. सक्सेना, एच. एम.: राजनीतिक भूगोल (रस्तोगी पब्लिकेशनस, मेरठ)
32. कपूर कालीदास : भारतीय भू–नीति (हिन्दी समिती सूचना विभाग)
33. कोलोशोव, वी. : राजनीतिक भूगोल (प्रगति प्रकाशन, मास्को)
34. दीक्षित श्रीकान्त : राजनीतिक भूगोल (ज्ञानोदय प्रकाशन, गोरखपुर)

M.A./M.Sc. Geography
Second Semester
Practical -I (M2GEOG1-CP03)Basic of Cartography and Physical Aspects(Cartography I)

Unit – I

a) Definition and Nature of cartography
b) scope & History of cartography
c) Cartographic techniques.
d) Cartographic materials and Tools

Unit – II

a) Map: Definition and Basic Concepts
b) Classification of Maps
c) Distributional maps and Cartograms
d) Representation of Statistical Data: Diagrams-One,Two,Three Dimensional (3 exercise)

The representation of data, information, features related to the following geographical aspects through maps and diagrams and their interpretation (to be submitted along with the record work):

Unit – III

Geomorphic aspects based on toposheets of 1:50000 or 1:25000 (5 exercise)

a) Stream orders and basin demarcation
b) Drainage density and texture
c) Slope : average slope maps according to Wentworth's method
d) Profiles : serial, composite, super- imposed, &projected Profiles

Unit – IV

Climatic aspects : I (4 exercises)

a) Rainfall variability graphs (running average, cumulative deviation & trend line).
b) Rainfall dispersion diagram
c) Isohyets or isotherms
d) Temperature variation graph.

Unit – V

Climatic aspects : II (5exercises)

a) Ergograph,& Ogilvie's ergograph
b) Climatograph
c) Climograph
d) Hythergraph

Distribution of Marks **Total Marks 100**

Practical

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

The Cartographic record work should contain 20 exercises drawn on one fourth of the full drawing sheet.

References:

1. Arthur G., Advance Practical Geography, Heinemann.
2. Campbell, J., Introductory Cartography, Prentice Hall Inc., New York.
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4. Keates, J. S., Cartographic Design and Production, Longman, London.
5. Loxton, J., Practical Map Production, John Wiley & Sons, New York.
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9. Robinson, A. H., Elements of Cartography, Chapman & Hall.
10. Sing, R. L., Elements of Practical Geography, Kalyani Publishing.
11. Singh, R. N., Map Work and Practical Geography, Central Book Depot.
12. भार्मा, जे. पी.: प्रयोगात्मक भूगोल (रस्तोगी पब्लिशर्स, मेरठ)

M.A./M.Sc. Geography
Second Semester
Practical -II(M2GEOG2-CP04) Basics of Remote Sensing and Image Interpretation

UNIT I Basics of Remote Sensing

a) Historical development; Significance of remote sensing in geographical studies
b) Electromagnetic Radiation (EMR) Spectrum; Laws of Radiation
c) Stages of Remote Sensing, EMR interaction with earth's surface
d) Spectral signatures, typical spectral reflectance curves of vegetation, soil and water

UNIT II Remote Sensing Satellites and Platforms

a) Orbits and platforms for earth observation; Swath, Row, Path
b) Satellite and sensor types: geo-synchronous and polar satellites, active and passive systems
c) Sensor types: Along Track, Across Track
d) Sensor specifications of IRS and Landsat satellite series

UNIT III Image Characteristics

a) Image formats - BIL, BIP, BSQ; Image display, color composites
b) Fundamental image statistics, image histogram
c) Image resolutions - spatial, spectral, radiometric and temporal resolution
d) Characteristics of IRS, Landsat, NOAA, IKONOS, World-View Satellite System

UNIT III Image Preparation

a) Geometric errors: Types
b) Geometric corrections: Image to map rectification, georeferencing
c) Resampling techniques
d) Contrast enhancement techniques: stretching, histogram equalization, density slicing

Unit V Image Interpretation and Thematic Map Generation

a) Visual Image Interpretation: principles, elements, interpretation keys
b) Manual Digitization and Map composition
c) Interpretation and Mapping of Natural Landscapes using satellite image.
d) Interpretation and Mapping of Cultural Landscapes using satellite image.

Practical Exercises:

1. Familiarization with the software –ILLWIS/ Erdas Imagine/ ENVI/ SAGA
2. Data acquisition-accessing satellite data of area of interest, digital referencing system
3. Data import and subset
4. Observation and identification of earth's features in various spectral bands and different types of images (PAN/ multi-spectral)
5. Observation of spectral profiles of water, soil and vegetation

6. Analysis of image histograms
7. Image display – Grey scale, pseudo color, TCC, FCC
8. Georeferencing toposheets
9. Geometric correction- Image to map rectification: NN, Bi-linear and Cubic interpolation
10. Image enhancement: Stretching, interpretation of results
11. Image enhancement: Histogram Equalization, interpretation of results
12. Image enhancement: Density Slicing, interpretation of results
13. Identification of features using elements of visual interpretation
14. Thematic map generation using visual interpretation and on-screen manual digitization/ analog multi-spectral images: Natural landscape
15. Thematic map generation using visual interpretation and on-screen manual digitization/ analog images: Cultural landscape
16. Computation of area of different classes

Exercises will be implemented in ERDAS, ENVI, ILLWIS, SAGA or any other DIP Software as per availability. One computer system will be provided to each student for conducting practical exercises.

One local field trip will be conducted for field verification of satellite image of Udaipur city and nearby areas. Students will be required to prepare a Field Report and submit along with the Record Work.

Suggested Readings

1. American Society of Photogrammetry, 1983. *Manual of Remote Sensing*, ASP, Falls Church, VA
2. Barrett, E. C. and L. F. Curtis, 1992. *Fundamentals of Remote Sensing and Air Photo Interpretation*, Macmillan, New York
3. Campbell, J., 1989. *Introduction to Remote Sensing*, Guilford, New York
4. Chauniyal, D.D., 2004. *Remote Sensing and Geographical Information Systems* (**in Hindi)**, Sharda Pustak Bhawan, Allahabad
5. Curran, Paul J., 1985. *Principles of Remote Sensing*, Longman, London
6. Jenson J.R., 1996. *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall, New Jersey
7. Jenson, J.R., 2000. *Remote Sensing of the Environment: An Earth Resource Perspective.* Perason Education
8. Lillesand, T.M., Keifer R.W. & Chipman, J.W., 2008. *Remote Sensing and Image Interpretation*. John Wiley & Sons, New Delhi
9. Pratt W.K., 1978. *Digital Image Processing*. Wiley, New York
10. Vyas P.R., Remote sensing and Geographical Information System : basics and Applications 2014

WEB RESOURCES

1. *Ebook on Remote Sensing Applications,* www.**nrsc**.gov.in/Learning_Centre_**EBook**.html
2. *E-Tutorial on Fundamentals of Remote Sensing*, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, accessible at http://www.nrcan.gc.ca/earth-sciences/geomatics

Distribution of Marks **Total Marks 100**

Practical

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

M.A./M.Sc. Geography
Second Semester
Skill -I (M2GEOG1-Skill01) Digital Cartography

Unit-I: Introduction

a) Nature & Scope
b) Concepts in Digital Cartography
c) Cartographic Visualization
d) Geo-visualization

Unit II: Overview of Software Packages

a) ArcGIS
b) QGIS
c) Microsoft Excel, SPSS
d) AUTOCAD

Unit-III: Maps

a) Introduction to maps: types
b) Cartographic communication – virtual, cognitive, temporal and permanent maps
c) Mapping Techniques: Preparation of dot, choropleth, isopleths chorochromatic and choroschematic maps
d) Map composition: Symbolization, Map layout, Labeling and Annotation

Unit IV: Diagrams

a) Construction of simple line, poly line, trend graphs

b) Construction of simple, multiple, compound bar diagrams, histograms
c) Construction of cartograms, value area cartograms
d) Preparation of maps using proportional squares, circles, spheres

Unit V: Cartographic Modeling

a) Cartographic modeling and its types
b) 3D modeling
c) TIN
d) DEM

Lab exercises

a) Preparation and editing of data in Microsoft excel
b) Preparation and editing of data in SPSS
c) Generation of vector point, line, polygon map and cartographic symbolization
d) Map composition

References

1. Allpress, J.D., Visual geography, Part-I [George Harrap]
2. Bagrew,L.: History of Cartography, C.A.Watts and Co., London, 1964.
3. Barrett,E.C. and Curtis,L.F.: Introduction to Environmental Remote Sensing, Chapman and Hall Ltd., London, 1976.
4. Bernhardsen, Tor, Geographic Information Systems, Viak IT, Longum Park, Norway, 1992
5. Lobeck, A.K. and Tellington, W.J., Military Maps and Air-Photographs [Mc Graw Hill]
6. Lobeck, A.K., Block Diagrams [John Wiley]
7. Mather, Paul M., 1991: Computer Applications in Geography, John Wiley & Sons, Inc., New York.
8. Monkhouse, F.J. and Wilkinson, H.R., Maps and Diagrams [Methuen]
9. Raisz, E., Principles of Cartography [Mc Graw hill]
10. Robinson, A.H., Elements of Cartography [John Wiley]
11. Stamp. L.D., Models
12. Sylvester, D., Maps and Landscape [George Philip and sons] Allpress, J.D., Visual geography, Part-I [George Harrap]

Distribution of Marks **Total Marks 100**

<u>Practical</u>

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

M.A./M.Sc. Geography
Third Semester
Paper – I (M3GEOG1-CT09) Agricultural geography

Unit – I

a) The nature and development of agricultural geography
b) Approaches recent trends in agricultural geography
c) Origin and dispersal of agriculture
d) Sources of agricultural data

Unit – II

a) Factors affecting agriculture: Physical, institutional and technological
b) Agricultural systems of the world
c) Critical review of classification of agricultural types of Whittlesy
d) Detailed study of intensive subsistence, commercial grain farming and tropical plantation agriculture

Unit – III

a) Land use classification; landuse pattern in India; and land capability classification
b) Von Thunen's agricultural model of agricultural land use and recent modification in it
c) Nutrition and food balance sheet; food surplus and food deficient regions of India
d) Diffusion model

Unit – IV

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

Unit – V

a) Sustainable development of agriculture
b) Green and white revolutions: Their components, impact and consequences
c) Specific problems in Indian agriculture and their management and planning
d) Agricultural policy of India

References:

1. Bayliss Smith, T. P., The Ecology of Agricultural Systems, Cambridge University Press, London, 1987
2. Berry, B. J. L. et al, The Geography of Economic Systems, Prentice hall, New York, 1976
3. Brown, L. R., The Changing World Food Prospects: The Nineties and Beyond, World Watch Institute, Washington D. C., 1990
4. Coppock, J. K. , An Agricultural Atlas of England and Wales, Faber and Haber, London
5. Cox, K. R., Man, Location and Behaviour: An Introduction to Human Geography, John Willey and Sons, London
6. Dyson, T., Population and Food: Global Trends and Future Prospects, Routledge, London, 1996
7. George, H. F., Geography of Agriculture: Themes in Research, Prentice Hall, New York
8. Gregor, H. P., Geography of Agriculture, Prentice Hall, New York, 1970
9. Grigg, D. B. The Agricultural Systems of the World, Cambridge University Press, New York, 1974
10. Hartshorne, T. N. and J. W. Alexander, Economic Geography, Prentice Hall, New Delhi, 1988
11. Kostrowicki, J., World Types of Agriculture, Warsaw, Poland
12. Mannion, A. M., Agriculture and Environment Change, John Wiley and Sons, London, 1995
13. Morgan, W. B. R. and J. C. Norton, Agricultural Geography, Methuen, London, 1971

14. Morgan, W. B. R., Agricultural in the Third World: A spatial Analysis, West View Press, Boulder, 1978
15. Preston, E. James, American Geography: Inventory and Prospects, Syracuse University Press
16. Sauer, Carl O., Agricultural Origin and Dispersals, M. I. T. Press, Massachusetts, 1969
17. Shafi, Mohammed, Agricultural Geography, Dorling Kindersley (India), Delhi, 2006
18. Singh, Jasbir, An Agricultural Atlas of India: A Geographical Analysis, Vishal, Kurukshetra
19. Singh, Jasbir, An Agricultural Geography of Haryana, Vishal Kurukshetra
20. Singh, Jasbir and S. S. Dhillon, Agricultural Geography, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1988
21. Symones, Lesli, Agricultural Geography, G. Bell & Sons, London
22. Tarrant, J. R., Agricultural Geography, John Wiley and Sons, New York, 1974
23. Whittlesey, D., Major Agricultural Region of the Earth, AAAG, Vol.26, pp.199 and 240-296
24. Whyle, R. O., Land, Livestock and Human Nutrition in India, F. A. Paragon

M.A./M.Sc. Geography
Third Semester
Paper – II (M3GEOG2-CT10) Urban Geography & Planning

Unit – I

a) Nature, scope and development of urban geography; urban concepts
b) Origin and growth of urban centres: ancient and Medieval age
c) Process of urbanisation: Trends of urbanization in the world
d) Urbanization In India , Development of Metropolitan cities in India

Unit – II

a) Classification of urban centres: Views of Mum ford and Griffith Taylor
b) Development of Conurbation and Megalopolises : North Eastern Sea board of USA , Rhine- Ruhr conurbations, Mumbai and Kolkatta conurbations in India
c) Theories of urban system: the law of primate city and the rank-size rule
d) Central place theories: Christaller's central place system, Losch's economic landscape

Unit – III

a) Urban land use: human ecology and urban land use models of Burgess, Harris-Ullman and Hoyt; land economics and urban land use
b) Central business district (CBD): criteria and methods of areal definition, historical process and CBD; the zone in transition
c) Functional classification Of cities : Empirical and Statistical methods
d) Centripetal and centrifugal forces of Urban growth

Unit – IV

a) Rural Urban Fringe : Concept, criteria's of Delimitation and charactestics
b) Morphology of Indian Cities : Ancient , Medieval and Modern Planned Cities of India with special studies of Jaipur and Chandigarh cities
c) Concept of basic and non basic functions, internal functional structure of urban centres
d) Social structure in urban areas of India , social segregation in Indian cities

Unit – V

a) Urban Problems: Development of Slums in urban areas and their problems, problems of housing and social infrastructure
b) Urban Planning: principles of urban planning , Layout plans of Cities
c) Urban environment: industrial pollution and environmental panning
d) Sustainable Urban Development: studies of master plans of Udaipur and Jaipur cities.

References:

1. Alam, S.M.: Hyderabad - Secunderabad Twin Cities Asia Publishing House, Bombay, 1964
2. Bansal, S. C., Urban Geography, Minakshi Publication, Meeruth, 2000, (Hindi)
3. Beaujeu-Garnier, J. and G. Chabot, Urban Geography, Longman, London
4. Berry, B. J. L. and F. E. Horton, Geographic Perspectives on Urban Systems, Prentice Hall, New York, Englewood Cliffs, New Jersey, 1970
5. Carter, Harlod, The Study of Urban Geography, Arnold-Hienemann Publishers (India) Private Ltd., New Delhi, 1982
6. Chapin, F. Stuart, Urban Land Use Planning, University of Illinois Press
7. Chorley, R. J. and P. Haggett (eds.), Models in Geography, Methuen, London, 1966
8. Davis, Kingsley and Hertz, Patterns of World Urbanisation, Columbia University Press
9. Dickinson, R. E., City and Region, Routledge, London, 1964
10. Duncan, O. D., Metropolis and Region, John Hopkins Press, Baltimore
11. Dwyer, D. J. (ed.), The City as a Centre of Change in Asia, University of Hong Kong Press, Hong Kong, 1971
12. Forrester, Jay W., Urban Dynamics, M. I. T. Press, Cambridge
13. Gallion, Arthur B. and Simon Eisner, The Urban Pattern: City Planning and Design, Affiliated East-West Press Private Ltd., New Delhi, 1969
14. Gibbs J. P., Urban Research Methods, D. Van Nostrand Co. Inc. Princeton, New Jersey, 1961
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16. Hagget, P., Geography: A Modern Synthesis, Harper & Row, New York
17. Hall P., Urban and Regional Planning, Penguin, London, 1974
18. Hauser, Philip M. and Schnore Leo F. (ed.), The Study of Urbanisation, Wiley, New York, 1965
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20. James, P. E. and C. F. Jones, (eds.), American Geography: Inventory and Prospect, Syracuse University Press, Syracuse, 1954
21. Johnson, J. H., Urban Geography: An Introductory Analysis, Pergamon Press, London, 1968
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29. Nangia, Sudesh, Delhi Metropolitan Region: A Study in Settlement Geography, Rajesh Publication, 1976
30. Pacione, M., Progress in Urban Geography, Croom Helm, London
31. Rao, V. L. S. Prakasa, The Structure of an Indian Metropolis: A Study of Bangalore, Allied Publishers, Bangalore, 1979
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33. Robson, B. T., Urban Analysis, Cambridge University Press, London, 1969
34. Singh, K. and F. Steinberg, (eds.), Urban India in Crisis, New Age Interns, New Delhi, 1998
35. Singh, O. P., Urban Geography, Tara Book Agency, Varanasi, 1987, (Hindi).
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M.A./M.Sc. Geography
Third Semester
Paper – III-A (M3GEOG3-ET11-A) Environment Geography

Unit – I

a) Environment: meaning, elements, and types
b) Human ecology: meaning, scope and concepts
c) Principles of environmental geography
d) Man-environment relationship: review of different perspectives

Unit – II

a) Ecosystem: concept, definitions, characteristics and types
b) Components and functioning of ecosystem
c) Trophic level, food chain and ecological pyramids; energy flow in ecosystem
d) Geo-chemical cycles and circulation of element in the ecosystem: carbon cycle, nitrogen cycle and oxygen cycle

Unit – III

a) Fresh water ecosystems: meaning, types and their properties
b) Marine ecosystems: meaning, types and their properties
c) Terrestrial ecosystems: meaning, types and their properties
d) Biomes: concept, types, characteristics and distribution; detail study of tropical desert biomes

Unit – IV

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

Unit – V

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

References:

1. Ackerman, E.A., Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958
2. Agarwal, A. and S. Sen, The Citizens Fifth Report. Centre for Science and Environment New Delhi 1999
3. Arwill, R., Man and Environment, Pelican
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39. सक्सेना, एवं उपाध्याय : मानव एवं पर्यावरण, के.डी. प्रकाशन, अजमेर।
40. राव, बी. पी. एवं बी. के. श्रीवास्तव : पारिस्थितिकी विज्ञान, वसुन्धरा प्रकाशन, गोरखपुर।
41. नेगी, बी. एस. : पारिस्थितिकी एवं पर्यावरण भूगोल, रस्तोगी प्रकाशन, मेरठ।
42. रघुवंशी, अरूण एवं चन्द्रलेखा : पर्यावरण एवं प्रदूषण, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल।

M.A./M.Sc. Geography
Third Semester
Paper – III-B (M3GEOG3-ET11-B) Geography of Rajasthan

UNIT I: Physical Aspects

a) Geographical and Political Introduction of Rajasthan
b) Physical divisions of Rajasthan
c) Climate: Seasonal variations in climate; Monsoon; Climatic Regions
d) Water resources: Status and problems

UNIT II: Resources

a) Forests: Types and distribution
b) Soil regions; Problems of soil
c) Demographic Characteristics: Distribution, Density, Growth Rate, Literacy, Sex Ratio
d) Major tribes of Rajasthan; Bhil, Meena, Sahriya, Kathodi (Distribution and Socio-Economic Characteristics)

UNIT III: Economic Aspects: Resource Base

a. Agriculture : Major characteristics, problems, Solutions and Agro-climatic regions Livestock and dairy development
b. Minerals: Distribution, production and development potential with special reference to Zinc-Lead, Copper, Marble, Lime Stone and Rock Phosphate
c. Power resources: Distribution, production and potential with respect to Coal, Petroleum, Natural Gas, Solar and wind power.

UNIT IV: Industrial Development and Transportation

a. Major industries: Mineral based- Zinc, Cement and Marble
b. Agro based industries- Cotton Textile and Sugar Industry
c. Major problems in industrial development
d. Transportation development-Road, Rail, Air

UNIT V: Tourism, Regionalization and Problems

a) Tourism: Basis of tourism in Rajasthan and major destinations
b) Geographical Regions of Rajasthan- Outline of scheme proposed by R.L. Singh
c) Special area development programs in Rajasthan (ADP, DPAP, DDP, IGC)
d) Geographical Problems of Rajasthan; Desertification, Drought, Water logging, Depleting ground water and Flood

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2. Bhalla, L.R., Geography of Rajasthan. Kuldeep Publication, Jaipur
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9. चौहान, तेज सिंह, राजस्थानकाभूगोल, विज्ञानप्रकाशनजोधपुर
10. लोढ़ा, राजमल एवंमाहेश्वरी, दीपक, राजस्थानकाभूगोल, हिमांशुपब्लिकेशन्स, उदयपुर
11. मामोरिया, चतुर्भुज एवंजैन, शैषमल, राजस्थानकाभूगोल, साहित्य भवनपब्लिकेशन्स, आगरा
12. सक्सेना, एच.एम., राजस्थानकाभूगोल, राजस्थानग्रन्थअकादमी, जयपुर
13. विजयवर्गीय, राम रक्षपाल, राजस्थानकाभू–विज्ञान एवं खनिजसम्पदा, राजस्थानहिन्दीग्रन्थअकादमी, जयपुर

M.A./M.Sc. Geography
Third Semester
Paper – IV-A (M3GEOG4-ET12-A) Cultural Geography

Unit – I

a) Definition, nature, development and scope of cultural geography
b) Cultural elements, Environment and culture, components of culture
c) Divergence process and convergence process

d) Cultural changes: perception, behaviouralism and cultural relativism

Unit – II

a) Races of mankind: origin, traits and classification
b) Cultural diversity: nature and bases
c) Language: evolution, dispersion, classification and distribution
d) Religion: evolution, dispersion, classification and distribution

Unit – III

a) Origin and dispersion of agriculture
b) Industrial revolution and cultural development
c) Economy and society of tribal groups, theories of tribal groups; dwelling places as cultural explorations
d) Economy and cultural landscape

Unit – IV

a) Human settlements: relation to ideology
b) Social structure and technology
c) Pattern of rural & urban society
d) Social process in the city

Unit – V

a) World cultural realms and regions
b) Cultural regions of Europe
c) Cultural regions of Indian Sub-continent
d) Globalization and culture conflicts

References:

1. Broek, J.C. and J.W. Webb, Geography of Mankind, McGraw Hill, New York, 1978
2. Crang, Mike, Cultural Geography, Routledge Publications, London, 1998
3. Harmandorf, Tribes of India, Oxford University Press, Delhi, 1989
4. Hazra, (ed.), Dimensions in Human Geography, Rawat Publication, Jaipur, 1997
5. Hutchinson and D. Smith, Ethnicity, Oxford University Press, Oxford, 1996
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11. Singh, A.K., Approaches to Tribal Development, Swarup and Sona, New Delhi, 1994
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14. Steve. P and K. Michael (ed), Places and the Politics of Identity, Routledge, London, 1993
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M.A./M.Sc. Geography
Third Semester
Paper – IV-B (M3GEOG4-ET12-B) Transport Geography

Unit – I

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

Unit – II

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

Unit – III

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

Unit – IV

a) Spatial patterns of flow
b) Gravity model: basic model and its modifications related to traffic and commodity flow
c) Allocation model: transportation problem and optimum solution
d) Flow in a capacitated network

Unit – V

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

References:

1. Abler, Adams and Gould, Spatial Organization: The Geographer's View of the World, Prentice Hall, New York
2. Buchannan, C. D., Traffic in Towns, Buchannan Report, HMSO, London
3. Hagget, P. et al, Locational Analysis in Human Geography, Edward Arnold, London, 1977
4. Haggett, P. and R. J. Chorley, Network Analysis in Geography, Arnold, London, 1968
5. Hay, A. Transport Economy, Macmillan, London, 1973
6. Hensher, David A. (ed), Handbook of Transport Geography and Spatial Systems, Emerald Group Publishing, 2004
7. Hoyle, B. S. (edt.). Transport and Development, Macmillan, London, 1973

8. Hoyle, B. S. and R. Knowles, Modern Transport Geography, Wiley Europe
9. Hurst, M. E. E., Transportation Geography: Comments and Readings, McGraw Hill, New York, 1974
10. Hussain, M. et al, Transport Geography: Perspective in Economic Geography Series, Anmol Publications Pvt. Ltd., New Delhi
11. James, P. E. and C. F. Jones, (eds.), American Geography: Inventory and Prospect, Syracuse University Press, Syracuse, 1954
12. Johnston, R. J., Multivariate Statistical Analysis in Geography: A Premier on The General Linear Model, Longman, London, 1978
13. Kansky, K. J., Structure of Transportation Network, Research Paper No.48, Department of Geography, University of Chicago
14. Knowles, R. and J. Wareing, Economic and Social Geography, Heinemann
15. Lowe, J. C. and S Moriyadas, The Geography of Movement, Houghton Mifflin Co., Boston
16. Munby, D., Transport, Penguin
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18. Raza, Moonis and Y. P. Agrawal, Transport Geography of India, Concept Publishing Company, New Delhi, 1985
19. Robinson, H. and C. G. Bamford, Geography of Transportation, McDonald and Evans, London, 1978
20. Taaffe, E. J. and et al, Geography, Prentice Hall Inc
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22. Taaffe, Edward James, Howard L. Gauthier, Morton E. O'Kelly, Geography of transportation, Prentice-Hall Foundations of Economic Geography Series, 2nd edition, Morton O'Kelly, 1996
23. Ullman, E. L., American Commodity Flow, University of Washington Press, 1957
24. White H. P. and M. L. Senior, Transport Geography, Longman, London, 1983
25. Woodcock, R. G. and M. J. Baily, Quantitative Geography, McDonald & Evans
26. Yeates, Maurice, An Introduction to Quantitative Analysis in Human Geography, McGraw-Hill Book Company, New York

M.A./M.Sc. Geography
Third Semester
Practical – I (M3GEOG1-CP05) Advanced Cartography II
(Basic of Cartography :Projections and Demographic, Socio- economic Aspects)

Unit – I

a) Quantitative & Qualitative symbols.
b) Sources of Geographic data (India)
c) Rules of constructing Diagram & Graphs
d) Special Diagrams – Star ,Triangular , Scatter. (3 exercises)

Unit – II

Map projections – Classification Characteristics, use and mathematical Constriction along with outline maps of the following projections (4 Exercises)

a) Bonne,s projection
b) Conical projection –two standard parallel
c) Gall's projection
d) Mollweide's projection

Unit – III

Demographic aspects - at least with 20 administrative units(4 Exercises)

a) Population distribution (Dot method)
a) Density of Population (Choropleth maps)
b) Age and Sex composition (Pyramid)

b) Urban and rural composition/Population by Religion

Unit – IV

Economic and social aspects (at least 20 administrative units):

a) Occupational structure.
b) Crop production and area.
c) SC and ST population distribution
d) Literacy Rate

Unit – V

Transport and settlement aspects (at least with 20 administrative units):

a) Traffic flow cartogram
b) Isochronic cartogram (speed of Travel)
c) Nearest neighbour analysis
d) Histogram – based on Human Settlement Distribution

Distribution of Marks **Total Marks 100**

Practical – Assessed by Internal Examiner

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very Short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

References:

13. Arthur G., Advance Practical Geography, Heinemann.
14. Campbell, J., Introductory Cartography, Prentice Hall Inc., New York.
15. Govt. of Rajasthan, District Census Handbooks, latest as well as of previous Census,
16. Keates, J. S., Cartographic Design and Production, Longman, London.
17. Loxton, J., Practical Map Production, John Wiley & Sons, New York.
18. Mishra, R. P. and A. Ramesh, Fundamentals of Cartography, Concept Publishers, New Delhi.
19. Monkhouse, F. J. and H. R. Wilkinson, Maps and Diagrams, Methuen & Co., London.
20. Raisz, E., General Cartography , McGraw Hill Book Co., New York.
21. Robinson, A. H., Elements of Cartography, Chapman & Hall.
22. Sing, R. L., Elements of Practical Geography, Kalyani Publishing.
23. Singh, R. N., Map Work and Practical Geography, Central Book Depot.

12- र्मा, जे. पी. : प्रयोगात्मक भूगोल (रस्तोगी पब्लिशर्स, मेरठ)

M.A./M.Sc. Geography
Third Semester
Practical – II (M3GEOG2-CP06) Basics of Geographical Information System

UNIT I: Introduction to GIS

a) Definition, evolution and components of GIS
b) Representation of geographical data in GIS
c) Geospatial data structure and formats
d) Data models: raster and vector data models

UNIT II: Coordinate Systems and Transformation

a) Datums, ellipsoid , geoid
b) Projected and Geographic Coordinate Systems, UTM coordinate system
c) Geometric transformation: map to map, image to map
d) Resampling, Root Mean Square Error

UNIT III: Data Generation and Database Management

a) Data Input, Spatial data editing
b) Topology
c) Attribute data input and management: data types, data entry, joining and relating tables
d) Attribute data manipulation

UNIT IV: Data Exploration

a) Descriptive statistics
b) Spatial data query, attribute data query, raster data query
c) Data generalization; data classification; zonal statistics
d) Data visualization and map composition

UNIT V: Introduction to Web Data Sources

a) Google Earth
b) Bhuvan
c) Water Resources Information System (India-WRIS)
d) Open Street Maps (OSM)

Practical exercises will be done using available GIS software - QGIS & ArcGIS - any other GIS software available in the department. One computer per student will be provided. Students will be required to prepare a record work of the outputs of all exercises conducted in the lab. In addition the students will also be required to submit the outputs in soft copy in a CD.

Lab Exercises (No. of exercises):

1. Familiarization with the software (1)
2. Importing raster data in GIS (1)
3. Geo-referencing and projecting a toposheet (1)
4. Geo-referencing and projecting a scanned map (1)
5. Generation of vector- point, line & polygon data - generating attribute data -GIS software (3)

6. Generation of vector- point, line & polygon data - generating attribute data - Google Earth (3)
7. Linking spatial and aspatial data- Table join (Excel file) (1)
8. Data visualization (2)
9. Computation of descriptive statistics (2)
10. Attribute data query (1)
11. Spatial data query (1)
12. Raster data query (1)
13. Data generalization (1)
14. Data classification (1)
15. Map composition (1)
16. Use of web sources for data acquisition using Bhuvan/ Google Earth/ India-WRIS/ OSM (3)

Distribution of Marks **Total Marks 100**

Practical

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

Suggested Readings

1. Bernhardsen, Tor, 1992. *Geographic Information Systems: An Introduction*. Wiley India
2. Burrough, P.A. and McDonnell, R., 1998. *Principles of Geographic Information Systems*. Oxford University Press, Oxford
3. Chang, Kang-tsung, 2003. *Introduction to Geographical Information Systems*. Tata McGraw Hill Publ. Co., New Delhi
4. Chauniyal, D.D., 2004. *Remote Sensing and Geographical Information Systems* (**in Hindi)**, Sharda Pustak Bhawan, Allahabad
5. Clarke, Keith C., 2003. *Getting Started with Geographical Information Systems*. Prentice Hall
6. Demeers, Michael N., 2000. *Fundamentals of Geographical Information Systems*, John Wiley, Singapore
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8. Lo, C.P. and Yeung, Albert K. W. 2002. *Concepts and Techniques of Geographic Information Systems*. Prentice Hall of India, New Delhi.
9. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. 1999. *Geographic Information Systems. Principles, Techniques, Management, Applications*. John Wiley, New York.
10. Reddy, M. Anji 2001. *Textbook of Remote Sensing and Geographic Information Systems*. B. S. Publs., Hyderabad.
11. Vyas P.R.,Remote Sensing and Geographical Information System and Remote Sensing : Basics and Applications, Rawat Publications, Jaipur, New Delhi-2014

WEB RESOURCES

1. www.qgistutorials.com
2. http://www.pasda.psu.edu/tutorials/gisbasics.asp
3. https://earth.google.com
4. bhuvan.nrsc.gov.in
5. india-wris.nrsc.gov.in
6. https://openstreetmap.org
7. http://openstreetmap.in

M.A./M.Sc. Geography
Fourth Semester
Paper – I (M4GEOG1-CT13) Industrial Geography

Unit – I

a) Nature and scope of industrial geography, recent development in industrial geography
b) Classification of industries: bases and characteristics
c) Elements and factors of industrial localization, centralization and decentralization of industrial enterprises
d) Horizontal, vertical and diagonal linkages of industries

Unit – II

Basic economic concepts, theories and models of industrial locations:

a) Demand, supply and price; marginal cost and average cost
b) Economies of scale and agglomeration and related concepts
c) A. Weber, E. M. Hoover, August Losch, A. Fetter, G. T. Renner
d) A. Pred, Palander Tord, D. M. Smith, E. M. Rawstron, Bos H. C. & Hamilton

Unit – III

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

a) Copper, Aluminium and Iron and steel
b) Pulp and paper, Textile
c) Oil refining, shipbuilding and software industries
d) Locational analysis of zinc and cement industries of Rajasthan

Unit – IV

a) Industrial location and spatial distribution analysis and measures: coefficients of localisation, specialisation, geographic association and index of diversification
b) Delimitation of industrial regions: indices and methods
c) Study of major industrial regions of the world: Great Lakes region and Lancashire region
d) Major industrial regions of India

Unit – V

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

References:

1. Adam, Watter, Structure of American Industry, Macmillan & Co., New York
2. Alexander, J. W., Economic Geography, Prentice Hall, New York
3. Alexanderson, G., Geography of Manufacturing, Prentice Hall, New York, 1967
4. Bengston, N. A. and V. L. Royen, Fundamental of Economic Geography, Prentice Hall, New York
5. Boesch, H., A Geography of World Economy, D. Van-Nostrand Co., New York, 1964
6. Britton, John N. H., Regional Analysis and Economic Geography, G. Bell & Sons
7. Carlson, A. S., Economic Geography of Industrial Materials, Rinchart Publishing Corporation
8. Eastall, R. C. and R. O. Buchanan, Industrial Activity and Economic Geography, Hutchinson, London
9. Hoover, E. M., The Location of Economic Activity, McGraw Hill, New York, 1948
10. Joshi, Hemlata , Industrial Geography of India: A Case History of Fertiliser Industry, Rawat Publishers, Jaipur
11. Lloyd, P. and P. Dicken, Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York, 1978
12. Losch, August, The Economics of Location, Yale University Press, London, 1973
13. McCarty, Harold H. and Lindberg, A Preface to Economic Geography, Prentice Hall, New York
14. Miller, E. W., A Geography of Manufacturing, Prentice Hall, New York, 1962
15. Renner, G. T., Geography of Industrial Localisation, Economic Geography, Vol. 23, 1947
16. Riley, R. C., Industrial Geography, Chatto and Windus, London, 1973
17. Saushkin, Yu. G., Economic Geography: Theory and methods, Progress Publishers, Moscow, 1980
18. Smith, D. M., Industrial Location: An Economic Geographical Analysis, Wiley, New York, 1971
19. Weber, Alfred, Alfred Weber's Theory of Location of Industries, Chicago University Press, Chicago, 1929
20. Yaseen, Leonard, Plant Location, American Research Council, New York
21. कुमार, प्रमिला एवं शर्मा, श्रीकमल : औद्योगिक भूगोल, मध्यप्रदेश हिन्दी ग्रन्थ अकादमी
22. लोढा, राजमल : औद्योगिक भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी

M.A./M.Sc. Geography
Fourth Semester
Paper – II (M4GEOG2-CT14) Population and Settlement Geography

Unit – I

a) Meaning, scope and development of population geography
b) Sources of data: population counts and census; sample data; reliability of data and problems of mapping population data; data errors and their detection and correction
c) Measures of population distribution; world pattern of population distribution; determinants of population distribution
d) Population distribution in India: patterns and determinants

Unit – II

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

Unit – III

a) Age structure and sex composition
b) Educational composition; urbanization

c) Economic characteristics and occupational structure
d) Population composition of India: characteristics and problems

Unit – IV

a) Migration: types and determinants
b) Population and development; population-resource regions
c) Population and environment
d) Population policies in developed and less developed countries; population policy of India

Unit – V

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

References:

1. Bhende, Asha A. and Tara Kanitkar, Principles of Population Studies, Himalaya Publishing House
2. Bilasborrow, Richard E. and Daniel Hogan, Population and Deforestation in the Humid Tropics, International Union for the Scientific Study of Population, Belgium, 1999
3. Bogue, D. J., Principles in Demography, John Wiley and Sons, New York, 1969
4. Bose, Ashish et al, Population in India's Development: 1947-2000, Vikas Publishing House, New Delhi, 1974
5. Census of India, India: A State Profile, 1991
6. Chandana, R. C., Introduction to Population Geography, Kalyani Publishers, Ludhiana, 2000
7. Chisholm, M. (1962): 'Rural Settlements and Land use', London
8. Clarke, John I., Population Geography and the Developing Countries, Pergamon Press Inc., Oxford, 1971
9. Clarke, John I., Population Geography, Pergamon Press Inc., Oxford, 1973
10. Crook, Nigel, Principles of Population and Development, Pergamon Press, New York, 1997
11. Daugherty, Helen Gin, and Kenneth C. W. Kammeyir, An Introduction to Population, The Guilford Press, New York, 1998
12. Demko, Geogre, J. et al, Population Geography, A Reader, McGraw Hill, New York, 1970
13. Garnier, Beaujeu J., Geography of Population, Longman, London, 1970
14. Hudson, R. S. (1970): 'A Geography of Settlements', McDonald and Sons, London
15. Kochhar, Rajesh, The Vedic People: Their History and Geography, Orient Longman Ltd., New Delhi, 2000
16. Mamoria, C. B., India's Population Problems, Kitab Mahal, New Delhi, 1981
17. Mitra, Asok, India's Population: Aspects of Quality and Control, Volume I & II, Abhinav Publications, New Delhi, 1978
18. Pathak, K. B. and F. Ram, Techniques of Demographic Analysis, Himalaya Publishing House
19. Peterson, William, Population, Macmillan Publishing Company, Inc., New York, 1975
20. Premi, M. K., India's Population: Heading Towards a Billion, S. R. Publishing Corporation, New Delhi, 1991
21. Shryock, Honry, S et al, The Methods and Materials of Demography, Volume I & II, U. S. Bureau of the Census
22. Srinivasan, K. and M. Vlassoff, Population Development Nexus in India: Challenges for the New Millennium, Tata McGraw Hill, New Delhi, 2001
23. Srinivasan, K., Basic Demographic Techniques and Applications, Sage Publications, New Delhi, 1998
24. Sundaram K. V. and Sudesh Nangia (eds.), Population Geography, Heritage Publications, Delhi, 1986
25. Trewartha, G. T., A Geography of Population: World Patterns, John Wiley & Sons, New York, 1973
26. Trewartha, Glenn T. (ed.), The More Developed Realm, A Geography of its Population, Pergamon Press, Oxford, 1978
27. UNDP, Human Development Report, Oxford University Press, Oxford, 2000
28. United Nations, Methods for Projections of Urban and Rural Populations, No VIII, New York 1974

29. United Nations, The Determinants and Consequences of Population Trends, Volume I, Population Studies No 50
30. Woods, Robert, Population Analysis in Geography, Longman, London, 1979
31. Zelinsky, Wilbur, A Prologue to Population Geography, Prentice Hall, 1966

M.A./M.Sc. Geography
Fourth Semester
Paper – III A (M4GEOG3-ET15 A) Geographical Research Methodology

Unit – I Research Methodology: An Overview

a) Research Methodology-An Overview; Procedure of Scientific Research
b) Some Methodological Controversies and Explanation in Geography
c) Selection and relevance of research theme, Defining Research Problem
d) Formulation of hypothesis, objectives, Nature, type and characteristics of hypothesis

Unit II : Research Design

a) Research design, Methodology and data base, outline of the research Research Design.
b) sources and types of data , - primary and secondary data, - published and unpublished sources, toposheet, satellite imageries
c) Methods of Data' Collection; Observation, Questionnaire, Schedule and Interview
d) Sampling: Need for Sampling Methods, Size of Sampling

Unit III: Measurement

a) Measurement in Research, Measurement Scales
b) Scales of measurement: nominal, ordinal, interval and ratio
c) Sources of Error in Measurement; Scaling: Meaning of Scaling
d) Scale\of Classification Bases, Important Scaling Techniques

Unit-IV: Processing and Analysis of Data

a) Processing-Editing, Coding
b) Classification and Tabulation
c) Significance of quantitative techniques
d) Descriptive and Inferential statistics - overview

Unit-V: Interpretation and Preparation of Research Reports

a) Meaning and Techniques of Interpretation, Steps, &Layout
b) Types of Reports
c) Appendices, notes, references, citation and bibliography
d) Writing of the dissertation/ thesis & Defense of the thesis at viva voce

References:

1. Chou, Ya-Lun, Statistical Analysis: With Business and Economic Applications, Holt, Rinehart and Winston, New York, 1975
2. Cole, J. P. and C. M. A. King, Quantitative Geography: Techniques and Theories in Geography, John Wiley and Sons Ltd., London, 1970
3. Gregory, S., Statistical Methods and the Geographer, Longman Group Ltd. London, 1978
4. Hammond, Robert and Patrick McCullagh, Quantitative Techniques in Geography: An Introduction, Oxford University Press, London, 1978
5. Hebden, Julia, Statistics for Economists, Heritage Publishers, London, 1990
6. Johnston, R. J., Multivariate Statistical Analysis in Geography, Longman Group Ltd. London, 1978

7. Kundu, Amitabh, Measurement of Urban Processes: A study of Regionalisation, Popular Prakashan Private Ltd., Bombay, 1980
8. Silk, J., Statistical Concepts in Geography, George Allen and Unwin, London, 1980
9. Wilson, A. H. and M. J. Kirkby, Mathematics for Geographers and Planners, Oxford University Press London 1982

M.A./M.Sc. Geography
Fourth Semester
Paper – III B (M4GEOG3-ET15 B) Social Geography

Unit – I

a) Nature, scope and development of social geography, philosophical bases of social geography
b) Positivist, structuralist and radical
c) Humanist, post-modern, and post-structuralist
d) Social geography in the realm of social sciences

Unit – II

a) Space and society
b) Understanding society and its structure and processes
c) Geographical bases of social formations; power relations and space
d) Contribution of social geography to social theory

Unit – III

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

Unit IV

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

Unit – V

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

References:

1. Ahmad, Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999
2. Casino, Vincent J. Del, Social Geography: A Critical Introduction, Wiley-Blackwell, 2009
3. Churye, B. S., Caste and Class in India, Popular Prakashan
4. Davis, K., Population of India and Pakistan, Princeton University Press
5. de Blij, H. J., Human Geography, John Wiley and Sons, New York
6. Dreze, Jean and Amartya Sen, Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996
7. Dubey, S. C., Indian Society, National Book Trust, New Delhi, 1991
8. Geddes, A. and A. T. A. Learmonth (eds.), Man and Land in South Asia, Concept Publishing Co., New Delhi
9. Government of India, Economic and Socio-Cultural Dimensions of Regionalization, Census of India, Census Centenary Monograph No.7, 1974

10. Government of India, Report on Development of Tribal Areas, Planning Commission, 1981
11. Gregory, D and J. Larry, (eds.) Social Relations and Spatial Structures, McMillan, 1985
12. Guha, B. S., Racial Elements in India's Population, Oxford University Press, London
13. Haq, Mahbubul, Reflections on Human Development, Oxford University Press, New Delhi
14. Jones, E. (ed.), Readings in Social Geography, Oxford University Press, London
15. Jones, E. and J. Eyles, An Introduction to Social Geography, Oxford University Press, London
16. Maloney, Clarence, People of South Asia, Winston, New York, 1974
17. Rao, M. S. A., Urban Sociology in India, Orient longman, 1970
18. Rao, M. S. A., Urbanisation and Social Change, Orient Longman
19. Rao, Subba, Personality of India: Pre and Proto Historic Foundation of India and Pakistan, M. S. University Baroda, Vadodara, 1958
20. Risley, H., The People of India, Reprint Corporation
21. Schwartzberg, Joseph, An Historical Atlas of South Asia, University of Chicago Press, Chicago, 1978
22. Sen, Amartya and Dreze Jean, Indian Development: Selected Regional Perspectives, Oxford University Press, London, 1996
23. Singh, K. S., Tribal Situation in India, IIAS, Shimla
24. Smith, David, Geography: A Welfare Approach, Edward Arnold, London, 1977
25. Sopher, David: An Exploration of India, Cornell University Press, 1980

M.A./M.Sc. Geography
Fourth Semester
Paper – IV A (M4GEOG4-ET16 A) Quantitative Methods in Geography

Unit –I

a) Definition & History of Quantitative Geography
b) Significance & Utilization of Quantitative Methods in Geography
c) Nature & Levels of measurement – Qualitative and Quantitative
d) Graphical Presentation of Data –Bar, Pie, Ogive (cumulative histogram), Frequency curve

Unit –II

a) Measure of Central Tendency – Mode, Median & Mean
b) Skewness and Kurtosis
c) Measures of deviation – types
d) Mean deviation, Standard deviation, Coefficient of Variation, Z-scores

Unit –III

a) Gini coefficient of concentration and Lorenz Curve
b) Geographic Relationship- Correlation
c) Carl Pearson Correlation; Spearman's Rank Correlation
d) Regression Analysis – Linear regression

Unit –IV

a) Assessment of Probability –Z Score
b) Tests of Statistical Significance : T-Test ,Chi-Square test , ANOVA
c) Composite Indices analysis
d) Matrices – Types and inversion of matrices

Unit –V

a) Advantages of using software for quantitative analysis; Interface
b) Data entry and manipulation, Generation of graphs
c) Data analysis in statistical software – computation of descriptive statistics
d) Regression and Correlation using software

**Available statistical software with introduction to SPSS*

Suggested Readings

1. Chou, Ya-Lun, Statistical Analysis: With Business and Economics Application, Holt, Rinehart and Winston, New York, 1975.
2. Cole, J. P. And C. M. A. King, Quantitative Geography: Techniques and Theories in Geography, John Willey and Sons Ltd., London, 1970.
3. Gregory, S., Statistical Method and the Geographer, Longman Group Ltd. London, 1978.
4. Hammond, Robert and Patrick McCullagh, Quantitative Techniques in Geography: An Introduction, Oxford University Press, London, 1978.
5. Hebden, Julia, Statistics for Economists, Heritage Publishers, London, 1990.
6. Johnston, R. J., Multivariate Statistical Analysis in Geography, Longman Group Ltd. London, 1978.
7. Kundu, Amitabh, Measurement of Urban Processes: A Study of Regionalisation, Popular Prakashan Private Ltd., Bombay, 1980.
8. Silk, J., Statistical Concept in Geography, George Allen and Unwin, London, 1980.
9. Wilson, A. H. And M. J. Kirkby, Mathematics for Geographers and Planners, Oxford University Press London 1982.
10. Nagar, Kailashnath: Basic Elements of Statistical, Meenaxi Publications.

M.A./M.Sc. Geography
Fourth Semester
Paper – IV B (M4GEOG4-ET16 B) World Geography

Unit – I

Asia

a) Asia in the context of the world
b) Terrain and drainage
c) Climate, natural vegetation and soils
d) Spatial distribution of population and economic base of the continent in general Regional study - West Asia

Unit- II

Europe

a) Europe in the contest of Asia and Africa
b) Terrain and drainage
c) Climate, natural Vegetation and Soils
d) Demographic and economic characteristics regional study Western Europe

Unit- III

Africa

a) Africa in the context of Europe and North America
b) Terrain and Drainage
c) Climate, natural vegetation and soils
d) Demographic and economic characteristics regional study Southern Africa

Unit- IV

North and South America

a) North and South America in the context of the Atlantic and Pacific Rim states
b) Terrain and drainage
c) Climate, natural Vegetation and Soils
d) Demographic and economic characteristics regional study of Middle America

Unit- V

Oceania; Global issues

a) Australia & New Zealand in the context of Polynesia, Micronesia and South Asia
b) Terrain and drainage
c) Climate, natural vegetation and soils
d) Demographic and economic characteristics; Globalization and W. T. O.; population, environment and sustainable development

Reference:

1. Cole, J., A Geography of the World's Major Regions, Routledge, London, 1996
2. Cole, J.P. , Latin America- Economic and Social Geography, Butterworth , USA, 1975
3. Cole. M.M. , South Africa, Dutton, New York, 1961
4. Blij, H.J. , Geography: Regions and Concepts, John Wiley & Sons Inc., New York, 1994
5. Dickenson, J.P. et al, The Geography of the Third World Routledge, London, 1996
6. Gourou, R. , The Tropical World. Longman, London , 1980
7. Jackson, R.H. and L. E. Hudman, World Regional Geography: Issues for Today, John
8. Kolb, A., East Asia : Geography of a Cultural Region, Methuen, London, 1977
9. Minshull, G. N., Western Europe, Hoddard & Stoughton, New York, 1984
10. Patterson, J. H., Geography of Canada and the United States, Oxford University Press, 1985
11. Songquiao, A., Geography of China, John Wiley & Sons Inc., New York, 1994
12. Ward, R. W. and A. Miller, World Regional Geography; A Question of Place, John Wiley & Sons Inc. , New York, 1989

M.A./M.Sc. Geography
Fourth Semester
Practical - I (M4GEOG1-CP07)

GEO-SPATIAL TECHNIQUES FOR APPLIED GEOGRAPHICAL RESEARCH

UNIT I: Digital Image Processing : Data Preparation

a) Georeferncing ,Image of map rectification, Image to Image registration, Data preparation, reprojection
b) Radiometric errors & corrections - Image normalization, Dark Object Subtraction
c) Contrast Enhancement - linear stretching techniques, Non-linear -histogram equalization
d) Band ratioing- NDVI & NDWI

UNIT II: Thematic Map Generation

a) Image statistics, feature space
b) Unsupervised Classification- Minimum distance
c) Supervised Classification - Training, signature evaluation, parametric (Maximum Likelihood) and non-parametric classifiers (Parallelepiped, minimum distance)
d) Accuracy assessment - Overall, user's & producer's accuracy, Kappa

UNIT III: Spatial Analysis In GIS

a) Types of spatial analytical functions in GIS
b) Buffer, Clip, Update, Union, Intersection
c) Map overlay

d) Remote Sensing and GIS data integration; Sources of error

UNIT IV: Statistical Surfaces

a) Generation of statistical surfaces
b) Methods of spatial Interpolation - Linear, Nonlinear -IDW
c) DEM, TIN and their derivatives
d) Terrain analysis

UNIT IV: Spatial Pattern Analysis

a) Point Pattern Analysis: Nearest neighbour analysis
b) Spatial Auto-correlation
c) Global indices (Geary's *c,* Global Moran's I & Getis-Ord General G Index)
d) Local indices (Local Moran's I & Getis- Ord Gi * index)

*** Laboratory Practical Exercises (No. of exercises)**

1 Introduction to Bhuvan/NASA portal (2)
2 Acquisition of satellite data and DEM (2)
3 Geo-referencing of Toposheets (1)
4 Image to map rectification (1)
5 Radiometric Correction of satellite images- DOS (1)
6 Contrast Enhancement (2)
7 Image ratioing -Generation and interpretation of NDVI image (1)
8 Thematic Map Generation using Supervised Classification (1)
9 Thematic Map generation using Unsupervised Classification (1)
10 Extraction of topographic attributes and landscape features using DEM (3)
11 Spatial interpolation of point data using IDW and evaluation of results (4)
12 Settlement Pattern Analysis- Nearest Neighbor technique (1)
13 Computation of Geary's *c,* Global Moran's I & Getis-Ord General G Index and interpretation of results - population data (3)
14 Computation of Local Moran's I & Getis- Ord Gi * index and interpretation of results - population data (2)

Exercises will be implemented in ERDAS, ENVI, Illwis, QGIS, TNT Mips, Arc View, ArcGIS or any other DIP and GIS Software as per availability.

Distribution of Marks **Total Marks 100**

Practical

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

Suggested Readings

1. Chang, Kang-tsung, 2003: Introduction to Geographical Information Systems. Tata McGraw Hill Publ. Co., New Delhi
2. Chauniyal, D.D., 2004. *Remote Sensing and Geographical Information Systems* (**in Hindi)**, Sharda Pustak Bhawan, Allahabad
3. Dobesch Hartwig, Dumolard Pierre & Dyras Izabela, 2007. *Spatial Interpolation for Climate Data* (Ed.), Geographical Information Systems Series, ISTE Ltd., USA
4. Goodchild, M.F., Park, B.O. and Steyaert, L.T. (Ed.) 1993, Environmental Modelling with GIS. Oxford University Press, Oxford.
5. Jenson J.R., 1996. *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall, New Jersey
6. Jenson, J.R., 2000. *Remote Sensing of the Environment: An Earth Resource Perspective.* Perason Education
7. Lillesand, T.M., Keifer R.W. & Chipman, J.W., 2008. *Remote Sensing and Image Interpretation*, John Wiley & Sons, New Delhi
8. Lloyd, Christopher D., 2010. *Spatial Data Analysis: An Introduction for GIS Users,* Oxford University Press
9. Longley, P. And Batty, M. (eds.) 1996. Spatial Analysis: Modelling in a GIS Environment. Geo-Information International, Cambridge
10. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. 1999. Geographic Information Systems. Principles, Techniques, Management, Applications. John Wiley, New York.
11. Maguirre, David J.; Michael F. Goodchild and David W. Rhind 1999. Geographical Information Systems: Principles and Application. Geo Information International, Vol.2, Longman Pub., N.Y.
12. Martin, D. 1996, Geographic Information Systems: Socio-economic Applications. Routledge, London
13. Mitchell Andy, 1999. *The ESRI Guide to GIS Analysis (Volume I) Geographic Patterns and Relationships*. ESRI Press, California.
14. Mitchell Andy, 2009. *The ESRI Guide to GIS Analysis (Volume II) Spatial Measurements and Statistics*. ESRI Press, California.
15. American Society of Photogrammetry, 1983. *Manual of Remote Sensing*, ASP, Falls Church, VA

16. Barrett, E. C. and L. F. Curtis, 1992. *Fundamentals of Remote Sensing and Air Photo Interpretation*, Macmillan, New York
17. Campbell, J., 1989. *Introduction to Remote Sensing*, Guilford, New York
18. Chauniyal, D.D., 2004. *Remote Sensing and Geographical Information Systems* (**in Hindi)**, Sharda Pustak Bhawan, Allahabad
19. Curran, Paul J., 1985. *Principles of Remote Sensing*, Longman, London
20. Jenson J.R., 1996. *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall, New Jersey
21. Jenson, J.R., 2000. *Remote Sensing of the Environment: An Earth Resource Perspective.* Perason Education
22. Lillesand, T.M., Keifer R.W. & Chipman, J.W., 2008. *Remote Sensing and Image Interpretation*. John Wiley & Sons, New Delhi
23. Pratt W.K., 1978. *Digital Image Processing*. Wiley, New York

WEB RESOURCES

1. *Ebook on Remote Sensing Applications,* www.**nrsc**.gov.in/Learning_Centre_**EBook**.html
2. *E-Tutorial on Fundamentals of Remote Sensing*, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, accessible at http://www.nrcan.gc.ca/earth-sciences/geomatics

M.A./M.Sc. Geography
Fourth Semester
Practical - II (M4GEOG2-CP08)

PROJECT WORK ON NATURAL RESOURCE MANAGEMENT USING RSGIS

UNIT I: Overview of Applications of Remote Sensing and GIS

a) Natural resource evaluation and management
b) Urban planning and management
c) Land use planning and management
d) Environmental management & Hazard mapping

UNIT II: Overview of Applications of Remote Sensing and GIS

a) Socio-economic applications
b) Health GIS
c) Water resource management
d) Agricultural studies

UNIT III-V: Project Planning, Execution and Writing of Project Report

Theme of project may be selected from any of the fields outlined in Unit I & II or any other problem of student's/ supervisor's choice with a geographical perspective analysed using geo-spatial methodology. The theme may range from methodological issues to real world geographical applications. Students will

be required to get the selected theme approved by the concerned supervising faculty by way of presentation of synopsis in a class seminar.

The paper is divided into two parts. Part 1 (Unit I& II) comprises class room teaching. The students will be introduced to applications of RSGIS technology for applied geographical research. Subsequently, students will be required to take up a small case study as Part 2 (Unit III -V) , essentially applying the geospatial tools for decision making and analysis. The case study will be carried out under supervision of internal faculty of the department. The project report will be of approximately 30-50 pages.

Distribution of Marks **Total Marks 100**

Practical Exam (External)	**80 marks**
Project Report (Evaluation by External Examiner on examination day)	40
Data Analysis	30
Presentation	20
Viva	10

References

1. *Ebook on Remote Sensing Applications,* www.**nrsc**.gov.in/Learning_Centre_**EBook**.html
2. Chauniyal, D.D., 2004. *Remote Sensing and Geographical Information Systems* (**in Hindi)**, Sharda Pustak Bhawan, Allahabad
3. Lillesand, T.M., Keifer R.W. & Chipman, J.W., 2008. *Remote Sensing and Image Interpretation*. John Wiley & Sons, New Delhi
4. Vyas P.R.,Remote Sensing and Geographical Information System and Remote Sensing : Basics and Applications, Rawat Publications, Jaipur, New Delhi-2014

M.A./M.Sc. Geography
Fourth Semester
Skill -II (M4GEOG1-Skill02) Statistical Analysis Using Software

UNIT I – Data

a) Measurement levels
b) Data types, database file formats
c) Cases and variables
d) Defining variables

UNIT II – Data Entry

a) Data import
b) Data entry
c) Data editing
d) Data manipulation

UNIT III – Data Distribution

a) Preparation of Line Graphs
b) Preparation of Bar Diagrams
c) Preparation of Histograms
d) Preparation of Pie diagrams

UNIT IV – Data Analysis: Computation of Fundamental Descriptive Statistics

a) Mean, Median, Mode
b) Measures of Dispersion – Standard deviation, Z-Scores, Box Plots
c) Measures of Symmetry – Skewness
d) Kurtosis

UNIT V – Analyzing Relationships

a) Preparation of scatter plot
b) Computation of Correlation
c) Computation of Regression
d) Output generation and export in different formats

**Exercises will be done in available statistical software – Microsoft Excel and SPSS*

Distribution of Marks **Total Marks 100**

Practical

I] Practical paper - 40 Marks

Practical paper of two hours duration with following pattern

Section – A Very short type - 10 marks. Asked 10 questions, attempt all questions.

Section – B Short Answers – 30 marks, Asked 10 questions, one question from each unit and attempt five questions.

II] Lab exercise Paper – 30 marks,

Lab exercise Paper of three hours duration.

Attempt three Exercise questions out of 6 questions.

III] - Record work – 20 marks

IV]- Viva-voce – 10 marks

DEPARTMENT OF GEOGRAPHY

University College of Social Sciences & Humanities

Mohanlal Sukhadia University, Udaipur, Raj. - 313001

Proposed Scheme of Courses in Geography

M. A. /M. Sc. Geography: Annual 2017-18

M. A. / M. Sc. Previous

Paper I	: Geographical Thoughts
Paper II	: Advanced Physical Geography
Paper III	: Economic & Resource Geography
Paper IV	: Advanced Geography of India
Practical - I	: Advanced Cartography
Practical - II	: Air-Photo Interpretation and Remote Sensing

M. A. / M. Sc. Final

Paper I	: Agricultural Geography
Paper II	: Political Geography
Paper III	: **Elective: Any one of the following**
III A.	: Regional Development and Planning
III B.	: Urban Geography
III C.	: Population and Settlement Geography
III D.	: Cultural Geography
Paper IV	: **Elective: Any one of the following**
IV A.	: Industrial Geography
IV B.	: Transport Geography
IV C.	: Environmental Geography
IV D.	: Social Geography
Practical - I	: Surveying & Leveling
Practical - II	: GIS &Digital Cartography

Notes:

1. There will be four theory papers and two practicals of 100 marks each.
2. Use of map stencils (outline of political boundaries only), Log Tables and simple function calculators are allowed in the examination.
3. There will be 16 hours theory teaching per week and 12 hours practical teaching per week. Each practical batch will comprise of 20 students.
4. A common Practical Test Paper of three hours duration will be held along with the main theory examination.
5. The Practical Test Paper will be set and evaluated by External Examiner in the line of theory papers.
6. Each theory paper of three hour duration will be divided into five units and three categories of questions will be set from each unit as per following distribution:

Sections	Questions		Marks	Distribution of Questions
	To be Asked	To be Attempted		
1. Very Short (20-50 Words Answers)	10	10	20	Proportionately from each Unit with internal choice
2. Short Answers (250 words)	10	5	40	
3. Analytic/Descriptive Answers (500 words)	5	2	40	
Total	25	17	100	

7. The practical exercises, record work and viva-voce examination shall be conducted by an external examiner in consultation with the internal examiner and shall be conducted in two days.

8. Special notes for M. A. Previous Practical Examinations:

   i. The Cartographic record work should contain 18 exercises drawn on one fourth of the full drawing sheet.
   ii. The Quantitative Methods record work should contain 30 exercises.
   iii. The internal examiner for M.A. (P) practical examinations will be common for both the Cartography and Quantitative Methods.
   iv. Cartography practical exercises shall be of three hours duration. Candidate will be required to attempt any three exercises out of six.

9. Special notes for M. A. previous Practical Examinations of Air Photo Interpretation & Remote Sensing:

   i. Practical exercise shall be of three hours duration and of 20 marks and candidates will be required to attempt any 2 exercises out of 4.
   ii. The identification of objects (at least 10) on the satellite imagery and air photo pairs shall be of 30 minutes duration and will carry 5 marks.

10. Special note for M. A. Final Practical Examinations of Computer Applications:

i. Practical exercise shall be of three hours duration comprising of two tests and candidates will be required to attempt any 4 exercises out of 6 on the systems.

11. Special note for M. A. Final Practical Examinations of Surveying:

i. Practical exercise shall be of three hours duration based on the practical working on each instruments with following distribution of marks:

Instrument	Exercise	Marks	Timing (Minutes)
a. Plane Table	Resectioning	10	35
b. Theodolite	Measurement of angle between two distant points	5	10
c. Dumpy Level	Measuring level difference between two distant points	5	10
d. Clinometer	Measuring heights of and level difference between two distant points	5	10
e. Tacheometer	Measuring distance of any distant point	5	10

12. Special notes with regard to for M. A. Final Examinations:

i. A student who obtained 55 per cent marks in the aggregate on successful completion of all the courses prescribed in M. A. Previous may be permitted to work on dissertation in lieu of any one of the optional papers of M. A. Final.
ii. The topic and the synopsis of the work are to be got approved by the Departmental Committee.

M.A. / M.Sc. (Previous) Geography
Paper - I: Evolution of Geographical Thought

Unit - I

Philosophy of geography and geography during ancient and medieval period:

a) Philosophy, definition and nature of geography; scope and purpose of geography.
b) Brief study of Greek and Roman scholars.
c) Geographical concept in ancient India.
d) The dark age of geography.
e) The Arab period.

Unit - II

The beginning of modern geography:

a) Contribution of Bernhardus Varenius.
b) Contribution of Immanuel Kant.
c) Impact of Darwinian Theory on geographical thoughts.
d) Contribution of Alexander von Humboldt.
e) Contribution of Carl Ritter.

Unit - III

Major school of thoughts and their contribution:

a) Main characteristics of German school of thoughts and contributions of Friedrich Ratzel, Alfred Hettner and Ferdinend von Richtofen.
b) Main characteristics of French school of thought and contributions of Paul Vidal de la Blache and Jean Brunhes.
c) Main characteristics of American school of thought and contributions of W.M. Davis Richard Hartshorne, and Carl O. Sauer.
d) Main characteristics of British school of thought and are contribution to geography.
e) Main characteristics of contemporary Indian geographical teaching and research.

Unit - IV

Major conceptual trends in geography:

a) The study of man-land relationship: environmental determinism, possibilism and neo-determinism.
b) Geography as chorological science and areal differentiation.
c) Geography as morphology of landscape.
d) Dichotomies in geography: physical v/s human and systematic v/s regional geography.
e) Dichotomies in geography: qualitative v/s quantitative approach, analysis v/s synthesis approach.

Unit - V

Issues related to explanations in geography:

a) General ideas of hypothesis, theories and laws in geography.
b) Forms of explanations in geography.
c) Exceptionalism in geography and the Schaefer-Hartshorne debate.
d) Impact of positivism and scientific method in geography.
e) Behaviouralism, humanism and radicalism in geography.

Suggested Readings:

1. Abler, Ronal F. et al, Geography's Inner Worlds: Pervasive Themes in Contemporary American Geography, Routledge, New Jersey, 1992.
2. Ali, S.M., Arab Geographers, Institute of Islamic Studies.
3. Ali, S.M., The Geography of Puranas, People's Publishing House, New Delhi.
4. Dikshit R.D., Geographical Thought: A Contextual History of Ideas, Prentice Hall of India Pvt. Ltd. 2000.
5. Dikshit R.D., The Art and Science of Geography: Integrated Readings, Prentice Hall of India, New Delhi, 1994.
6. Dohrs, F.E. and Sommers, L.W. (eds.) Introduction to Geography, Thomas Y. Crowell Co., New York, 1967.

7. Fischer, E. et al, A Question of Place: The Development of Geographic Thought, R.V. Beatty Ltd., Arlington, 1967.
8. Ruson, R.H., A Geography of Geography: Origins and Development of the Discipline, W.M.C. Brown Company.
9. Hartshorne, Richard, The Nature of Geography, Association of American Geographers, Lancaster, Pennsylvania, 1939.
10. Hartshorne, Richard, Perspective on the Nature of Geography, RandMcNally and Co., Chicago, 1959.
11. Harvey, M.E. and B.P. Holly (eds.), Themes in Geographic Thought, Rawat Publications, Jaipur, 1999.
12. Husain, Majid, Evolution of Geographical Thought, Rawat Publications, Jaipur, 1984.
13. Mandal, R.B. and V.N.P. Sinha, Recent Trends and Concepts in Geography (three volumes), Concept Publishing Company, New Delhi.
14. Peet, R., Modern Geographical Thought, Blackwell, Oxford, 1998.
15. Prasad, H., Research Methods and Techniques in Geography, Rawat Publications, Jaipur.
16. Raza, Moonis, A Survey of Research in Geography, ICSSR, New Delhi.
17. जैन, एस.एम.: भौगोलिक चिन्तन का विकास (साहित्य भवन,आगरा)
18. कौशिक, एस.डी: भौगोलिक विचाराधारा एवं विधि तंत्र (रस्तोगी प्रकाशन, मेरठ)
19. माथुर एवं जोशी: भौगोलिक विचाराधाराओं का इतिहास (आर.बी.एस. पब्लिशर्स, जयपुर)
20. सिंह, जे.:भौगोलिक चिन्तन के मूलाधार (वसुन्धरा प्रकाशन, नई दिल्ली)
21. सिंह, यू.:भौगोलिक चिन्तन का विकास (..... पब्लिशर्स, नई दिल्ली)

M.A. / M.Sc. (Previous) Geography
Paper - II: Advanced Physical Geography

Unit - I

a) Earth's interior: seismological evidences of the structure and zoning of the earth's interior.
b) Revival of the continental drift theory.
c) Plate tectonic theory: division of the crust in plates; plate boundaries and plate margins, mechanism of plate movements; plate tectonics and associated structures.
d) Process of denudation; mass wasting: types and results.
e) Development of slopes: approaches to the study of slopes; views of W. Penck, A. Wood and A.N. Strahler.

Unit - II

a) Fluvial morphometry:
   i. Linear properties: stream orders, bifurcation ratio, stream numbers and stream lengths.
   ii. Areal properties: basin area, drainage density and texture of topography;
   iii. Relief properties; channel slope and valley side slope.
b) Cycle of erosion: views of W.M. Davis.
c) Cycle of erosion: views of W. Penck.
d) Fluvial landforms:
   i. Erosional landforms.
   ii. Depositional landforms.
   iii. Fluvial cycle of erosion and interruptions in it.

Unit - III

a) Land form of arid and semi-arid lands.
b) Arid cycle of erosion.
c) Glacial topography: erosional and depositional landforms; fluvo-glacial landforms.
d) Coastal landforms.
e) Karst cycle.

Unit - IV

a) Atmospheric heat: insolation, heat budget; horizontal and vertical distribution of termperature.

b) Motions in the atmosphere: atmospheric pressure and its thermal and dynamic controls.
c) General atmospheric circulation; forces controlling the atmospheric circulation; uni-cell and tri-cell model of atmospheric circulation.
d) Jet streams: characteristics, types and origin.
e) Air masses: source region, modifications in air masses and their classification; Fronts and their types.

Unit - V

a) Tropical and extra tropical cyclines: origin, areas and weather association with them.
b) Atmospheric humidity: sources and types.
c) Condensation, Sublimation and their forms.
d) Submarine topography.
e) Relief features of the Indian and Atlantic Ocean floors.

Suggested Readings:

1. Barry, R.G. and R.J. Chorley, Atmosphere, Weather and Climate, Routledge, 1998.
2. Critchfield, H., General Climatology, Prentice-Hall, New York, 1975.
3. Dayal, P., A Text Book of Geomorphology, Shukla Book Depot, Patna, 1996.
4. Garrison, T., Oceanography, Wadsworth Co., USAa, 1998.
5. Kale, V., and A. Gupta, Elements of Geomorphology, Oxford University Press, Calcutta, 2001.
6. Mather, J.R., Climatology, McGraw Hill, New York, 1974.
7. Monkhouse, F.J., Principles of Physical Geography, Hodder and Stoughton, London, 1960.
8. Pitty, A., Introduction to Geomorphology, Methuen, London, 1974.
9. Sharma, H.S., Tropical Geomorphology, Concept, New Delhi, 1987.
10. Singh, S., Geomorphology, Prayag Pustakalaya, Allahabad, 1998.
11. Sparks, B.W., Geomorphology, Longmans, London, 1960.
12. Strahler, A.N. and A.H. Strahler, Modern Physical Geography, John Viley & Sons, 1992.
13. Trewartha, G.T., An Introduction to Climate, International Students Edition, McGraw Hill, New York, 1980.

14ण सिंह, सविन्द्र :भौतिक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 1997
15ण चतुर्भुज मामोरिया एवं जैन :भौतिक भूगोल एवं जीव मण्डल, साहित्य भवन, आगरा, 1996
16ण वीरेन्द्र सिंह चौहान :भौतिक भूगोल, रस्तोगी पब्लिकेशन्स, मेरठ, 1996
17ण उपाध्याय एल.एन. :भौतिक भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर
18ण तिवारी, ए.के. :जलवायु विज्ञान के मूल तत्व, राज. हिन्दी ग्रन्थ अकादमी, जयपुर
19ण तिक्खा, रामनाथ :भौतिक भूगोल, केदारनाथ रामनाथ, मेरठ
20ण नेगी, बी.सी. :जलवायु विज्ञान तथा समुद्र विज्ञान, केदारनाथ रामनाथ, मेरठ
21ण कौशिक, एस.डी. :मौसम विज्ञान (राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर)
22ण संह, सविन्द्र :भू–आकृति विज्ञान, वसुन्धरा प्रकाशन, गोरखपुर, 1997

M.A. / M.Sc. (Previous) Geography
Paper - III: Economic and Resource Geography

Unit - I

a) Scope, approaches and recent trends in economic geography.
b) Location, movement and interaction in the simplified and heterogeneous landscape.
c) Spatial variation in transport costs : location and structure of transport cost; location of economic activities and spatial organisation of economies;
d) Transportation development and spatial impact.
e) Spatial variation in production costs: labour, capital, technical knowledge; location impact.

Unit – II

a) Classification of economies, sectors of economy: primary, secondary and tertiary.
b) Types of farming; subsistence agriculture.
c) Tropical plantations.
d) Commercial grain farming and corn region of USA.
e) Mediterranean agriculture.

Unit - III

a) Study of Great Lake industrial region of USA.
b) Study of Ruhr industrial region.
c) Study of industrial belt of Japan.
d) Study of industrial region of Ukraine.
e) World pattern of water transportation and trade.

Unit - IV

a) Scope, approaches and trends in resource geography.
b) Resources: concepts and classification.
c) Distribution, production and problems of conservation of iron, ore and manganese.
d) Distribution, production and problems of conservation of coal, petroleum, and nuclear resources.
e) Forest and water resources: distribution, utility and conservation.

Unit – V

a) Distribution, density and growth of human resources.
b) Population-resource equilibrium.
c) Population resource regions of the world.
d) Problems of resource utilization and conservation of resources.
e) Resource regions of world.

Suggested Readings:

1. Alexander, J.W., Economic Geography, Prentice Hall of India, New Delhi.
2. Bengston, N.A. and M.W. Royen, Fundamental of Economic Geography, Prentice Hall.
3. Berry, B.J.L. et al, D.M., Economic Geography, Prentice Hall.
4. Hamilton, F.E.I. (ed.), Resources and Industry, Oxford University Press, New York, 1992.
5. Janaki, V.A., Economic Geography, Concept Publishing Co., New Delhi.
6. Robinson, H., Economic Geography, MacDonald and Evans.
7. Singh, G., Economic and Commercial Geography, Manol Talao.
8. Thomas, R.S., The Geography of Economic Activity, McGraw Hill, New York.
9. Wheeler, J.O. et al, Economic Geography, John Wiley, New York, 1995.
10. Whitbeck, R.S. and Finch, V.L. Economic Geography, McGraw Hill, New York.
11. Zimmermann, E.W., World Resources and Industries, Harber.
12. श्रीवास्तव, वी.के. एवं राव, बी.पी.: आर्थिक भूगोल के मूल तत्व (वसुन्धरा प्रकाशन, गोरखपुर)
13. जैन, हरकचन्दः सैद्धान्तिक आर्थिक भूगोल (कमलेष प्रकाशन, भीलवाड़ा)
14. रजा, एम. एवं सिंह, ए.: संसाधन भूगोल
15. नैगी, बी.एस. : संसाधन भूगोल
16. सिंह एवं सिंह : आर्थिक और संसाधन भूगोल

M.A. / M.Sc. (Previous) Geography
Paper - IV: Advanced Geography of India

Unit - I

a) Geographical structure of India.
b) Physiographic divisions and sub divisions.
c) Climate: regional variations, phenomena of Monsoon and cycle of seasons.
d) Vegetation types and vegetation regions; problem of deforestation.
e) Major soil types; problem of soil erosion.

Unit – II

a) Water resources: status and problems; problem of floods and droughts.
b) Coastal and marine resources.
c) Irrigation: sources; multipurpose schemes and their problems with reference to Kaveri, Chambal and Sutlej.
d) Agro-climatic regions;
e) Cropping pattern.

Unit – III

a) Major mineral resources: ferrous - iron ore and manganese; and non-ferrous - bauxite and copper.
b) Power resources: conventional - thermal and hydro; and non-conventional - solar and wind.
c) Major industries: cement, chemical and engineering industries.
d) Industrial regions of India.
e) India's international trade : items, destination/origin, problems and policies.

Unit - IV

a) Population: distribution and growth; tribal population distribution pattern and belts.
b) Population problems and population policy of India.
c) Settlement types and pattern.
d) Transportation: rail, road and air.
e) Regional disparities and socio-economic development in India; Indian five year plans: objectives and achievements.

Unit - V

a) Concept of geographical regions; outline scheme of regions proposed by S.P. Chatterjee and R.L. Singh.
b) Detailed study of Kashmir region,
c) Detailed study of Middle Ganga plain region.
d) Detailed study of Malwa plateau region.
e) Detailed study of Tamil Nadu coastal plain and Bay of Bengal islands.

Suggested Readings:

1. Blandford, H.F., Climate and Weather of India, Ceylon and Burma, Meteorological Department of India.
2. Brown, C. and Dey, India's Mineral Wealth, Oxford University Press, London.
3. Chandrashekhar, S., India's Population: Facts and Policy, Allen and Unwin.
4. Chatterjee, S.D., Climatology of India, Calcutta University, Calcutta.
5. Chhibber, H.L., India, Part-III, Nand Kishore and Bros.
6. Davis, K., The Population of India, Princeton.
7. Deshpande, C.D., India - A Regional Interpretation, Northern Book Centre, New Delhi, 1992.
8. Joshi, H., Industrial Geography of India: A Case Study of Fertiliser Industry, Rawat Publication, Jaipur.
9. Khullar, D.R., India: A Comprehensive Geography, Kalyani Publishers, Ludhiana, 2000.
10. Mitra, A., Levels of Regional Development of India, Census of India, Vol. 1, Part I-A (i) and (ii), New Delhi, 1967.
11. Routray, J.K., Geography of Regional Disparity, Asian Institute of Technology, Bangkok, 1993.
12. Shafi, M., Geography of South Asia, McMillan & Co., Calcutta, 2000.
13. Singh, G., Geography of India, Atmaram & Sons, Delhi.
14. Singh, R.L. (ed), India: A Regional Geography, National Geographical Society, India.
15. Wadia, D.N., Geology of India, McMillan & Co., London, 1967.
16. बंसल, एस.सी.: भारत का वृहत् भूगोल, मिनाक्षी प्रकाशन, मेरठ, नई दिल्ली
17. मामोरिया, सी.बी.: भारत का भूगोल (साहित्य भवन, आगरा)
18. मामोरिया, सी.बी.: भारत का वृहद् भूगोल (साहित्य भवन, आगरा)
19. चौहान, टी.एस. : भारत का भूगोल (विज्ञान प्रकाशन, जयपुर)
20. सिंह एवं सिंह : भारत एक भौगोलिक समीक्षा (वसुन्धरा प्रकाशन, गोरखपुर)

M.A. / M.Sc. (Previous) Geography
Practical - I: Advanced Cartography

Unit - I

e) Meaning of cartography, art & science of cartographyh, history of cartography.
f) Cartographic materials and techniques.
g) Quantitative and qualitative symbols.
h) Maps and their classification.

i) Sources of geographic data (India).
The representation of data, information, features related to the following geographical aspects through maps and diagrams and their interpretation (to be submitted along with the record work):

Unit - II

Climatic aspects:

e) Isohyets or isotherms
f) Rainfall dispersion diagram.
g) Rainfall variability graphs (running average and cumulative deviation).
h) Rainfall trend line.
i) Temperature variation graph.

Unit - III

Geomorphic aspects (based on toposheets of 1:50,000 or 1:25,000 scale):

a) Profiles: serial, composite, superimposed and projected.
b) Slope: average slope map according to Wenthworth's method.
c) Drainage density and texture.
d) Stream order & River Basin
e) Hypsometric curve

Unit - IV

Demographic, transport and settlement aspects (atleast with 20 administrative units):

c) Density and population trend.
d) Age and Sex composition.
e) Urban and rural composition.
f) Traffic flow: cartograms.
g) Nearest neighbour analysis.

Unit - V

Economic and social aspects (atleast 20 administrative units):

e) Occupational structure.
f) Cropping pattern
g) Crop production and area.
h) Literacy.
i) SC and ST population.

Note: The record work will comprise of a minimum of 20 exercises drawn on one-fourth of a full drawing sheet and methodological and analytical interpretation of each one.

Distribution of Marks **Total Marks 100**

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

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

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

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

Practical – Assessed by Internal Examiner

B Part – **Advance Cartography, (60 marks)**

A Test paper Lab exercise – 30 marks, asked 6 questions, attempt three questions and duration 3 hours.

B - Record work – 20 marks

C - Viva-voce – 10 marks

The Cartographic record work should contain 20 exercises drawn on one fourth of the full drawing sheet.

References:

24. Arthur G., Advance Practical Geography, Heinemann.
25. Campbell, J., Introductory Cartography, Prentice Hall Inc., New York.
26. Govt. of Rajasthan, District Census Handbooks, latest as well as of previous Census,
27. Keates, J. S., Cartographic Design and Production, Longman, London.
28. Loxton, J., Practical Map Production, John Wiley & Sons, New York.
29. Mishra, R. P. and A. Ramesh, Fundamentals of Cartography, Concept Publishers, New Delhi.
30. Monkhouse, F. J. and H. R. Wilkinson, Maps and Diagrams, Methuen & Co., London.
31. Raisz, E., General Cartography , McGraw Hill Book Co., New York.
32. Robinson, A. H., Elements of Cartography, Chapman & Hall.
33. Sing, R. L., Elements of Practical Geography, Kalyani Publishing.
34. Singh, R. N., Map Work and Practical Geography, Central Book Depot.
35. भार्मा, जे. पी.: प्रयोगात्मक भूगोल (रस्तोगी पब्लिशर्स, मेरठ)

M.A. / M.Sc. (Previous) Geography
Practical - II: Air Photo Interpretation and Remote Sensing

Unit - I

a) Definition, Scope and Development of air photo interpretation techniques.
b) Types and quality of aerial photographs; factors affecting quality of aeriel photographs.
c) Tools and geometry of air photographs: Pocket and mirror stereoscope; geometry of aerial photographes.
d) Aerial camera, lens and filters.
e) Stages of production of aerial photographs.

Unit - II

a) Construction of sterograms and steotriplets; mosaics: types and their characteristics.
b) Basic air photo measurements: Photographic scale and flying height; measuring height of objects.
c) Displacement: relief and tilt.
d) Calculation of area, number of strips and number of airphotos; measuring angles, shutter speed and expauser interval.
e) Parallex: slope measurement.

Unit – III

a) Basic concepts and historical development of Remote Sensing techniques.
b) Process and stages of remote sensing.
c) Electromagnetic spectrum, properties of electromegnatic waves, energy interaction in the atmosphere and earth surface features.
d) Basic principles of thermal Remote Sensing: properties, characteristics of India remote sensing imageries.
e) Remote sensing platforms, sensors and resolution.

Unit - IV

a) Data analysis: Ground truth collection, concept of signatures, data processing and digital processing.
b) Satellite remote sensing platforms - Landstate, SPOT, IRS, INSAT; principal characteristics and geometry of scanner.
c) Orbital characteristics and data production : MSS, TM, LISS, I, LISS II and LISS III, HMR.

d) Equipment and their uses: Optical reflecting projector; diazo printer; overhead reflecting projector; analog image analyzer.
e) Working of above equipment.

Unit - V

a) Elements of object identification.
b) Comparisons of maps, air photos and imageries.
c) Mapping and interpretation of natural and cultural landscapes, field checking with air photos and imageries.
d) Application of remote sensing in geomorphic, agricultural, forestry, resource management, and environmental studies.
e) Computer based analysis of remote sensing data; GIS data model and structure; GIS and remote sensing integration.

Practical Exercises

Based on Aerial Photographs:

a) Object identification by Pocket Steoscope.
b) Indexing of aerial photographs
c) Interpretation of the following:
   i. Topographical aspects: General physiography, drainage orders and basins, vegetation, surface materials. (One exercise of each aspect).
   ii. Cultural aspects: Landuse-land covers (agricultural and general), field patterns settlement and transportation lines. (One exercise of each aspect).

Based on Satelite Imageries: (One exercise of each aspect)

a) Landuse-land covers.
b) Urban settlement pattern.
c) Forest: types and density.
d) Drainage order and basins.
e) Settlement and transportation lines.
f) Topographical aspects.

Distribution of Marks **Total Marks 100**

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

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

Practical – Assessed by Internal Examiner

Part B- Air photo Interpretation and remote sensing 60 marks

A.- Test paper Lab exercise – 35 marks (25+10),

iii. Practical exercise shall be of three hours duration and of 25 marks and candidates will be required to attempt any 2 exercises out of 4.
iv. The identification of objects (at least 10) on the air photo pairs shall be of 30 minutes duration and will carry 10 marks

B -Record work – 15 marks

C -Viva-voce – 10 marks

Suggested Readings:

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

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

Unit - I

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

Unit - II

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

Unit - III

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

Unit - IV

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

Unit - V

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

Suggested Readings:

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

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

Unit – I

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

Unit - II

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

Unit – III

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

Unit - IV

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

Unit – V

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

Suggested Readings:

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

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

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

Unit - I

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

Unit - II

a) Regional planning theory: society and supra urban space, economic activity and supra urban space and the systems of cities and economic development.
b) Social and political activity and supra urban space.

Analytical techniques for regional planning:

c) Information needs, forecasting techniques, industrial location analysis.
d) Economic base analysis, regional multiplier analysis, input output analysis.
e) Social accounting, gravity model, social area analysis.

Unit - III

Evaluation techniques for regional planning:

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

Unit - IV

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

Unit - V

Regional planning case studies:

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

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

Suggested Readings:

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

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

Unit - I

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

Unit – II

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

Unit - III

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

Unit - IV

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

Unit - V

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

Suggested Readings:

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

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

Unit - I

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

Unit - II

Population distribution:

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

.

Unit - III

Population growth:

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

Unit - IV

Population structure and characteristics:

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

e) Population composition of India: characteristics and problems.

Unit - V

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

Suggested Readings:

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

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

Unit - I

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

Unit - II

Basic economic concepts:

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

Critical review of theories and models of industrial location:

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

Unit - III

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

a) Copper, aluminium and iron and steel.

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

Unit - IV

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

Unit - V

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

Suggested Readings:

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

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

Unit - I

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

Unit - II

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

Unit - III

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

Unit - IV

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

Unit - V

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

Suggested Readings:

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

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

Unit - I

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

Unit - II

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

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

Unit - III

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

Unit - IV

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

Unit - V

Case studies of man induced environmental and ecological changes:

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

Suggested Readings:

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

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

Unit - I

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

Unit – II

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

Unit - III

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

Unit - IV

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

Unit - V

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

Suggested Readings:

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

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

Unit - I

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

Unit - II

Plane Table:

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

Unit - III

Theodolite and tacheometer:

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

Unit - IV

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

Unit - V

Dumpy level:

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

Note:

Candidates will submit following exercises as record work:

Resectioniong: 3 exercises of graphical methods of Llano's, Bessel's and trial and error.
Profiles: 2 exercises based on levelling measurements obtained with dumpy level.
Contouring: 1 exercise based on levelling measurements obtained with dumpy level.
Contouring: 1 exercise based on levelling measurements obtained with Clinometer.
Measuring and plotting reduced levels using tacheometer: 2 exercises.
Triangulation survey based on a minimum of 15 control points using theodolity: 2 exercises including one related to composite survey.
Plan of any **unsurveyed** campus/neighbourhood area based on composite survey: 1 exercise.
Thematic maps showing socio-economic characteristics of the surveyed area: form of built-up area, building material, functional use, social composition, availability of sanitary, water, electricity, telephone amenities, assets and income: 6 exercises.
All exercises will be based on surveying and levelling work done by the candidates themselves for areas hitherto unsurveyed.

Distribution of Marks **Total Marks 100**

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

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

Practical – Assessed by Exnternal Examiner

B Part- Surveying –Practical Exam (60 marks)

Surveying – 60 marks

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

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

B - Record work – 20 marks

C - Viva-voce – 10 marks

Suggested Readings:

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

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

Unit - I

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

Lab Work

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

Unit - II

i. Measuring the Surface of the Earth
ii. Geodesy

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

Lab Work

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

Unit - III

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

Lab Work

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

Unit - IV

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

Lab Work

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

Unit - V

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

Lab Work

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

Distribution of Marks **Total Marks 100**

A Part – GIS & Digital Cartography (40 marks)

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

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

Practical – Assessed by External Examiner

Part B- GIS & Digital Cartography – 60 marks

I. A -Test paper Lab exercise – 35 marks (25+10),

II. Practical exercise shall be of three hours duration and of 25 marks and candidates will be required to attempt any 2 exercises out of 4. One based on computer.

B - Record work – 20 marks

C - Viva-voce – 10 marks

Suggested Readings:

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

Proposed Scheme of Courses in Geography
Three-Year Pass Course (B. A.) 2017-18

TDC I Year Arts

Paper I : Physical Geography

Paper II : Human Geography

Practical : Cartography-I (Scales and presentation of geomorphic and climatic data)

TDC II Year Arts

Paper I : World Regional Geography

Paper II : Economic & Resource Geography

Practical : Cartography-II (Projections and presentation of socio-economic data & elementary statistical methods)

TDC III Year Arts

Paper I : Geography of India

Paper II : Geography of Rajasthan

Practical : Surveying and Remote Sensing

Notes:

1. Each theory paper will be of 70 marks each with minimum pass marks of 28
2. Each practical will be of 60marks with minimum pass marks of 23.
3. Teaching hours for each theory paper and practical will be three hours per week.
4. Practical batch will comprise of twenty Five students in one batch.
5. Use of map stencils (outline of political boundaries only) and simple function calculators are allowed in the examination.
6. Each theory paper of three hour duration will be divided into five units and questions will be asked as per following scheme:

Sections	Questions		Marks	Distribution of Questions
	To be Asked	To be Attempted		
1. Very Short (20-50 Words Answers)	10	10	20	Proportionately from each Unit with internal choice
2. Short Answers from each Unit with internal choice (250 words)	10	5	30	
3. Analytic/Descriptive Answers (500 words)	5	2	20	
Total	25	17	70	

B.A. First Year

Subject: Geography

Paper I - Physical Geography

Unit – I

a) Definition and scope of physical geography.
b) Origin of the earth - Tidal Hypothesis of James Jeans and Big Bang theory.
c) Interior of the earth.
d) Origin of the continent and oceans:- Wegner's theory of Continental drift and Plate tectonics.
e) Theories of mountain building:- Geosynclines Organ theory of Kober and Plate tectonic theory.

Unit – II

a) Isostacy :- Concept and Views of Airy and Pratt.
b) Diastrophism: - Faults & folds.
c) Weathering: - Physical, Chemical and Biological.
d) Drainage pattern and Cycle of erosion :- Davis & Penck.
e) Landforms: - Fluvial, coastal and arid.

Unit – III

a) Composition and structure of the atmosphere.
b) Atmospheric temperature: – Isolation and heat budget.
c) Atmospheric pressure :- Vertical and horizontal distribution of air pressure.
d) Winds: - Planetary, periodic and local winds.
e) Jet stream.

Unit – IV

a) Air masses: - Source region and classification of air masses.
b) Fronts :- Front genesis and frontolysis , Type of fronts.
c) Cyclones :- Tropical and temperate cyclones.
d) Anti cyclones.
e) Climatic classification by Koeppen.

Unit – V

a) Reliefs of the ocean basins - Bottom reliefs of the Indian ocean.
b) Distribution of temperature and Salinity of oceans.
c) Ocean currents : - Atlantic ocean and Pacific ocean currents.
d) Tides :- Type and theory of origin (Progressive wave and Stationary Wave theory.
e) Coral reefs :- Conditions of growth, types and origin according to Darwin and Murray.

Suggested Readings:

1. Dayal, P., A Text book of Geomorphology, Shukla Book Depot, Patna, 1996.
2. Dury, G. H., The Face of the Earth, Penguins, 1980.
3. Ernst, W.G., Earth Systems: Process and Issues, Cambridge University Press 2000.
4. ICSSR, A Survey of Research in Physical Geography, Concept, New Delhi, 1983.
5. Kale, V. and Gupta, A., Elements of Geomorphology, Oxford University Press, Calcutta, 2001.
6. Monkhouse, F. J., Principles of Physical Geography, Hodder and Stoughton, London, 1960.
7. Pitty, A., Introduction to Geomorphology, Methuen, London, 1974.
8. Sharma, H. S., Tropical Geomorphology, Concept, New Delhi, 1987.
9. Singh, S., Geomorphology, Prayag Pustakalaya, Allahabad, 1998.
10. Small, R. J., The Study of Landforms, McGraw Hill, New York, 1985.
11. Sparks, B. W., Geomorphology, Longmans, London, 1960.
12. Steers, J. A., The Unstable Earth: Some Recent Views in Geography, Kalyani Publishers, New Delhi, 1964.
13. Strahler, A. N., Environmental Geo-Science, Hamilton Publishing, Santa Barbara, 1973.
14. Strahler, A. N. and A. H. Strahler, Modern Physical Geography, John Wiley & Sons, 1992.

15. Summerfield, M. A., Global Geomorphology, Longman, 1991
16. Thornbury, W. D., Principles of Geomorphology, Wiley Eastern, l969.
17. Wooldridge, S. W. and R. S. Morgan, The Physical Basis of Geography: An Outline of Geomorphology, Longman Green & Co., London, 1959.
18. Wooldridge, S. W., The Geographer as Scientist, Thomas Nelson and Sons Ltd., London, 1956.
19. Barry, R. G. and R. J. Chorley, Atmosphere, Weather and Climate, Routledge, 1998.
20. Critchfield, H., General Climatology, Prentice-Hall, New York, 1 975.
21. Das, P. K., The Monsoons, National Book Trust, New Delhi, 1968.
22. Lydolph, Paul E., The Climate of the Earth, Rowman and Allanheld, Totowa, N. J., 1985.
23. Mather, J. R., Climatology, McGraw Hill, New York, 1974.
24. Patterson, S., Introduction of Meteorology, McGraw Hill Book Co., London, 1 969.
25. Stringer, E. T., Foundation of Climatology, Surjeet Publications, Delhi, 1982.
26. Trewartha, G. T., An Introduction to Climate, International Students Edition, McGraw Hill, New York, 1980.
27. Anikouchine, W. A. and R. W. Sternberg, The World Oceans: An Introduction to Oceanography, Englewood Cliffs, N. J. 1973.
28. Gerald, S., General Oceanography: An Introduction, John Wiley & Sons, New York, 1980.
29. Garrison, T., Oceanography, Wadsworth Co. USA, 1998.
30. King, C. A. M., Beaches and Coasts, E. Arnold, London, 1972.
31. King, C. A. M., Oceanography for Geographers, E. Arnold, London, 1975.
32. Sharma, R. C. and M. Vatel, Oceanography for Geographers, Chetnya Publishing House, Allahabad, 1970.
33. Shepard, F. P., Submarine Geology, Harper & Sons, New York, 1948.
34. Thurman, H. B., Introductory Oceanography, Charles Webber E. Merril Publishing Co., 1984.
35. Weisberg, J. and Howard, Introductory Oceanography, McGraw Hill Book Co., New York, 1976.
36. सविन्द्रसिंह : भौतिक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 1997
37. शर्मा एच.एस. : ''भौतिक भूगोल'' पंचशील प्रकाशन, जयपुर
38. चतुर्भुज मामोरिया एव जैन : भौतिक भूगोल एवं जीव मण्डल, साहित्य भवन आगरा, 1996
39. वीरेन्द्र सिंह चौहान : भौतिक भूगोल, रस्तोगी पब्लिकेशन्स, मेरठ, 1996
40. उपाध्याय एल. एन. : भौतिक भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर
41. तिक्खा, रामनाथ : भौतिक भूगोल, केदारनाथ रामनाथ, मेरठ
42. तिवारी, ए. के. : जलवायु विज्ञान के मूल तत्व, राज.हिन्दी ग्रन्थ अकादमी, जयपुर
43. नेगी, बी. सी. : जलवायु विज्ञान तथा समुद्र विज्ञान, केदारनाथ रामनाथ, मेरठ

B.A. First Year
Subject: Geography
Paper: II Human Geography

Unit – I

a) Definition and scope of Human geography.
b) Its relation with other social sciences.
c) Schools of Human geography: - Determinism, Possibilism and Neo – Determinism.
d) Concept of Man – Environment relationship.
e) Fundamental principles of Human geography: Principles of activities, Principle of areal differentiation, Principle of terrestrial unity.

Unit – II

a) Stages of evolution of man
b) Races of mankind: - criteria of classification according to G. Taylor
c) Classification and distribution of races according to G. Taylor
d) Factors of evolution of human races
e) Migration zone theory by Griffith Taylor

Unit – III

a) Distribution of Tribes in the world.
b) Habitat, Occupation & social organization: Pigmies, Badawins, Eskimos and Khirgiz,
c) Distribution of Tribes in India
d) Habitat, economic activities and social organization of Bhil, Naga, Toda and Santhal.
e) Early economic activities of mankind :- Food gathering, Hunting, Fishing & Shifting cultivation.

Unit – IV

a) Distribution of population: world distribution pattern physical, economic and social factors influencing spatial distribution.
b) Concept of over population, under population, optimum population and zero population growth.
c) Demographic transition theory.
d) Migration-internal and international, general laws of Migration
e) Concept of human development and population problems and policy of India.

Unit – V

a) Settlement: origin and types of settlement.
b) Rural settlement-Pattern of rural settlements, house types and building materials, rural settlement in India
c) Urban settlement- origin of towns, patterns of cities.
d) Functional classification of cities, zoning of cities, Christaller's theory
e) Urbanization and problems: slums, town planning, concept and principles.

*Note – Stencils are to be permitted in the examination.

Suggested Readings:

1. Brunhes, J. : Human Geography
2. Huntington, E.: The Principles of Human Geography, John Wiley & Sons, N.Y.
3. Perpillou, A.V. : Human Geography, Longmans, 1965
4. Money, D.C.: An Introduction to Human Geography; U.I.P. London
5. Karan, M.P. : Manav Bhugol ke Siddhant, Kitabghar, Kanpur
6. Mamoria, C.B. : Principles of Human Geography
7. Negi, B.S. : Human Geography- An Ecological Aproach, Kedarnath Ramnath, Meerut,1982
8. Dwivedi, R.L. & Singh, R.L. : Manav Bhugol ki Samiksha
9. Blache Vidal de la : Manav Bhugol ke Siddhant (in Hindi)

B. A. First Year
Subject: Geography
Practical

Practical: Cartography-I (Scales and presentation of geomorphic and climatic data)

The art and science of cartography; history; techniques and preparation of maps and their classification.

1. Scales: plain, diagonal, comparative, time and Venire's (two exercises of each scale and two scales on each sheet). (10 exercises)
2. Enlargement, reduction and combination of maps (2 exercises)
3. Methods of representation of relief: hachure, form line, contour and layer tint methods. (4 exercises on two sheets)
4. Composite features to be drawn with the help of contours based on topo sheets representing the typical areas of glaciated region, arid region, region and fluvial region (any one of either youth, mature and old stage). (4 exercises)

5. Drawing of profiles: serial (at least four), composite, superimposed and projected. (4 exercises on two sheets)
6. Knowledge of principles and working of weather instruments including self- recording instruments: thermometer, thermograph, barometer, barograph, hygrometer, hygrograph, rain gauge, rainograph, wind wane and cup anemometer.
7. Weather symbols: based on Indian weather maps. (one exercise)
8. Study and interpretation of Indian weather maps: One each of December-January and July August. (2 exercises)
9. Representation and interpretation of climatic data:
10. (a) Rainfall histogram (b) Hyther graph, (c) Climograph, (d) Rainfall variability graph (departure from mean). (4 exercises)

Notes:

1.Candidates will be examined by an External Examiner in consultation with the Internal Examiner.
2. Each exercise should be drawn on 1/4th of a full drawing sheet.
3. The test paper of practical will be of two hours duration and candidates will be required to answer three questions out of five.
4. The distribution of marks will be as follows:

a.	Paper	36 Marks
b.	Record Work*	14 Marks
c.	Viva-voce**	10 Marks

* Record work will be assessed by the teacher in-charge of the practical group and the external examiner.

** Viva-voce will be based on the record work and weather instruments.

5. Ex-students will have to complete the prescribed practical work under the guidance of the Head of the Department of the respective college and to produce a certificate to that effect before the commencement of the examination.

Suggested Readings:

1. Monkhouse, F. J., Maps and Diagrams, Methuen & Co. Ltd., London.
2. Robinson, A. R.,Elements of Cartography, Chapman & Hall.
3. Singh, R. L., Elements of Practical Geography, Kalyani Publishers.
4. Raize, E., General Cartography, McGraw Hill Book Co., London.
5. Singh, R. N. and Kanaujia L. R. S., Map Work & Practical Geography, Central Book Depot, Allahabad.
6. Mishra, R. P. and A. Ramesh, Fundamentals of Cartography, Concept Publishers, New Delhi.

7- भार्मा, जे.पी. : प्रायोगिक भूगोल, रस्तोगी प्रकाशन, मेरठ
8. जैन शेपमल : प्रायोगात्मक भूगोल, साहित्य भवन आगरा
9. भल्ला, एल. आर. : प्रायोगात्मक भूगोल, के.डी. प्रकाशन, अजमेर
10. मामोरिया चतुर्भुज : मानचित्र विज्ञान एवं प्रायोगात्मक भूगोल, साहित्य भवन, आगरा
11. पंवार, आर. एस. : मानचित्र विज्ञान एवं प्रायोगात्मक भूगोल, तुलसी प्रकाशन, मेरठ
12. वर्मा, एल एन.व आर. एम लोढा : प्रायोगात्मक भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर
13. सिंह, एल.आर.; : मानचित्र एवं प्रायोगात्मक भूगोल, सेन्ट्रल बुक डिपो, इलाहाबाद
14. सिंह एवं कन्नोजिया : प्रायोगात्मक भूगोल की रूपरेखा, सेन्ट्रल बुक डिपो, इलाहाबाद

B.A. Second Year
Subject: Geography
Paper I: World Regional Geography

UNIT I: Japan (Asia)

a) Geographical Location and Importance of Japan in Asia
b) Physical Division, Drainage and Climate

c) Population Distribution and Urbanization
d) Horticulture and Natural Resources: Vegetation and Major Minerals
e) Industrial Regions of Japan

UNIT II: Egypt (Africa)

a) Geographical Location and Importance of Egypt in Africa
b) Physical Division, Drainage and Climate
c) Population Distribution and Natural Resources: Vegetation and Major Minerals
d) Agricultural Development in Nile Valley: Aswan Project & Irrigation
e) Industrial Development

UNIT III: United State of America (North America)

a) Geographical Location and Importance of USA in North America
b) Physical Division, Drainage and Climate
c) Population Distribution and Development of Megalopolis (East Coast)
d) Agricultural Belts: Wheat, Corn and Cotton
e) Industrials Regions: Iron-Steel and Engineering Industry

UNIT IV: Brazil (South America)

a) Geographical Location and Importance of Brazil in South America
b) Physical Division, Drainage and Climate
c) Population Distribution and Natural Resources: Vegetation and Major Minerals
d) Agricultural Development: Coffee & Sugarcane: Distribution and Production
e) Industrial development and Urbanization

UNIT V: France (Europe) & New Zealand (Oceania)

a) Geographical Location and Importance of France in Europe
b) Physical Division, Drainage and Climate of France
c) Population Distribution and Urbanization: Agriculture, Industrial Regions, Transportation
d) Geographical Location, Physical Division and Climate of New Zealand
e) Population Distribution and Dairy Farming,Urbanization

References:

1. Cole, J., A Geography of the World's Major Regions, Routledge, London, 1996.
2. Cole, J. P., Latin America - Economic and Social Geography, Butterworth, USA, 1975.
3. Cole, M. M., South Africa, Dutton, New York, 1961.
4. de Blij, H. J., Geography: Regions and Concepts, John Wiley & Sons Inc., New York, 1994.
5. Dickenson, J. P. et al., The Geography of the Third World, Routledge, London, 1996.
6. Gourou, R., The Tropical World, Longman, London, 1980.
7. Jackson, R. H. and L. E. Hudman, World Regional Geography: Issues for Today, John
8. Kolb, A., East Asia: Geography of a Cultural Region, Methuen, London, 1977.
9. Minshull, G. N., Western Europe, Hoddard & Stoughton, New York, 1984.
10. Patterson, J. H., Geography of Canada and the United States, Oxford University Press, 1985.
11. Songquiao, Z., Geography of China, John Wiley & Sons Inc., New York, 1994.
12. Ward, R. W. and A. Miller, World Regional Geography: A Question of Place, John Wiley &Sons Inc., New York, 1989.
13. वर्मा, लक्ष्मी नारायण, प्रादेशिक भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर
14, हुसैन, माजिद, विश्व का भूगोल, रावत पब्लिकेशनस,जयपुर नई दिल्ली
15, मिश्र, निरंजन, क्षैत्रीय भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर

B. A. SECOND YEAR
SUBJECT: GEOGRAPHY
Paper-II: Economic & Resource Geography

Unit – I

a) Definition, nature and scope of economic geography
b) Recent trends in economic geography; its relation with economics, and allied subjects.
c) Classification of economies and spatial organization.
d) Sectors of economy: primary, secondary and tertiary.
e) Impact of economic activities on environment.

Unit – II

a) Natural resources: meaning; Classification of resources.
b) Conservation of resources; Water and forest resource conservation.
c) Changing nature of economic activities: Mining and forestry,
d) Changing nature of economic activities: Agriculture and industry.
e) Changing nature of economic activities: Trade and transport.

Unit – III

a) Agricultural types and classification.
b) Agriculture: physical, social, cultural environment influencing crop production.
c) Spatial distribution, production and international trade of rice and wheat
d) Spatial distribution, production and international trade of cotton and rubber.
e) Spatial distribution, production and international trade of coffee and tea.

Unit – IV

a) Classification of minerals; distribution, production and trade of iron ore and bauxite.
b) Distribution and production of coal, petroleum and hydroelectricity.
c) Factors of localization of industries; iron and steel industry.
d) Chemical and cement industries.
e) Textile and ship building industries.

Unit – V

a) Trade and transport: geographical factors in their development.
b) Major water, land and air transport routes.
c) Internal and international trade.
d) World Trade Organization (WTO) and globalisation.
e) Impact of WTO and globalisation on developing countries of the world.

Suggested Readings:

1. Bengston, N. A. and V. L. Royen, Fundamental of Economic Geography, Prentice Hall, New York.
2. Boesch, H., A Geography of World Economy, D. Van-Nostrand Co., New York, 1964.
3. Chapman, J. D., Geography and Energy, Longman, London, 1989.
4. Gregor, H. F., Geography of Agriculture, Prentice Hall, New Jersey, USA, 1970.
5. Griggs, D. B., The Agricultural Systems of the World, Cambridge University Press, New York, 1974.
6. Hartshorne, T. N. and J. W. Alexander, Economic Geography, Prentice Hall, New Delhi, 1988.
7. Jones, C. F. and G. G. Darkenwald, Economic Geography, McMillan Co., New York. 1975.
8. Millar E., Geography of Manufacturing, Prentice Hall, New York, 1962.
9. Pickes, L. D., The Wealth of The World, Dan & Co., London.
10. Raza. M. and Y. Agrawal, Transport Geography of India, Concept, New Delhi, 1986.
11. Robinson, H., Economic Geography, Longmans.
12. Smith, D. M., Industrial Location - An Economic Geographical Analysis, John Wiley, New York, 1971.
13. Stamp, L. D., A Commercial Geography, Longmans.
14. Thomas, R. S., The Geography of Economic Activities, McGraw Hill, New York 1962.
15. UNO, Statistical Year Book (Latest Edition).

16. दास, गुप्ता एवं कपूरः आर्थिक और वाणिज्य भूगोल, एस चांद एण्ड कम्पनी, दिल्ली
17. दुबे रामनाथ :आर्थिक–वाणिज्य भूगोल, किताब महल, इलाहाबाद
18. नेगी :संसाधन भूगोल
19. नेगी :मानव तथा आर्थिक भूगोल

20. जैन, पी. :आर्थिक भूगोल की समीक्षा
21. कौशिक, एस. डी. :आर्थिक भूगोल की समीक्षा
22. कौशिक, एस. डी. :संसाधन भूगोल

B.A. Second Year
Subject: Geography
Practical: Cartography-II (Projections and Presentation of socio-economic data)

Map projections:

1. Meridians and parallels: definition, and characteristics.
2. Map projections: meaning, compromises, classification,
3. Characteristics, use and graphical construction along with outline map of the following projections:
   - i. Zenithal projections: orthographic, stereographic and gnomonic (both polar and equatorial cases) (6 exercises)
   - ii. Conical projections: Bonne's and polyconic (2 exercises)
   - iii. Mercator's projections (1 exercise)
   - iv. Globular projection (1 exercise)
   - v. Gall's projection (1 exercise)
   - vi. Mollweide's projection (1 exercise)
   - vii. Sinusoidal projection (1 exercise)

Presentation socio-economic data:

1. Thematic maps: Elements and characteristics of thematic maps.
2. Drawing and use of dot, choroschematic, chorochromatic, choropleth and isopleth maps (6 exercises)
3. Diagrams: elements and characteristics of diagrams.
4. Drawing of diagrams along with appropriate scales:
   - i. One dimensional (2 exercises)
   - ii. Two dimensional (3 exercises)
   - iii. Three dimensional (3 exercises)
   - iv. Traffic flow diagram (1 exercise)
5. Graphs: elements and characteristics of graphs.
6. Drawing of poly, band, and triangular graphs. (3 exercises)

Basic statistical methods:

1. Frequency distribution and its presentation.
2. Measures of central tendency: Arithmetic mean, mode and median.
3. Measures of dispersion: Standard deviation and coefficient of variation.
4. Measures of correlation: Rank correlation and product moment correlation.

Notes:

1. Candidates will be examined by an External Examiner in consultation with the Internal Examiner.
2. Each exercise should be drawn on $1/4^{th}$ of a full drawing sheet.
3. The test paper of practical will be of two hours duration and candidates will be required to answer three questions out of five.
4. The distribution of marks will be as follows:

a. Paper 36 Marks
b. Record Work* 14 Marks
c. Viva-voce** 10 Marks

* Record work will be assessed by the teacher in-charge of the practical group and the external examiner.

** Viva-voce will be based on the record work.

5. Ex-students will have to complete the prescribed practical work under the guidance of the Head of the Department of the respective college and to produce a certificate to that effect before the commencement of the examination.

Suggested Readings:

1. Ahmed, K. S., Simple Map Projection, Friends Book House, Aligarh.
2. Bygott, J., An Introduction to Map Work and Practical Geography, University Tutorial Press, London.
3. Meux, A. H., Reading Topographical Maps, University of London Press.
4. Mishra, R. P. and A. Ramesh, Fundamentals of Cartography, Concept Publishers, New Delhi.
5. Monkhouse, F. J., Maps and Diagrams, Methuen & Co. Ltd., London.
6. Raize, E., General Cartography, McGraw Hill Book Co., London.
7. Robinson, A. R., Elements of Cartography, Chapman & Hall.
8. Singh, R. L. and P. K. Dutt, Elements of Practical Geography, Student Friends, Allahabad
9. Singh, R. L., Elements of Practical Geography, Kalyani Publishers.
10. Singh, R. N. and L. R. S. Kanaujia, Map Work & Practical Geography, Central Book Depot, Allahabad.
11. Tamaskar E. G. and V. M. Deshmukh, Geographical Interpretation of Indian Topographical Maps, Orient Longman.
12. भार्मा, जे. पी. : प्रायोगिक भूगोल, रस्तोगी प्रकाशन, मेरठ
13. जैन शेपमल : प्रायोगात्मक भूगोल, साहित्य भवन आगरा
14. भल्ला, एल. आर. : प्रायोगात्मक भूगोल, के.डी. प्रकाशन, अजमेर
15. मामोरिया चतुर्भुज : मानचित्र विज्ञान एवं प्रायोगात्मक भूगोल, साहित्य भवन, आगरा
16. पंवार, आर. एस. : मानचित्र विज्ञान एवं प्रायोगात्मक भूगोल, तुलसी प्रकाशन, मेरठ
17. वर्मा, एल एन.व आर. एम लोढा : प्रायोगात्मक भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर
18. सिंह, एल.आर.; : मानचित्र एवं प्रायोगात्मक भूगोल, सेन्ट्रल बुक डिपो, इलाहाबाद
19. सिंह एवं कन्नोजिया : प्रायोगात्मक भूगोल की रूपरेखा, सेन्ट्रल बुक डिपो, इलाहाबाद

B.A. Third Year
Subject: Geography
Paper-I: Geography of India

Unit – I

a) India in the context of Southeast and South Asia.
b) India: a land of diversities; unity within diversities.
c) Major terrain elements of India and their role in shaping physical landscape of India.
d) Drainage systems of India and their functional significance.
e) The morphological regions of India.

Unit – II

a) Regional and seasonal variations of climate: the monsoon, western disturbance, norwesters, climatic regions of India.
b) Soil types of India: their distribution and characteristics
c) Vegetation types and their distribution; forest resources
d) Status, use and need for conservation of mineral resources
e) Status, use and need for conservation of power resources

Unit – III

a) Spatial distribution of population and density; socio-economic implications of population growth; urbanization;
b) Changing nature of Indian economy.
c) Agricultural growth during the plan period; Green Revolution vis-à-vis traditional farming;
d) Major crops and their status; wheat, Rice, Sugarcane, cotton
e) Regionalization of Indian agriculture;

Unit – IV

a) Industrial development and Indian economy.
b) Industrial regions of India and their industrial structure.
c) Major industries: Iron and steel, Cotton, cement, chemical Industries
d) Means of transportations: Roads, Railways and Railways
e) Composition of Domestic and International trade.

Unit – V

a) Basis of regional divisions of India.
b) Classification of Economic Regions of India: P. Sen Gupta
c) Comparative Analysis of macro regions.
d) Resource regions of India.
e) Planning region of India

Suggesting Readings:

1. Deshpande, C. D., India - A Regional Interpretation, Northern Book Centre, New Delhi, 1992.
2. Farmer, B. H., An Introduction to South Asia, Methuen, London, 1983.
3. Govt. of India, India - Reference Annual, Pub. Div, New Delhi, (latest edition)
4. Govt. of India, National Atlas of India, NATMO Publication, Calcutta.
5. Govt. of India, The Gazetteer of India, Vol. I & III Publication Division, New Delhi, 1965.
6. Khullar, D. R., India: A Comprehensive Geography, Kalyani Publishers, Ludhiana, 2000.
7. Learmonth, A. T. A. et al (ed), Man and Land of South Asia, Concept, New Delhi.
8. Manorama Press, Manorma Year Book, Kottayam (Kerala), (Latest Edition).
9. Mitra, A., Levels of Regional Development of India, Census of India, Vol. 1, Part I-A (i) and (ii), New Delhi, 1967.
10. Routray, J. K., Geography of Regional Disparity, Asian Institute of Technology, Bangkok, 1993.
11. Shafi, M, Geography of South Asia, McMillan & Co., Calcutta, 2000.
12. Singh, G., Geography of India. Atmaram & Sons, Delhi.
13. Singh, R. L. (ed), India: A Regional Geography, National Geographical Society, India,
14. Spate, O. H. K. and Learmonth, A. T. A., India and Pakistan - Land, People and Economy Methuen & Co., London, 1967.
15. Times of India Press, Times of India Year Book, Bombay (Latest Edition)
16. Vaidiya, K. S., Dynamic Himalaya, University Press, Hyderabad, 1998,
17. Wadia, D. N., Geology of India, McMillan & Co., London, 1967.

18- गौड कृपाशंकर : भारत की भौगोलिक समीक्षा, हिन्दी प्रचार पुस्तकालय, वाराणसी
19- मामोरिया चतुर्भुज : भारत का आर्थिक भूगोल, आगरा बुक स्टोर, आगरा
20- दुबे, रामनाथ : भारत का आर्थिक भूगोल, किताब महल, इलाहाबाद
21- तिवारी विश्वनाथ : भारत का वृहद् भूगोल, रामप्रसाद एण्ड सन्स, आगरा
22- चौहान, वीरेन्द्रसिंह : विशाल भारत, रस्तोगी एण्ड कम्पनी, मेरठ

23. चौहान, तेजसिंह : भारत का भूगोल, विज्ञान प्रकाशन, जयपुर

B. A. Third year
Subject:Geography
Paper-II: Geography of Rajasthan

Unit – I

a) Rajasthan in the context of India; diversity and unity; history of emergence.
b) Geological structure and formation of the state.
c) Relief features and physiographic regions; drainage characteristics.
d) The monsoon rhythm and weather conditions; climatic regions; climate and man.
e) Vegetation; forests; soils types.

Unit – II

a) Distribution of population: status, factors and implications.
b) Population characteristics: gender, literacy and workforce.
c) Urbanization and migration.
d) Tribal population: composition, concentration and principal tribal groups.
e) Population growth and associated problems.

Unit – III

a) Agriculture and economy of Rajasthan
b) Cropping pattern: detailed study of bajra, maize, wheat, pulses and oilseed crops
c) Source of irrigation; irrigation system of Indira Gandhi Canal and Chambal Command Area; problem of depleting ground water resources
d) Livestock resource: distribution by composition and size; dairy development
e) Major agricultural problems and their solution.

Unit – IV

a) Minerals, industries and economy of Rajasthan.
b) Detailed study of minerals: rock phosphate, mica, marble, soapstone and limestone.
c) Status and potential of energy minerals: lignite, petroleum and natural gas.
d) Detailed study of industries: zinc, cement, chemical, cottage and small-scale industries.
e) Industrial problems and prospects of the state.

Unit – V

a) Tourism: basis of tourism in Rajasthan; major destinations; tourists by place of origin.
b) Means of transportation: net work of roads and railways and related problems.
c) Droughts in Rajasthan: nature, causes, implications and coping measures.
d) Basis of regions of Rajasthan and study of different schemes of regionalization.
e) Detailed study of Marusthali and Aravalli regions.

Suggesting Readings:

1. Bhalla, L. R., Rajasthan ka Bhugol, Kuldeep Publication, Ajmer (Hindi).
2. Census of India, Rajasthan Series, General Population Tables of 1961to 2001.
3. DST (Govt. of Rajasthan), Resource Atlas of Rajasthan, Jaipur.
4. Govt. of Rajasthan, Statistical Abstract (latest edition), Jaipur.
5. Mishra, V. C., Geography of Rajasthan, National Book Trust, New Delhi.
6. NCEAR, Techno-economic Survey of Rajasthan, Vol. I and II, New Delhi.
7. Publication Division, Govt. of India, India (Latest edition), New Delhi.

8. Spate, O. H. K., India and Pakistan, Methuen, 1960.
9. चौहान, तेजसिंह : राजस्थान का भूगोल, विज्ञान प्रकाशन, जोधपुर
10- लोढा, राजमल एवं महेश्वरी, दिपक : राजस्थान का भूगोल, हिमांशु पब्लिकेशन्स, उदयपुर
11- मामोरिया, चतुर्भुज व जैन शेपमल : राजस्थान का भूगोल, साहित्य भवन पब्लिकेशन्स, आगरा
12- सक्सेना, एच.एम. : राजस्थान का भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर
13- विजयवर्गीय, राम रक्षपाल : राजस्थान का भू–विज्ञान एवं खनिज सम्पदा, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर

B. A. Third year
Subject: Geography
Practical: Surveying, Topographical Maps and Remote Sensing

I. Surveying:

1. Objectives; primary division and classification of surveying; principles of surveying.
2. Plane table survey:
   i. Radiation; intersection; open and close traverse with a minimum of five stations. (4 exercises)
   ii. Resectioning: three point problem by mechanical and graphical methods of Bessel and Llano. (3 exercises)
3. Prismatic compass survey:
   i. Types of bearings and conversion of bearings.
   ii. Radiation; intersection; open and close traverse (with a minimum of five stations. (4 exercises)
   iii. Calculation of included angles; correction of bearing; closing of the error. (1 exercise)

II. Topographical maps:

1. A brief history of Survey of India; scheme of topographical maps; and conventional symbols. (2 exercises)
2. Scale of slopes. (1 exercise)
3. Study and interpretation of Survey of India 1:50,000 or 1:63,360 topographical maps representing typical areas of Rajasthan in respect of relief, drainage, land use, settlement and means of transport (2 exercises)

III. **Remote sensing**:

1. Remote sensing as a tool for data generation and mapping;
2. Basic concepts of aerial photographs and satellite imageries;
3. Generating maps (physical and human features) from aerial photographs and remote sensing data products using pocket stereoscope and other aids. (2 exercises)

Notes:

2. Candidates will be examined by an External Examiner in consultation with the Internal Examiner.
3. Each exercise should be drawn on a full drawing sheet.
4. The test paper of practical will be of two hours duration and candidates will be required to answer three questions out of five.
5. The distribution of marks will be as follows:

a. Paper	30 Marks
b. Record Work*	10 Marks
c. Viva-voce**	5 Marks
d. Field survey and viva- voce	15 Marks (10+5)

* Record work will be assessed by the teacher in-charge of the practical group and the external examiner.

** Viva-voce will be based on the record work.

6. Ex-students will have to complete the prescribed practical work under the guidance of the Head of the Department of the respective college and to produce a certificate to that effect before the commencement of the examination.

Suggesting Readings:

1. Cole, John P. and Cuchlaine A. M. King, Quantitative Geography: Techniques and Theories in Geography, John Wiley & Sons Ltd., London, 1970.
2. Hammond, Robert and McCullagh Patrick, Quantitative Techniques in Geography: An Introduction, Clarendon Press, Oxford, 1978.
3. Kanetkar, T. P., Surveying and Levelling, Vol. I, A. V. Griha Prakashan, Bombay, 1985.
4. Nag, Prithvish and M. Kudrat, Digital Remote Sensing, Concept Publishing Company, New Delhi, 1998.
5. Singh, R. L., Elements of Practical Geography, Student Friends, Allahabad.

6. सिंह एवं कनोजिया : मानचित्र तथा प्रायोगात्मक भूगोल, सेन्ट्रल बुक डिपो, इलाहाबाद
7- तिवारी, वि वनाथ : प्रायोगिक भूगोल, रामप्रसाद एण्ड संस, आगरा
8- वर्मा, एल.एन. एवं लोढा, आर. एम. : प्रायोगात्मक भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर
9- भार्मा, जे.पी. : प्रायोगात्मक भूगोल, रस्तोगी प्रकाशन, मेरठ