



JANANAYAK CHANDRASHEKHAR UNIVERSITY, BALLIA

Department of Geography
Revised Syllabus for **M.A. / M.Sc.** Geography
UNDER SEMESTER SYSTEM
(w.e.f. -2020-21)

Jananayak Chandrashekhar University, Ballia
DEPARTMENT OF GEOGRAPHY
Faculty of Social Science
Semester Based Syllabus

Semester	Paper	Marks
1st	i-GR101: Geomorphology	80
	ii-GR102: Advanced Geography of India	80
	iii-GR103: Economic Geography	80
	iv-GR104: Environmental Geography	80
	v-GR105: Practical Examination (Evaluation by Internal Examiner)	
	Part A: Cartographic Work	40
	Part B: Field Cum- Lab Work	40
	Total	400
2nd	i-GR201: Physical Landscape	80
	ii-GR202: Hydrology and Oceanography	80
	iii-GR203: Geography of Resources	80
	iv-GR204: Basics of Remote Sensing	80
	v- GR205: Practical Examination (Evaluation by Internal Examiner)	
	Part A: Cartographic Work	40
	Part B: Field Cum-Lab Work	40
	Total	400
3rd	i-GR301: Climatology	80
	ii-GR302: Geoinformatics and Geographic Information system (GIS) Applications	80
	iii-GR303: Students are requested to opt any one of the following	50+30
	GR303A: Disaster Management	
	GR303B: Urban Geography	
	GR303C: Population Geography	
	iv-GR304: Students are requested to opt any one of the following	50+30
	GR304A: Geography of Rural Settlements	
	GR304B: Geography of Tourism	
GR304C: Industrial Geography		
v-GR305: Practical Examination (Evaluation by Internal Examiner)	80	
	Total	400
4th	i-GR401: Geographical Thoughts	80
	iiGR402: Research Methods& Techniques	80
	iii-GR403: Students are requested to opt any one of the following	50+30
	GR403A: Regional planning & Development	
	GR403B: Agricultural Geography	
	GR403C: Transport Geography	
	iv-GR404: Students are requested to opt any one of the following	60+20
	GR404A: Population & Development	
	GR404B: Geography of Rural Development	
GR404C: Political Geography		
v- GR405: Project Work & Study Tour (Evaluation by Internal & External Examiner)	80	
	Total	400

DEPARTMENT OF GEOGRAPHY
JAN NAYAK CHANDRASHEKHAR UNIVERSITY, BALLIA
M.A./M.Sc.

First Semester

Paper I

GR 101: Geomorphology

Unit-I:

Meaning and scope of geomorphology, Fundamental Concepts, Modern geomorphologists - Hutton, Strahler, King.

Unit-II:

Endogenetic process- Plate tectonic, Mountain Building, Volcancity, Seismicity, Earthquakes, tsunami, Isostasy

Unit-III-:

Geomorphometric Analysis- Drainage density, Drainage Frequency, Bifurcation ratio, Drainage curve, Bifurcation ratio, Slope types and analysis.

Unit-IV:

Development of Geomorphology in India, Recent trends in Geomorphology Applied Geomorphology, Regional geomorphology of Indo- Gangetic plain Rajmahal hills, Rajasthan desert and Malwa Plateau.

Books Recommended

1. Ahmed, E. (1985): Geomorphology, Kalyani Publishers New Delhi.
2. Bloom, A.L.(1998/2001): Geomorphology. 3rd edition. Prentice Hall of India, New Delhi.
3. Chorley, R.J., Schumm] S-A and Sugden, D.E.(1984): Geomorphology. Methuen and Company Ltd., London.
4. Dayal, P.(1994): A Text Book of Geomorphology. Kalyani Publishers, New Delhi.
5. Fairbridge, R.W.(ed.) (1968): Encyclopedia of Geomorphology, Reinhold Book Corporation., New York.
6. Gregory, K.J. and Walling, D.E.(1973): Drainage Basin Form and Process. Edward Arnold, London.
7. Jog, S.R.(ed.) (1995): Indian Geomorphology (2 vols.). Rawat Publications] Jaipur
8. Kale, v. and Gupta, A.(2001): Introduction to Geomorphology. Orient Longman, Hyderabad.
9. King, C.A.M.(1966): Techniques in Geomorphology. Edward Arnold, London.
10. Pethick, J.(1984): An Introduction to Coastal Geomorphology. Arnold, London. Indian reprint 2000.
11. Sharma, P.R.(ed.), (1993): Applied Geomorphology in Tropics. Rishi Publications, Varanasi.
12. Singh, S.(2004): Geomorphology. Prayag Pustak Bhawan, Allahabad.
13. Sparks, B.W.(1986): Geomorphology. Longmans, London.
14. Thornbury, W.D.(2005): Principles of Geomorphology. John Wiley and Sons, New York.
15. Wooldridge, S.W. and Morgan, R.S.(1959): The Physical Basis of Geography- An Outline of Geomorphology. Longman, London.

Paper II

GR102: Advanced Geography of India

Unit-I:

Making of India through geological times, Structure and relief regions, Drainage, Physiographic division soil types.

Unit-II:

Climatic characteristics, Mechanism of Indian Monsoon, Climatic Regions, Natural Vegetation & wild life, vegetation regions.

Unit-III:

Agricultural Characteristics and Trends] Crop Combination regions, Green, White, Blue, and Yellow revolutions. Agricultural region and new trends in Indian agriculture, Role of Bio-technology in agriculture

Unit-IV-

Industrial region & industrial complexes; Transport- rail, road, air. Population growth trends and pattern, distribution density & national population policy, Impact of globalization on Indian economy.

Books Recommended.

1. Chapman, G. and Baker, K.M. (eds.) (1992): The Changing Geography of Asia. Routledge, London.
2. Farmer, B.H. (1983): Introduction to South Asia. Methuen and Company Ltd and Company Ltd. London.
3. Ganguly, S. and Neil, De Votta (eds.) (2003): Understanding Contemporary India. Lynne Rienner Publishers., Boulder and London.
4. Gole, P.N. (2001): Nature Conservation and Sustainable Development in India. Rawat Publications, Jaipur and New Delhi.
5. Johnson, B.L.C. (ed.) (2001): Geographical Dictionary of India. Vision Books, New Delhi.
6. Johnson, B.L.C. (1983): Development in South Asia. Penguin Books, Harmondsworth.
7. Khullar, D.R. (2006): India. A Comprehensive geography. Kalyani Publishers., New Delhi.
8. Krishnan, M.S. (1968): Geology of India and Burma. 4th edition. Higgin Boothams Private Ltd., Madras.
9. Nag, P. and Gupta, S.S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
10. Sharma, T.C. (2003): India: Economic and Commercial Geography. Vikas Publication., New Delhi.
11. Singh, J. (2003): India: A Comprehensive and Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
12. Singh, R.L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.
13. Spate, O.H.K., Learmonth, A.T.A and Farmer, B.H. (1979): India and Pakistan. Methuen and Company Ltd. And Company Ltd., London.
14. Subbarao, B. (1959): The Personality of India. University of Baroda Press, Baroda.
15. Sukhwai, B.L. (1987): India. Economic Resource Base and Contemporary Political Patterns Sterling Publications, New Delhi.
16. Tirtha, R. (2002): Geography of India. Rawat Publications., Jaipur and New Delhi.
17. Tiwari, R.C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
18. Wadia, D.N. (1959): Geology of India. MacMillan and Company, London and Madras. Student edition.

Paper III

GR 103: Economic Geography

Unit-I:

Meaning, scope, evolution and recent trends of economic geography, Fundamental concepts. Relation of Economic geography with economics and other branches of social sciences.

Unit-II:

Classification of industries: Iron & Steel, textile, sugar & Petro- Chemical; Elements and Theories of Industrial location- Weber, Losch, Isard & Hoover.

Unit-III:

Case studies of selected industries- Iron & steel, textile, sugar & Petro-chemicals. Industrial regions- delimitation and structural factors; Industrial regions of world, Economic Development - Changing concept of development, Theories of Economic Development : Classical & New classical

Unit-IV:

Theories of transport development, Economic regions and their salient features. Impact of WTO, globalization, Liberalization, Economy of developing world.

Books Recommended:

- 1- Alexander, J.W., Economic Geography, Prentice- hall, New Delhi.
- 2- Robinson A.H., Jones, C.F and Darkenwarld G.G., Principles of Economic Geography.
- 3- Bones Hans, A Geography of World Economy, Von Nostrand, New York.
- 4- Bengston and Royen, Fundamentals of Economic Geography.
- 5- Zimmerman, E.W., Introduction to World Resources.
- 6- Chisholm M., Modern World Development- A Geographical Perspective.
- 7- Singh K.N.& Singh J., Arthik Bhoogol ke Mool Tatva (Hindi), Gyanodaya Pralashan, Gorakhpur.
- 8- Jain, P.Arthil Bhoogol ki Samilsha (Hindi).
- 9- Srivastava V.K.& Rao B.P, Arthil Bhoogol.
- 10- Wheeler, J.O. et al: Economic Geography, John Wiley, New York 1995.
- 11- Robertson, D. (ed) Globalization and Environment, E. Elgas Co.U.K., 2001.

Paper IV

GR104: Environmental Geography

Unit-I:

Meaning Scope crept approaches of environmental geography, Types of environment, environmental perception Environment& society, environment and development.

Unit-II:

Concept of ecology and ecosystem, Biosphere as an ecosystem, Abiotic and biotic components of biosphere and ecosystem, Ecological production and energy flow-tropic level, food chain and food web. Ecological pyramids, Bio-geochemical cycles-nitrogen, Hydrological cycle, carbon cycle.

Unit-III:

Environmental hazards, Natural Hazard- Flood, Drought, Landslide, soil erosion earthquake, desertification. Man-made hazards- urbanization, Industrialization, technological hazard, global climatic changes, Man-Made hazards- urbanization, Industrialization, technological hazard, global climatic changes, global warming, green house effect, ozone depletion.

Unit-IV:

Environmental pollution, pollutants, Sources and types of pollution-water, air and noise pollution, Solid waste disposal, environmental pollution and health Environmental education Environmental monitoring. Environmental impact analysis Environmental policies and legislation, Environmental management, Sustainable development

Books Recommended

1. Anjuneeyulu, Y. (2002): Environmental Impact Assessment Methodologies. B.S. Publications, Hyderabad.
2. Anjuneeyulu, Y. (2004): Introduction to Environmental Science. B.S. Publications, Hyderabad.
3. Athavale, R.N. (2003): Water Harvesting and Sustainable Supply in India. Rawat Publications., Jaipur.
4. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
5. Blaikie, P., Cannon, T. and Davis, I. (eds.) (2004): At Risk: Natural Hazards, Peoples Vulnerability and Disasters. Routledge, London.
6. Clarke, J.I., Curson, P., Kayastha, S.L. and Nag, P. (eds.) (1991): Population and Disaster. Basil Blackwell, USA.
7. Gautam, A. (2007): Environmental Geography, Sharda Pustak Bhawan, Allahabad.
8. Huggett, R.J. (1998): Fundamental of Biogeography. Routledge, London.
9. Kayastha, S.L. and Kumra, V.K. (1986): Environmental Studies. Tara Book Agency, Varanasi.
10. Khoshoo, T.N. (1981): Environmental Concerns and Strategies. Ashish Publishing House, New Delhi.
11. Kumra, V.K. (1982): Kanpur City. A Study in Environmental Pollution. Tara Book Agency, Varanasi.
12. Mathur, H.S. (2003): Essentials of Biogeography. Pointer Publication, Jaipur.
13. Nag, P. Kumra, V.K. and Singh, J. (1990): Geography and Environmental Issues at Local, Regional and National Levels. (in vols.), Concept Publishing Company, New Delhi.
14. Odum, E.P. (1975): Ecology. Rowman and Littlefield, Lanham USA.
15. Rajagopalan, R. (2005): Environmental Studies: From Crisis to Cure, Oxford University Press, New Delhi.
16. Reddy, M.A. (2004): Geo informatics for Environmental Management. B.S. Publishers., Hyderabad.
17. Saxena, K.K. (2004): Environmental Studies. University Book House Private Ltd, Jaipur
18. Saxena, H.M. (1999): Environmental Geography. Rawat Publications, Jaipur and New Delhi.
19. Saxena, H.M. (2000): Environmental Management. Rawat Publications., Jaipur and New Delhi.
20. Singh, A.K., Kumra, V.K. and Singh, J. (1986): Forest Resource, Economy and Environment. Concept Publishing. Company, New Delhi.
21. Singh, D.N., Singh, J. and Raju, K.N.P. (eds.) (2003): Water Crisis and Sustainable Management, Tara Book Agency, Varanasi.
22. Singh, J. (2001): Paryayaran Evam Samvikas. Gyanodaya Prakashan, Gorakhpur
23. Singh, O., Nag, P., Kumra, V.K. and Singh, J. (eds.) (1993): Frontier in Environmental Geography. Concept Publishing Company, New Delhi.
24. Singh, O., Kumra, V.K. and Singh, J. (1988): India's Urban Environment. Pollution, Perception and Management. Tara Book Agency, Varanasi.

25. Singh, R.B.(ed.) (1990): Environmental Geography. Heritage Publication, New Delhi.
26. Singh, R.B.(ed.) (1995): Studies in Environment and Development. Rakesh Prakashan, Varanasi.
27. Singh, Rana P.B. (ed.) (1993): Environmental Ethics: Discourses and Cultural Traditions. National Geographical Society of India, BHU, Varanasi.
- 28- Singh, S. (2006): Environmental Geography. Prayag Pustak Bhawan, Allahabad.
29. Singh, S. (2007): Paryavaran Bhoogol Prayag Pustak Bhawan, Allahabad.
30. Singh, S.N. (1993): Elements of Environmental Geography and Ecology (in Hindi), Tara Book Agency, Varanasi.
31. Wrigley, N. (1985): Categorical Data Analysis for Geographers and Environmental Scientists. Longman, London.

First Semester

GR 105 Practical Examination

(The practical examination shall be conducted in two parts carrying 40 marks each. Log-Table and calculator will be allowed in both the parts. The T.A. & D.A. and related expenses to teacher and supporting staff on tour duty shall be met by the representative institutions. Normally two teachers and one attendant will accompany the tour party. Add one teacher on above the every 20 students.)

Part A: Cartographic Work-	40
Part B: Field Cum-Lab Work-	40
Part A: Cartographic Work	
Unit-I: Measures of central tendency-Mean, median and mode, Mean deviation, Quartile deviation-	10
Unit-II: Measures of dispersion, Standard Deviation, Co-efficient of variation, Co-efficient of Correlation rank Correlation, Chi square test.-	15
Unit-III:	
Geological maps and cross section Horizontal, Inclined, Unconformable, Folded and Faulted strata.-	15
Part B: Field cum Lab Work	
Unit-I:	
Collection of data: Methods, Sources and Types, Classification and Tabulation Data processing (With special reference to village/Ward/town area).-	10
Unit-II: Local excursion and report (maximum 2 days) -	10
Unit-III- Practical record (Part A&B)-	10
Viva-Voce examination-	10

Books Recommended:

- 1- Monkhouse, F.J. Maps & Diagrams.
- 2- Robinson, A.H. Elements of Cartography.
- 3- Singh, R.L., Elements of Practical Geography.
- 4- Singh, L.R. & Singh, R.N. Map Work and Practical Geography (Eng/Hindi)
- 5- Sharma, J-P. Prayogatmak Bhoogol ki Rooprekha (Hindi)
- 6- Hira Lal, Prayogatmak Bhoogol ke Adhar (Hindi)
- 7- Lal, Hira, Matratmak Bhoogol (Hindi)
- 8- Tiwari, R.C. and Tiwari, Sudha, Abhinav Prayogic Bhoogol.

Second Semester

Paper I

GR 201: Physical Landscape

Unit-I:

Concept and types of physical Landscape, Significance of geomorphic process in land forms development, Geological structure, climatic and biotic Factors in Formation of landforms Theories of Landform development.

Unit-II:

Concept of cycle of erosion: Davis and Penck, interruption in the cycle and polycyclic relief.

Unit-III:

Exogenic process: Concept of gradation, Agents and processes of gradation, Causes, Types and classification of weathering, Erosion & Depositional processes and Landform- Humid, Arid, karst, Glacial, Periglacial and Coastal.

Unit-IV:

Morphometric analysis of relief features, Evolution of slopes and erosional surfaces, study of micro landforms of Vindhyan regions, Chhota Nagpur Plateau and Chambal basin.

Books Recommended

1. Bernhard, H. and James, M.A.(1994): Climatology, McGraw Hill Company, New York.
- 2- Chorley, R.J. (1995): Atmosphere, Weather and Climate. Methuen and Company Ltd and Company Ltd., London.
3. Chow, V.T.(ed.) (1954): Handbook of Applied Hydrology: A Compendium of Water Resources Technology. McGraw Hill, New York.
- 4- Critchfield, H.J. (2003): General Climatology Prentice- Hall of India, New Delhi.
5. Rai, V.K. (1993): Water Resource Planning and Development, Deep and Deep Publication, New Delhi.
6. Bilas, R.(1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
- 7- Reddy, J.P. (1988): A Textbook of Hydrology. Laxmi Publication., New Delhi. 4th edition.
8. Singh, M-B. (1999): Climatology and hydrology .Tara' Book Agency, Varanasi.(In Hindi).
9. Singh, M.B.(2002): Physical Geography. Tara Book Agency, Varanasi. (In Hindi).
10. Singh, S.(1998): Geomorphology. Prayag Pustak Bhavan, Allahabad.
11. Sparks, B.W.(1986): Geomorphology, Longman, London.
12. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.
13. Trewartha, G.T. (1980) : An Introduction to Climatology. Mc Graw Hill Student edition, New York.
14. Ward, R.C. and Robinson, M.(2000): Principles of Hydrology. Mc Graw Hill, New York.
15. Weisberg, J-S- (1974): Meteorology. Houghton Mifflin Company, Boston.
16. Wooldridge, S-W- and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology. Longmans Green, London.

Paper II

GR202: Hydrology and Oceanography

Part A: Hydrology

Unit-I:

Meaning, Scope and development of hydrology, Hydrological cycle, Elements of hydrological cycle, Man's influence on the hydrological cycle Evapo- transpiration, Factors affecting evaporation From Free water surface and soils.

Unit-II:

Soil moisture and its Zone, infiltration, Ground water: Occurrence, storage, Recharge and discharge, Run-off: its sources and components, factors affecting run-off, Principles and determination of water balance and its application in crop production.

Part B: Oceanography

Unit III:

Relevance of Oceanography in earth and atmospheric Science, Definition of oceanography, Surface configuration of Ocean Floor, Distribution of temperature and salinity of oceans and seas.

Unit IV:

Circulation of Oceanic waves, tides and currents, currents of the Atlantic, Pacific and Indian Oceans. Marine Deposits and coral reefs, Ocean as storehouse of resources for the future.

Books Recommended

1. Bernhard, H. and James, M.A. (1944): Climatology. McGraw Hill Company, New York.
2. Chorley, R.J.(1995): Atmosphere, Weather and Climate. Methuen and Company Ltd and Company Ltd., London.
3. Chow, V-T.(ed.) (1954): Handbook of Applied Hydrology: A Compendium of Water Resources Technology. McGraw Hill, New York.
- 4- Critchfield, H.J. (2003): General Climatology, Prentice- Hall of India, New Delhi
5. Rai, V.k. 91993) Water Resource Planning and Development, Deep and Deep Publication, New Delhi
6. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing Company, New Delhi.
7. Reddy, J.P.(1988): A Textbook of Hydrology. Laxmi Publication., New Delhi. 4th edition.
8. Singh, M.B. (1999): Climatology and Hydrology. Tara Book Agency, Varanasi. (In Hindi)
9. Singh, M.B. (2002): Physical geography. Tara Bool Agency, Varanasi. (In Hindi).
10. Singh, S.(1998): Geomorphology. Prayag Pustak Bhavan, Allahabad.
11. Sparks, B.W,(1986): Geomorphology. Longman, London.
12. Thornbury, W.D.(2005): Principles of Geomorphology, John Wiley and Sons, New York.
13. Trewartha, G.T.(1980): An Introduction to Climatology. McGraw Hill Student edition, New York.
14. Ward, R.C. and Robinson, M.(2000): Principles of Hydrology. McGraw Hill, New York.
15. Weisberg, J.S. (1974): Meteorology. Houghton Mifflin Company, Boston.
16. Wooldridge. S-W- and Morgan, R.S.(1959): The Physical Basis of Geography An Outline of Geomorphology. Longmans Green, London.
17. Upadhyaya D.P. and Singh R.A.: Climatology and Hydrology, Vasundhara Publications, Gorakhpur
18. Jones J.A.A.: Global Hydrology, Process Resources and Environmental Management, Longman, London, 1997.
19. Todd D.K.: Ground Water Hydrology, John Wiley, New York., 1959.

Paper III

GR203: Geography of Resources

Unit-I:

Concept and scope of resource geography and geography of resources, Resource concept and types world resources distribution and pattern, Land, Water, mineral and power resources.

Unit-II:

Human resources, Resource base and its dynamism as related to stages of cultural technological and economic development, population growth and resource scarcity hypothesis, Sustainable development.

Unit-III:

Factors of Location of Economic Activities- Physical, Social, Economic and Cultural, von-Thuenen model of agricultural Location, Agriculture regions of the world.

Unit-IV:

Resource regionalization, world economic development, concept of developed and developing countries, Resource conservation and management, Resource development and international policies.

Books Recommended

1. Burton, I. and Kates, R.W.(1978): Readings in Resource Management and Conservation, McGraw Hill, New York
2. Clark, G.L., Feldman, M.P. and Gertler, M.S. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, Oxford and New York.
3. Ehrlich, P.R., Ehrlich, R.H. and Holdren, J-P. (1998): Ecoscience : Population, Resources and Development. 2nd edition. Freeman and Company, San Francisco.
4. Sheppard, E.and Treror, I.B.(ed.) (2003): A Companion to Economic Geography, Blackwell Publication, U.K. and USA.
5. Mc Carty, H.M. and James, B.L. (1976): A Preface to Economic Geography, Prentice Hall, New Jersey.
6. Mitra, A. (2000): Resource Studies; Sridhar Publishers., Kolkata.
7. Ramesh, A.(ed.) (1984): Resource geography, Heritage Publishers, New Delhi.
8. Singh, J.(2000): Sansadhan Bhoogol, Gyanodaya Prakashan, Gorakhpur
9. Singh, K.N. and Singh, J.(2003): Arthik Bhoogol ke Mool Tatva Gyanodaya Prakashan, Gorakhpur.
10. Todaro , M.P. and Smuth, S.C. (2004): Economic Development, Pearson Education,(Singapore) Private Ltd.

Paper IV

GR204: Basis of Remote Sensing

Unit-I:

Remote Sensing- definition and Scope, electro-magnetic radiation, characteristics: interaction with matter, type of remote sensing and remote sensing platform

Unit-II:

Aerial photos: Types, Scale, resolution, geometric Properties of aerial photos, Stereoscopic parallax, Relief displacement.

Unit-III:

General orbital characteristics of remote sensing satellites, general characteristics of remote sensing sensors, characteristics of raw remote sensing data.

Unit-IV:

Elements of image interpretation, image processing techniques, visual and digital, Remote sensing in resource mapping and environmental monitoring. Land use and land cover mapping: a cover study.

Books Recommended

1. Campbell, J.B. (2002): Introduction to Remote Sensing. 5th edition. Taylor and Francis, London.
2. Cracknell, A. and Hayers, L. (1990): Remote Sensing Year Book, Taylor and Francis, London.
3. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
4. Deekshatulu, B.L. and Rajan, Y.S. (ed.) (1984): Remote Sensing. Indian Academy of Science, Bangalore.
5. Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H.Freeman, New York.
6. Guham, P.K.(2003): Remote Sensing for Beginners. Affiliated East-West Press Private Ltd., New Delhi.
7. Hallert, B.(1960): Photogrammetry, McGraw Hill Book Company Inc., New York.
8. Harry, C.A.(ed.) (1978): Digital Image Processing, IEEE Computer Society, California
9. Hord, R.M.(1982): Digital Image Processing of Remotely Sensed Data, Academic Press, New York.
10. Keuder, D.R.(1959): Aerial Photographic Interpretation: Principles and Application. McGraw Hill, New York.
11. Lillesand, T.M. and Kiefer, R.W.(2000): Remote Sensing and Image Interpretation. 4th edition John Wiley and Sons, New York.
12. Nag. P.(ed.) 1992: Thematic Cartography and Remote Sensing. Concept Publishing. Company, New Delhi.
13. Reeves, R.G.(ed.) (1983): Manual of Remote Sensing. Vols. 1 and 2; American Society of Photogrammetry and Remote Sensing Falls Church, Virginia.
14. Siegel, B.S. and Gillespie, R.(1985): Remote Sensing in Geology, John Wiley and Sons, New York.
15. Silver, M. and Balmori, D.(eds.) (2003): Mapping in an Age of Digital Media. Wiley- Academy, New York and Chirchester.
16. Spurr, R.(1960): Photogrammetry and Photo Interpretation, The Roland Press Company, London.
17. Survey of India, (1973): Photogrammetry, Survey of India, Dehradun.
18. Swain, P.H. and Davis, S.M.(ed.) (1978): Remote Sensing: The Quantitative Approach. McGraw Hill, New York.

M.A./M.Sc. IInd Semester

GRP205: Practical **80**

(Log-Table and calculator will be allowed. The T.A. & D.A. and related expenses to teacher and supporting staff on tour duty shall be met by the representative institutions. Normally two teachers and one attendant will accompany the tour party. Add one teacher on above the every 20 students.)

Part A: Cartographic Work- **40**

Unit-I: **15**

Map Projection: Classification, properties, choice, merits and demerits of map projection. Drawing of the following map projections by using mathematical methods, Bonne's, Polyconic, Gall's Equatorial cases of Gnomonic, Stereographic and Orthographic projections, Mollweide's and Interrupted Mollweide's, Sinusoidal and Interrupted Sinusoidal and International Projections.

Unit-II: **15**

Cartographic Representation of Statistical Data:

Water Surplus Graph, Rainfall Dispersion diagram, Hypsographic Curve, water Balance graph, Locational Quotient, coefficient of Localization and Localization curve.

Unit-III: **10**

Block diagrams.

Part B: Field-cum-Lab Work:- **40**

Unit-I: **10**

Aerial Photo Interpretation-

Unit-II: **10**

Computer: Components and Characteristics, Application in Map Making.

Unit-III:

Practical Record 10

Viva-voce 10

Third Semester

Paper I

GR 301: Climatology

Unit-I:

Definition, scope, significance and evolution of climatology; Elements of weather and climate; Relation with meteorology. Composition and structure of Atmosphere; Insolation, process of heating and cooling; heat balance of the earth and atmosphere, Greenhouse effect.

Unit-II:

Air pressure and pressure belts; Atmospheric motion, Force controlling motion of air, vertical motion and velocity, jet stream, Permanent, Seasonal and local wind, cyclone and anticyclone. Concept, classification, characteristics of air mass and front, Ocean atmospheric interaction: El-Nino, Southern oscillation (ENSO) and La-Nina.

Unit-III:

Climatic Classification of Koppen, Thornthwait, and G.T. Trewartha and World climatic region, climatic changes, evidences and possible causes, Global Warming.

Unit-IV:

Applied climatology and weather Forecasting, Impact of Human civilization on health, Food, clothing, agriculture, Mining, industry, trade and development; Man-climate interrelationship.

Suggested Readings:

1. Barry R.G. and Chorley R.J.: Atmosphere, Weather and Climate, Routledge, London and New York, 1998.
2. Critchfield, J.J.: General Climatology, Prentice Hall, New Delhi, 1993.
3. Lal, D.S.: Climatology, Chaitanya Publications, Allahabad, 1986.
4. Lydolph, P.E.: The Climate of the Earth, Rowman, 1985.
5. Robinson P.J. and Henderson S: Contemporary Climatology, Henlow, 1999.
6. Upadhyaya D.P., and Singh R.A.: Climatology and Hydrology, Vasindhara Publication, Gorakhpur, 2000 (Hindi).
7. Addison H.: Land, water and flood Chapman and Hall, London, 1961.
8. Chorley R.J., Water, Earth and Man, Methuen, London, 1967.
9. Jones J.A.A.: Global Hydrology: Process Resources and Environmental Management, Longman, London, 1997.
10. Todd, D.K.: Ground Water Hydrology, John Wiley, New York, 1959.

Pedagogy:

1. Weather and climatic maps and charts are to be made available to the students. Audio- Visual aids to be used for effective teaching.
2. Students to be taken on a Field visit to near by reservoir. Data pertaining to water table and the local wells in different seasons has to be collected.

PaperII

GR 302: Geoinformatics and Geographic Information System (GIS) Applications

Unit-I

Geoinformatics: Concept, meaning, scope, evolution and development.

Interrelation between Geoinformatics and Geodesy: surveying mapping, positioning, navigation, cartography, remote sensing, photogrammetry, GIS and GPS.

- Georeferencing, datum and applications.
- GPS-segment, types, surveying techniques, instruments, applications and benefits.
- Mobile Mapping- concept and use.

UnitII

- Geospatial technology, meaning, concept and scope.
- Data sources- Field information and discrete information.
- Data types- Spatial and non- spatial, raster and vector.
- Data acquisition, storage, modeling, analysis, management and NSDI
- Data Base Management System (DBMS)
- New Map Policy

Unit III

- GIS: evolution, meaning, scope purpose and application.
- Basic principle of GIS.
- GIS Software and hardware.
- GIS data standards- concept and components
- Digital Elevation Model (DEM)- process, derivatives and application.

UnitIV

- Remote sensing and GIS integration.
- GIS project design and planning
- GIS packages and products
- GIS and industry, business system, human welfare
- Application trend of GIS product.
- Legal and managerial issues in handling geographic data

Books Recommended

1. Bonham, Carter, G.F.(1995): Information Systems For Geoscientists- Modelling with GIS, Pergammon, Oxford.
2. Burroughs, P.A. and McDonnell, R. (1998): Principles of Geographic Information Systems. Oxford University Press, Oxford.
3. Change, K.T. (2003): Introduction to Geographic Information Systems. Tata MCGraw Hill Publications Company, New Delhi.
4. Chauniyal, D.D.(2004): Remote Sensing and Geographic Information Systems. (in Hindi). Sharda Pustak Bhawan, Allahabad

5. Demers, M.N. (2000): Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore.
6. ESRI (1993): Understanding GIS, Redlands. USA
7. Fraser Taylor, D.R. (1991): Geographic Information Systems. Pergammon Press, Oxford.
8. George, J.(2003): Fundamentals of Remote Sensing. Universities Press Private Ltd, Hyderabad.
9. Gizard, M.C. and Gizard, C.M.(2003): Processing of Remote Sensing Data. Oxford and IBH, New Delhi.
10. Glen, E.M. and Harold, C.S.(1993): GIS Data Conversion Handbook. Fort Collins, Colorado, GIS Word Inc.
11. Goodchild, M.F., Park, B.O. and Steyaert, L.T. (eds.) (1993): Environmental Modelling with GIS. Oxford University Press, Oxford.
12. Guptill, S.C., and Morrison, J.L. (1995): Elements of Spatial Data Quality, Elsevier/ Pergammon, Oxford.
13. Heywood, I. (2003): An Introduction to Geographical Information Systems, 2nd edition, Pearson Publishing Company, Singapore.
14. Korte, G.M.(2002): The GIS Book On Word Press: Thomson Learning, New York and Singapore.
15. Lo, C.P. and Yeung, A.K.W.(2002): Concepts and Techniques of Geographic Information Systems. Prentice Hall of India, New Delhi.
16. Longley, P. and Batty, M.(eds.) (1996): Spatial Analysis: Modelling in a GIS Environment. GeoInformation International, Cambridge.
17. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D.(1999): Geographic Information Systems: Principles, Techniques, Management, Applications, John Wiley and Sons, New York.
18. Maguire, D.J., Michael, F.G. and David, W.R. (1999): Geographical Information System: Principles and Application. Geo Information International, Vol.2, Longman Publication, New York.
19. Martin, D. (1996): Geographic Information Systems: Socioeconomic Umplications. Routledge, London.
20. Michael, F.G. and Karan, K.K.(ed.) (1990): Introduction to GIS. NCGIA, Santa Barbara, California.
21. Nag P. and M. Kudarat (1998): Digital Remote Sensing, Concept Publishing company, New Delhi.
22. Mishra H.C. (2000) GIS handbook, GIS India, Hyderabad.
23. Reddi A. and Y. Hari Shankar (2006) Text Bool of Digital Remote Sensing, B.S. Publication, Hyderabad.
24. Ralston, B.A.(2002): Developing GIS Solutions with Map Objects and Visual Basis. On Word Press: Thompson Learning, New York and Singapore.
25. Reddy, M.A. (2001): Text book of Remote Sensing and Geographic Information System. B.S. Publications., Hyderabad.
26. Ripple, W.J. (ed.) (1989): Fundamentals of Geographic Information Systems: A Compendium. ASPRS/ ACSM. Falls Church.
27. Siddiqui, M.A. (2005): Introduction to Geographical Information Systems, Sharda Pustak Bhawan, Allahabad.
28. Star, J. and Estes, j. (1990): Geographic Information Systems- An Introduction. Prentice- Hall, Englewood Cliffs, New Jersey.
29. Worboys, M.F.(1995): GIS: A Computing Perspective. Taylor and Francis, London.

Paper III

GR303A: Disaster Management

Note: Candidates will have to attempt five questions, including Question 1 (short answer) and four other question, selecting one question From each unit.

Unit-I:

Definition, meaning and concept of disaster and hazard. Types of Hazards- Natural and man-made. Concept of Disaster Management, Concept of Disaster Relief, Resume, Trigger mechanism, Response, Mitigation Risk and Vulnerability,

Unit-II:

Natural Disaster- Geological, Water and climate, Environmental Man-Made disaster- Chemical, Industrial, Nuclear, Accident

Unit-III:

Biological disaster- Epidemics, Pest- Attack,, Cattle epidemic, Food poisoning. Social Response to Lazard-reduction. Identification of multiple disaster prone areas.

Unit-IV:

Natural Disaster reduction Management, Decision making policy. Determination of acceptable level of Risk. Measures to control and mitigate disaster. Role of NDMA and SDMA.

GR303A: Disaster Management

Practical

1. Flood risk assessment
2. Water balance graph
3. Vulnerability index
4. Drought risk assessment & mapping
5. Index of damaged/affected area
6. Practical record & Viva voce

Books Recommended:

1. Alexander David (1993): Natural Disaster, London UCI Press.
2. Benarde Melvin (1972): Race Against Famine: Mumbai, Orient Longmans.
3. Bhargwa, Gopal (1992) Environmental Challenges and Ecological Disaster: Global Perspective, Mittal, New Delhi.
4. Sharma, Vinod K. (1995): Disaster Management, National Centre For Disaster Management Indian Institute of Public Administration, New Delhi.
5. Parasuraman, S. and P.V. UnniKrishnan (2000): India Disaster Report: Towards Policy Initiatives Oxford University Press, New Delhi
6. World Disaster Report 1997
7. Hewitt, Kenneth, (1997) Regions at Risk-A Geographical Introduction to Disaster, Longman.
8. Lodha, R.M,(1997) Environmental Ruins: The Crisis of Survival, Indus Publishing Company, New Delhi.

Pedagogy:

Students may be encouraged to collect clippings From Newspapers on various topics included in the syllabus. They may be involved in Discussions on the emerging Political issues and attempt to provide geographical Interpretation.

GR303B: Urban Geography**Unit-1**

Meaning, Scope and Development of Urban Geography; Factors of Urban Growth – Ancient, Medieval and Modern Period.

Unit-2

Origin and Location of Modern Urban Settlements; Models of Urban Growth – Concentric Zone, Sectoral and Multinucle; Conurbations and Megalopolis.

Unit-3

Umland and Urban Fringe; Functional Classification of Urban Centres; Urban Hierarchy and Rank Size Relationship. Morphology of Urban Settlement; Demographic Structure and Characteristics of Urban Population in India, Trends of Urbanization.

Unit-4

Occupational Pattern, Urban Amenities, Urban Land Use Problems, Problems of Cities and their Planning.

GR303B: Urban Geography

Practical

1. Population Projection and Population Growth forecasting.
2. Study of Master Plans.
3. Study of Morphology and functional classification of Towns.
4. Town Planning.
5. Land Use Study.
6. Remote Sensing and GIS Application in Urban Studies.
7. Record and Viva-voce.

Books Recommended :

1. Tayler, G. (1964) Urban Geography, Methuen, London.
2. Mayer, H.M. & Kohn, C.F. (1967) : Reading in Urban Geography, Central Book Depot, Allahabad.
3. Rao, B.P. and Sharma, N. (2000) Urban Geography (in Hindi), Vasundhara Prakashan, Gorakhpur.
4. Bansal, S.C. (2008) Urban Geography (in Hindi), Meenakshi Prakashan, Meerut.
5. Singh, Ujagir (1974) Urban Geography (in Hindi), Uttar Pradesh Hindi Granth Academy, Lucknow.
6. Yadav, C.S. (1992) Urban Planning and Policies, Concept Publishing Company, New Delhi.
7. Karan, M.P. (1991) Urban Geography (in Hindi), Kitab Ghar Acharya Nagar, Kanpur.
8. Singh, O.P. (1979) Urban Geography (in Hindi), Tara Publication, Varanasi.
9. Singh, R.L. (1955) Banaras : A Study in Urban Geography, Nand Kishore & Sons, Varanasi.
10. Alam, S.M. (1965) Hyderabad-Secundrabad : A Study in Urban Geography, Allied Publishers, Mumbai.
11. Mandal, R.B. (2000) Urban Geography : A Textbook, Concept Publishing Company, New Delhi.

GR303C: Population Geography

Unit-1

Definition, Scope and Approaches of Population Geography; Development of Population Geography; Sources of Population Data – Their Reliability and Comparability.

Unit-2 Population Dynamics; Factors Influencing Distribution and Density of Population; World Patterns of Population; Growth of Population – Theories and World Pattern; Population Explosion.

Unit-3 Growth and Distribution of India's Population; Demographic Transition Theory; Population Composition – Age and Sex Composition, Occupational Structure.

Unit-4 Literacy, Urbanization etc.; Migration – Types, Laws, Causes and Consequences; Concept of Optimum, Over and Under Population. Population Resource Region of the World; Population Policies of India; Population Planning with Special Reference to India.

GR303C: Population Geography

Practical

1. Preparation of density maps by choropleth and isopleths.
2. Construction of simple, compound and superimposed pyramid.
3. Construction of population graph diagrams.
4. Population projection methods and mapping.
5. Preparation Population potential map.
6. Record and Viva-voce.

Book Recommended :

1. Trewartha, G.T. (1969) : A Geography of Population : World Patterns, John Wiley & Sons, New York.
2. Chandna, R.C. (2003) : A Geography of Population, Kalyani Pub., New Delhi.
3. Sundaram, K.V. (1985) : Population Geography, Heritage Publishers, New Delhi.
4. Panda, B.P. (1991) : Population Geography (in Hindi), Madhya Pradesh Hindi Granth Academy, Bhopal.
5. Hiralal (2000) : Jansankhya Bhoogol, Radha Publications, New Delhi.
6. Tripathi, R.D. (2008) : Jansankhya Bhoogol Avam Janakiki, Vasundhara Prakashan, Gorakhpur.
7. Agrawal, S.N. (1977) : India's Population Problems, Mc Graw Hill, New Delhi.
8. Chandna, R.C. & Sidhu, M.S. (1980) : An Introduction to Population Geography, Kalyani Pub., New Delhi

Paper IV

GR304A: Geography of Rural Settlements

Note: Candidates will have to attempt five questions, including Question 1 (short answer) and Four other questions. Selecting one question From each unit.

Unit-I:

Nature, Scope, significance, development and approaches of rural settlement geography, Definition and characteristic of rural settlements, human settlement as a system. Rural-urban continuum. Histogenesis of rural settlements; Spatio-temporal dimensions and sequent occupancy. Distribution, size and spacing of rural settlements.

Unit II:

Types, Forms and Patterns of rural settlements: cause and effect, Functional classification of rural settlements of rural settlements, morphogenesis of rural settlements, morphology of rural settlements, Central places and rural service centres: their nature, hierarchy and Functions. Service centres as growth points, Rural-urban Fringe-structure, characteristics and Functions.

Unit-III:

Cultural landscape elements in rural settlements in different geographic environments with special reference to India, house types and their spatial patterns. Origin, evolution, size, socio-spatial structure of Indian villages.

Unit-IV:

Social issues in rural settlements- poverty, housing. Deprivation and inequality, Environmental issues in rural settlements water supply, sanitation, drainage and health hazards. Planning of rural settlements with special reference to India.

GR304A: Geography of Rural Settlements

Practical

1. Survey and mapping of rural settlements.
2. Analysis of rural settlements distribution by seater diagram.
3. Study of morphology of an Indian village.
4. Planning of an Indian village.
5. Record and Viva-voce.

Suggested Readings:

1. Alam, S.M. et al: Settlement System in India, Oxeord and IBP publication Co. New Delhi, 1982.
2. Chisholm M.rural settlements and Land use. John Wiley N.Y.1967.
3. Grover N. Rural settlements; A Cultural Geographical Analysis; Inter India Publication, Delhi;1986.
4. Daniel P. and Hopkinson M: the Geography of Settlements, Oliver and Boyd; Edinburg, 1986.
5. Hudson, F.S.: Geography of Settlements, Macdonald and Evans, N.Y.1976.
6. Vanmali, S: Service Centers in Rural India, B.R. Publication Corporation, New Delhi, 1983.

Pedagogy:

The teacher should motivate students with illustrations of diverse pattern of settlements in different natural settings of this country and abroad. Models, maps, Illustrations and audio-visual devices should Eorm teaching aids to impress the students. The students are advised to consult Census of India Table H- Series.

GR304B: Geography of Tourism

Unit-1

Concept, Nature, Scope & Approaches; Elements of Tourism; Evolution of Tourism Studies; Multiplier Effect of Tourism.

Unit-2

Cultural, Environmental, Socio-cultural & Economic Impact of Tourism; Types of Tourism – Cultural, Adventure, National & International.

Unit-3

Role of Infrastructure in Promotion of Tourism – Transport & Communication, and Markets; Information Technology; Travel Agents & Tour Operators.

Unit-4

Major Tourist Circuits of the World; Evolution & Growth of Tourism in India; Trend of Tourism in India, Major Tourist Circuits & their Salient Features. Tourist Organizations : Domestic and International; Problems & Prospects of Tourism in India; Planning & Management of Tourism.

GR304B: Geography of Tourism

Practical

1. Tourist centers of India.
2. Tourist circuits and tourist paths in India.
3. Morphology of a tourist centre.
4. Infrastructure of a tourist centre.
5. Pilgrimage tourism and religious tourism in India.
6. Planning for develop a tourist centre.
7. Record and Viva-voce.

Books Recommended :

1. Robinson, H. (1976) A Geography of Tourism, Macdonald and Evans, London.
2. Milton, D. (1993) Geography of World Tourism, Prentice Hall, New York.
3. Hall, C.M. & Page, S.J. (1999) The Geography of Tourism & Recreation, Environment, Place & Space Routledge, London.
4. Bhatia, A.K. (1989) Tourism Development, Principles & Practices, Sterling, Bangalore.
5. Cris, Ryan (1991) Recreational Tourism : A Social Science Perspective, Routledge London.
6. Garg, N.K. (1996) Tourism & Economic Development, Avishkar, Jaipur.
7. Bhardwaj, D.S. & Chaudhary, M. (1997) Contemporary Issues in Tourism, Himalaya Pub., Mumbai.

GR304C: Industrial Geography

Unit-1

Meaning and Scope of Industrial Geography; Industrial Revolution and its Consequences; Trends of Industrialization in India & Abroad.

Unit-2

Factors of Location of Industries; Theories of Industrial Location – Weber, Hoover, Losch; Industrial Complexes. Centralization and Decentralization of Industries, Linkages of Industries; Industrial Regions of World and India.

Unit-3

Distribution and Spatial Pattern of Iron & Steel, Textile, Sugar & Fertilizer Industry; Industries and Economic Development, Problems and Prospects of Industrial Sprawl.

Unit-4

Impact of Globalization on Industrial Development, Industrial Policies and their Implications in Industrialization in India, Sustainable Industrial Development.

GR304C: Industrial Geography

Practical

1. Comparative Cast Analysis for a given industry in a given region.
2. Analysis of Spatial Pattern of Industries.
 - A. Location Quotient.
 - B. Isodapanes.
 - C. Practical Exercises of different industrial location models.
3. Study of an industrial complex of India and determination of different kind of linkages.
4. Industrial planning in a given region based on resource distribution and infrastructure.
5. Practical record and Viva-voce.

Books Recommended :

1. Alexanderson, C. (1967) : Geography of Manufacturing, Prentice Hall, India.
2. Miller, A. (1962) : Geography of Manufacturing, Prentice Hall, New Jersey.
3. Kumar, Pramila & Sharma, S.K. (1985) : Industrial Geography (Hindi), M. P. Hindi Granth Academy, Bhopal.
4. Seth, V.K. (1987) Industrialization in India: Spatial Perspective, Delhi Commonwealth Publication.
5. Sinha, B.N. (1987) : Industrial Geography of India, Oxford Book House, New Delhi.
6. Sharma, V.N. (2001) : Spatial Pattern of Industrial Development in M.P., Radha Publication, New Delhi.
7. Smith, D.M.(1982) Industrial Location : An Economic Geographic Analysis, John Wiley & Sons, New York.
8. Weber, Alfred (1957) : Theory of Location of Industries, Chicago University Press.
9. Kuchhal, S.C. (1997) Industrial Economics of India, Chaitanya Publication, Allahabad.

M.A./M.Sc.IIIrd Semester

Paper V GRP 305: Practical Examination	80 MM
(A) Surveying:	60
Prismatic Compass	15
Dumpy level	15
Theodolite	10
Sextant	10
Abney level	10
(B) Practical Record	10
Viva-Voce	10

M.A./M.Sc. Semester-IV

Paper I

GR401: Geographical Thought

Unit-I:

Basis Frame and Concept: Man-environment interaction: New environmentalism, Concepts: space, place, environment, time and spatial organization, Region and regional typology; culture and cultural landscape.

Unit-II:

Modern Approaches: Quantitative revolution and challenges, Philosophy and geography: Contributions of Vidal de la Blache, and Carl Sauer; Humanistic and phenomenological geography: contributions of Yi-Fu Tuan; Literary geography: landscape as text.

Unit-III:

Contemporary Trends: Qualitative paradigm, Behavioural revolution: perception and cognition, mental maps; Marxism, Postmodernism; Poststructuralism and Postcolonialism.

Unit-IV:

Indian Geography-Base and Trends: Postcolonialism and Indian geography: Gandhu's contribution and Indian Geography, Gaia Theory and links to Indian Literature, Ancient Indian Geography and scientific outlook (e.g. cultural astronomy); Future of Indian geography: problems, perspectives and prospects.

Books Recommended:

1. Adams, P., Steven, H. and Karel, T.(eds.) (2001): Texture of Place, Exploring Humanistic Geographics University of Minnesota Press, Minneapolis.
2. Anderson, K.Domosh, M., Pile, s and Thrift, N. (eds.) (2003): Handbook of Cultural Geography sage Publication London.
3. Barnes,T. and Gregory, D.(eds.) (1997): Readings in Human Geography: The poctics and Politics of Inquiry,Arnold, London.
4. Bunse, E,V.(2004): Geography and the Art of Life John Hoplins University Press, Baltimore.
5. Buttimer, A.(1971): Society and Milieu in the French Geographic Tradition. Rand Mc Nelly, Chicago.
6. Daniels, P., Bradshaw, M., Shaw. D. and Sidway, J. (2000): An Introduction to Human Geography. Issues For the 21st Century. Prentice Hall, London.
7. Dear, M.J. and Eusty, S.(2002): The Spaces of Post modernity: Readings in Human Geography. Blackwell Publishers, Oxford.
8. Dikshit, R.D.(2004): Geographical Thought. A Critical History of ideas Prentice Hall of India New Delhi, (in English and Hindi).
9. Doel, M. (1999): Poststructuralist Geographies. The Diabolical Art of Spatial Science Edinburgh University Press, Edinburgh.
10. Gayle, G. and Wilmot, c. (eds.) (2003): Geography in America at the Dawn of the 21st Century. Oxford University Press, Oxford and New York.
11. Harvey,D.(1969): Explanation in Geography, Arnold, London.

12. Harvey, M-E. and Holly, P.B. (2002): Themes in Geographic Thought, Rawat Publications, Jaipur and New Delhi.
13. Hubbard, P., Kitchin, R. Bartley, B. and Fuller, D. (2002): Thinking Geographically: Space, Theory and Contemporary Human Geography. Continuum, London.
14. Johnston, R, Gregory D, Pratt G, Watts M and Whatmore S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.
15. Johnston, R.J. (1985): The Future of Geography, Methuen and Company Ltd, New York. (2003 edition published).
16. Johnston, R.J. and Sidaway, J.D. (2004): Geography and Geographers 6th edition, Edward Arnold, London.
17. Kanpur, A. (ed.) (2001) Indian Geography- Voice of Concern, Concept Publishing Company, New Delhi.
18. Martin, G (2005): All Possible Worlds. A History of Geographical ideas. 4th edition, Oxford University Press, New York.
19. Mathews, J.A. and Herberter, D.T. (eds.) (2004): Unifying Geography Common Heritage, Shared Future Routledge, London.
20. Peet, R. (1998): Modern Geographical Thought. Blackwell Publishers Inc, Massachusetts.
21. Sack, R.D. (ed.) (2002): Progress Geographical Essays. John Hopkins University Press, Baltimore.
22. Sauer, C.O. (1963): Land and Life, University of California Press, Berkeley.
23. Singh, R.L. and Singh, Rana P.B. (eds.) (1990) Literature and Humanistic Geography, National Geographical Society of India, BHU, Varanasi, Publication number 37.
24. Singh, R.L. and Singh Rana P.B. (eds.) (1992): The Roots of Indian Geography Search and Research. National Geographical Society of India, BHU., Varanasi Publication number 39.
25. Singh, Rana P.B. (ed.) (1993): Environmental Ethics. National Geographical Society of India, BHU, Varanasi, Publication number 40.
26. Singh, Rana P.B. (ed.) (1994): The Spirit and Power of Place. National Geographical Society of India, BHU, Varanasi Publication number 41.
27. Singh, Rana P.B. (2004): Cultural Landscapes and the Lifework, Indica Books, Varanasi.
28. Soja, E. (1989): Post-modern Geographies, Verso Press, London. Reprinted 1997: Rawat Publications, Jaipur and New Delhi.
29. Taylor, G. (ed) (1953): Geography in the Twentieth Century, Methuen and Company Ltd And Company, London.
30. Tuan, Yi-Fu (1977): Space and Place. The Perspective of Experience. Edward Arnold, London.

Paper II

GR402: Research Methods and Techniques.

Unit-I:

Framework of Research:

Concept and significance of research in geography, Philosophy and methods: empiricism, positivism, behaviorism.

Unit-II:

Planning Research and Data Generation: Primary and secondary data: Data Collection and arrangement: Research design; Participatory research; Framing pilot and research project; Making survey-questionnaire.

Unit-III:

Theories and Techniques: Model making, Application of system theory; Application and relevance of statistical and cartographic techniques; Application of computer and GIS.

Unit-IV:

Analysis, writing and Dissemination: Production and arrangement of data; Analysis of data and maps; Quantitative and Qualitative interpretations; writing manuals (arranging themes, maintaining coherence, cross-comparison, concluding, referencing, noting); Proof marks and marked Proof; writing a research paper/report.

Books Recommended:

1. Ahija, R.(2001): Research Methods. Rawat Publications Jaipur and New Delhi.
2. Bhattacharya, D.K.(2005): Research Methodology, Excel Books, New Delhi.
3. Blackburn, J. and Holland, J.(eds.) (1998): Who changes Institutionalising Participation in Development, IT, Publications, London.
4. Blaxter, L., Ilughes, C. and Tight, M.(1996): How to Research. Open University Press, Buckingham.
5. Crang, Mike 1999. Cultural Geography. Routledge, London.
6. Daniels, P., Bradshaw, M., et at.(2000): Human Geography: Issues For the 21st Century, Prentice Hall, London, and Pearson Publishers., Singapore, Indian reprint, 2003.
7. DenZin, N.K. and Lincoln, Y.S., (eds.) Handbook of Qualitative, Research Thousand Oaks CA, Sage Publications.,
8. Dikshit, R.D. (2003): The Art and Science of Geography: Integrated Readings, Prentice& Hall of India, New Delhi.
9. Dorling, D. and Simpson, L.(eds.) (1999): Statistics in Society. Edward Arnold, London.
10. Fisher,P. and Unwin, D., (eds.) (2002) virtual Reality in Geography. Taylor and Francis London.
11. Flowerdew, R. and Martin, D.(eds.) (1997): Methods in Human Geography. A Guide for Students Doing a Research Project, Longman, Harlow.
12. Hay, L.(es)(2000): Qualitative Research Methods in Human Geography. Oxford University Press New York.
13. Henn, M., Mark W., and Nice F. (2006): A Short Introduce to Social Research, vistaar Publications, New Delhi.
14. Eyles J. and Smith D.M. (1988): Qualitative Methods in Human Geography, Polity Press Dales Brewering Campbridge.

15. Kitchin R. and Tate, N., (2001): Conducting Research into Human Geography. Theory, Methodology and Practice, Prentice- Hall London
16. Kitchin, R. and Fuller, D., (2003): The Academi's guide to Publishing, vistaar Publications, New Delhi.
17. Limb, M.(2001) Qualitative Methodologies for Geographers Issue and Debates, Edward Arnold, London.
18. LoFland, J. and Lofland, L.H. (1995): Analysing Social Setting. A Guide to Qualitative Observation and Analysis; Wadsworth, Belmont, CA.
19. Longley, P., Goodchild, M.F., Maguire, D and Rhind, D. (1999): Geographic Information Systems. Principles, Techniques, Management, Applications. John Wiley and Sons, New York.
20. Maso, L. Atkinson, P.A. Delamoni, S. and Verhoeven, J.C.(eds.)(1995): Openness in Research The Tension Between Self and Other. Van Cocum, Assen, Netherlands.
21. Mikkelsen, B.(2005) Methods For Development Work and Research: A New Guide For Practitioners, Sage Publications, London.
22. Mukherjee, N.(1993): Participatory Rural Appraisal: Methodology and Application. Concept Publishing Company, New Delhi.
23. Mukherjee, N (2002): Participatory Learning and Action: with 100 Field Methods, Concept Publishing Company, New Delhi.
24. O' Leary, Z.(2005): The Essential Guide in Doing Research, vistarr Publications, New Delhi.
25. Pacione, M., (ed) (1999): Applied Geography: Principle and Practice. Routledge, London.
26. Parsons, T. and Knight, P.G., (1995): How to do Your Dissertation in Geography and Related Disciplines, Champman and Hall, London.
27. Patrick M. and Chapman S.(1990): Research Methods (Third Edition), Routledge, London.
28. Peet, R. and Thrift N.(ed.) (1989/2002): New Models in Geography (2 vols.) Rawat Publishers, Jaipur and New Delhi.
29. Rachel, P. et al (2001) Introducing Social Geographics, Arnold Hodder Group, London, and Oxford University Press Oxford.
30. Robson, C.(1993): Real World Research. A Resource For Social Scientists and Practitioners-Researchers, Blackwell Publishers, Oxford.
31. Rogers, A. and Viles, H.A.(2003): The Student's Companion to Geography, Blackwell Publishers, Oxford Indian reprint available.
32. Sheskin, Ira, M. (1987): Survey Research For Geographers, Scientific Publishers, Jodhpur.
33. Silverman, D.(1993): Interpreting Qualitative Data. Methods for Analyzing Talk, Text and Interaction. Sage Publications, London.
34. Singh, R.L. and Singh, Rana P;B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi edition).

Paper III

GR403A: Regional Planning and Development

Unit-I:

Philosophy and purpose of Planning. The development of planning thought, theories of regional development, economic base theory, international trade multipliers, aggregate growth model. The concept of growth centres, growth centre strategy of regional planning, rural economy, core-Periphery relationship.

Unit-II:

Concept and types of regions-Functional and formal, Uniform and nodal, single purpose and composite regions in the context of planning Regional hierarchy. Approaches For the definition of different types of regions and their utility in planning-resource base approach, growth centre approach, basic needs approach and habitat transformation approach.

Unit-III:

Delineation of planning regions. Planning regions of India. Planning process sectoral, temporal and spatial dimensions. Planning for a regions development and multiregional planning in a national context. Indicators of development and measuring levels of regional developments with special reference to India.

Unit-IV:

Regional planning for rural development with special reference to U.P. role of innovation diffusion, infra-structural elements (Irrigation, Power, transpiration and communication and marketing) and Industrial in regional planning. Population-resource equilibrium and spatial organization in regional planning. Metropolitan regions in regional planning. Regional planning as development strategy since independence, regional development strategies concentration Vs dispersal. Regional plans of India Concepts of multilevel planning decentralized planning. People's participation with the planning process.

GR403A: Regional planning & Development

1. Study of river valley project area and integrated planning exercise.
2. Identification of growth centers.
3. Planning of infrastructural Elements.
4. Preparation of Development Plans to Local Levels.
5. Metropolitan of Regional Planning.
6. Delimitations of Planning Regions
7. Practical record & Viva voce.

Suggested Readings:

1. Singh, O.P. and Pandey, D.C.: Development Planning: Theory and Practuce, Gyanodya Prakashan Nainital; 1986.
2. Bhatt, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3. Freidman, J. and Alonso W. Regional Development Policy: A Case Study of Venezuela, MIT Press, Cambridge Mass-1966.
4. Ghosal G.S. and Krishnan G: Regional Disparties in Levels of Socio Economic Development in Punjab, Vishal Publications, Kurushetra, 1984.
5. Kuklinski A.R. (ed): Growth Poles and growth Centres in Regional Planning, Moutonj, The Hague, 1972.

6. Kundu A and Raza M: Indian Economy: The Regional dimension, Spectrum Publishers, New Delhi, 1982.
7. Losch, A: The Economics of Location, University Press, New Haven, 1954.
8. Mishra, R.P.: Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.
9. Mishra R.P. and Other (ED): Regional Development-Planning in India: A Strategy, Institute of Development Studies, Mysore, 1974.

GR403B: Agricultural Geography

Unit-1

Definition and Scope of Agricultural Geography; Land Capability Classification with Special Reference to India.

Unit-2

Land Use Classification with Special Reference to India. Carrying Capacity of Land; Kostrowicki's Classification of World Agriculture.

Unit-3

Methods of Agricultural Productivity Measurement – Kendall's Ranking Coefficient Method, Weighted Ranking Coefficient Method.

Unit-4

Delimitation Method of Crop Combination Regions by Weaver and Doi; Cropping Intensity and Diversification; Measurement of Level of Agricultural Development. Impact of Modern Agriculture on Environment; Concept of Agricultural Development, Sustainable Agriculture.

GR403B: Agricultural Geography

Practical

1. Techniques of landuse survey.
2. Landuse Planning.
3. Agricultural Efficiency.
4. Carrying Capacity.
5. Agricultural Intensity.
6. Practical record & Viva voce.

Books Recommended :

1. Misra, R.P. (1968) : Diffusion of Agricultural Innovation, Concept Publication, New Delhi.
2. Singh, B.B. (1979) : Agricultural Geography (Hindi), Gyanodaya Prakashan, Gorakhpur.
3. Pandey, J.N. & Kamlesh, S.R. (2003) : Agricultural Geography (in Hindi), Vasundhara Prakashan, Gorakhpur.
4. Tiwari, R.C. & Singh, B.N. (1994) : Agricultural Geography (Hindi), Prayag Pushtak Bhawan, Allahabad.
5. Kumar, Pramila & Sharma, S.K. (1990) : Agricultural Geography (Hindi), M.P. Hindi Granth Academy, Bhopal.
6. Singh, Jasbir & Dillon, S.S. (1984) : Agricultural Geography, Tata Mc Graw Hill Pub., New Delhi.
7. Hussain, Majid (1998) : Agricultural Geography, Rawat Publications, Jaipur.
8. Negi, B.S. (1980) : Agricultural Geography, kedarnath Ramnath, Meerut.
9. Mohammad, Noor (1980) : Perspectives in Agricultural Geography (Vol. I-IV), Concept Pub. Co., New Delhi.
10. Giri, H.H. (1975) : Land Utilization in Gonda District, Shivalaya Prakashan, Gorakhpur.
11. Singh, S.N. (1994) : Agricultural Development in India, Kaushal Publications, Shillong.

GR403C: Transport Geography

Unit-1

Definition, Scope and Fundamental Concepts of Transport Geography; Transport Network System – Patterns of Movements.

Unit-2

Transport Modes, Hierarchy of Networks; Bases of Spatial Interaction – Complementarity, Intervening Opportunity and Transferability; Concept of Accessibility.

Unit-3

Relative Importance of Different Modes of Transport – Road, Rail, Air and Water; Evolution of Transport Network Model - Road, Rail, Air and Water with Special Reference to Taffee, Morrill and Gould.

Unit-4

Major Transport Routes of the World; Structure of Transport Network; Urban Transport and Network System. Pattern of Transport System in India; Transport and Regional Development; Transport Policy and Planning.

GR403C: Transport Geography

Practical

1. Analysis of the structure and spatial variation of transport network by graph and theoretical methods (Alpha, Gama, Beta, and Pie indices).
2. Application of gravity potential models showing transport interaction.
3. Traffic flow Analysis.
4. Connectivity and degree of circuitry.
5. Transportation planning.
6. Practical record & Viva voce.

Books Recommended :

1. Taffee, E.J. & Gauthier, H.L. (1973) Geography of Transportation, Prentice Hall.
2. Hurst, Elliot (1973) Transport Geography – Readings and Comments, Mc Graw Hill Book Co. New York.
3. Kansky, J. (1963) Structure of Transport Network, University of Chicago, Deptt. of Geography.
4. Singh, J. (1969) Transport Geography of South Bihar, N.G.S.I., B.H.U.
5. Singh, K.N. (1990) Transport Network in Rural Development in Eastern U.P., I.R.E.D., Gorakhpur.
6. Singh, K.N. (2005) Parivahan Bhoogol, Gyanodaya Prakashan, Gorakhpur.
7. Jain, J.K. (1997) Transport Economics, Chaitanya Pub. House, Allahabad.
8. Raza, M. & Agrawal, Y. (1986) Transport Geography of India, Concept Pub., New Delhi.
9. Robinson, H. & Banford, C. (1978) Geography of Transport, Mc Donald & Evans, London.
10. White, H.P. & Senior, M.L. (1983) Transport Geography, Longman, London.
11. Houle. B.S. (1973) Transport and Development, Mc Millan, London.

Paper IV

GR404A: Population & Development

Note: Candidates will have to attempt Five question, including Question 1 (short answer) and Four other questions. Selecting one question From each unit.

Unit-I:

Conceptual Frame: Population as resource; Population and development; Population and ecosystem; Demographic transition.

Unit-II:

Historical Background and Characteristics: History of human population; Relationship between population, Food and energy; Population characteristics: developed and developing countries (case study of India).

Unit-III:

Problems and Policies:

Optimum Population; Over Population & Under Population, Family welfare and planning; Population policies in India.

UnitIV

Population and Development Conflict: Neo-Malthusian theory; Future Perspectives: Growth scenario and relationship with Development. Population problems versus Development.

GR404A: Population & Development

Practical

1. Trend of population growth
2. Demographic transition
3. Trends of rural urban ratio
4. Family welfare programme
5. Concept of optimum population
6. Practical record & Viva voce

Books Recommended:

1. Champion, T.(ed.) (1993): Population Matters. Paul Chapman, London.
2. Ehrlich, P.R. and Ehrlich, A. H. (1996): Ecoscience: Population, Resources, Environment. 6th edition, W.H. Freeman and Company, San Francisco.
3. Firor, J. and Jacobsen, J.E. (2003): The Crowded Greenhouse: Population, Climatic Change and Creating a Sustainable World, Universities Press (India) Private, Ltd., Hyderabad.
4. Haggett, P.(2001): Geography, A Modern Synthesis. 5th edition, Harper and Row, New York.
5. Hammett, C. (eds.) (1996): Social Geography: A Reader. Arnold, London.
6. Meadow, D.H., Meadows, D.L., Randers, J. and Behrens, W.W. III (1973): The Limits to Growth, I R Growth. I Report of the Club of Rome. The New American Library, New York.
7. Meadows, D.H., Meadows, D.L. and Randers, J.(1992): Beyond the Limits Confronting Global Collapse, Envisioning a Sustainable Future. (A sequel to The Limits to Growth).Chelsea Green Publishers, Post Mills VT,USA.

8. Mesarovic, M. and Pester, E. (1974): ManKind at the Turning Point. II Report of the Club of Rome. The New American Library, New York.
9. Middleton, N. and O' Keefe, P. (2001): Redefining Sustainable Development. Pluto Press, London.
10. Ross, J.A. (ed.) (1982): International Encyclopaedia of Population. Free Press, New York.
11. Sharma, P.R. (ed.) (1991): Perspectives on the Third World Development. Rishi Publications., Varanasi.
12. Sharma, P.R. (ed.) (1994): Regional Policies and Development in the Third World. Rishi Publications, Varanasi.
13. Simon, J.L. (1977): The Economics of Population Growth. Princeton University. Press, Princeton.
14. Thalur, B.(ed.) (2004): Population, Resources and Development. Vol.II, Perspectives in Resource Management in Developing Countries. Concept Publishing. Company , New Delhi.
15. Tinbergen, J.(1976): RIO. Reshaping the International Order.III Report of the Club of Rome. The New American Library, New York.
16. U.N.C.E.D. (1987): Our Common Future. UNCED The Centre For Our Common Future, Geneva.

GR404B: Geography of Rural Development

Unit-1

Concept of Rural Development, Models of Rural Development, Dualism in Development and Integrated Area Development.

Unit-2

Appraisal of Rural Development under Five Year Plans, Infrastructure for Rural Development – Irrigation, Transport and Marketing; Rural Development Schemes.

Unit-3

People's Participation and Panchayati Raj in Rural Development, Role of Administrative and Political Nexus in Rural Development, Implementation of Rural Development Programmes.

Unit-4

Rural-Urban Divide and Continuum, Core and Periphery Relation, Problems of Rural Areas, Causes & Consequences of Rural Population Migration in India. Priority in Rural Development in India, PURA, Sectoral Imbalances in Rural Development.

GR404B: Geography of Rural Development

Practical

1. Theory of Central place
2. Rural development strategy
3. A Case study of city region
4. Rural sanitation programme
5. Land use
6. Practical record & Viva voce

Books Recommended :

1. Arora, R.C. (1999) : Integrated Rural Development, S. Chand & Company, New Delhi.

2. Bhadauria, B.P.S. (1988) : Rural Development Strategy and Perspective, Anmol Publication, Delhi.
3. Dubey, Bechan (1990) : Integrated Rural Development (Hindi), Mishra Trading Company, Varanasi.
4. Dak, T.M. (1987) : Social Inequalities and Rural Development, National Publishing House, New Delhi.
5. Misra, R.P. & Sundaram, K.V. (1988) : Rural Area Development : Perspective and Approaches, Sterling Publishers, New Delhi.
6. Mishra, R.P. (1987) : Rural Development – Capitalist and Socialist Paths, Concept, New Delhi.
7. Sharma, S.K. (1990) : Integrated Rural Development : Approaches, Strategy and Perspectives, Abhinav Publication, New Delhi.
8. Singh, S.K. (2002) : Rural Development Policies & Programmes, Northern Book Centre, New Delhi.
9. Chauhan, P.R. (1996) : Regional Disparities in the Levels of Development, AMGI, Gorakhpur.
10. Singh, Katar (1990) Rural Development : Principles, Policies and Management, Sage Publications, New Delhi.
11. Desai, Basant (1988) : Rural Development VI Vols., Himalaya Publishing House, Mumbai.

GR404C: Political Geography

Unit-1

Meaning, Scope and Development of Political Geography; Approaches to the Study of Political Geography with special Study of Functional and Unified Field Theory Approaches.

Unit-2

The Concept of Nation and State; Spatial Factors and Anatomy of State : Core Area and Capitals; Frontiers and Boundaries. Global Strategic Views with particular emphasis on ideas of Mahan, Mackinder, Spykman and Deseveresky.

Unit-3

Origin and Success of Federalism in India; Elements of Electoral Geography; Geopolitical Setting of India.

Unit-4

Geopolitical Problems of India in Relation to its Neighbours; Significance of Indian Ocean; Regional Co-operations – SAARC, ASEAN, European Union.

GR404C: Political Geography

Practical

1. Cartographic Representation of India's Global and Strategic Position under Land, Sea and Air Power Setting.
2. Analysis of size and shape of Administrative units and National and Local Level in view of Administrative Efficiency and Planning.
3. Application of Cartographic and Statistical Technique in Electoral Geography of given area.
4. Practical record & Viva voce

Book Recommended :

1. Glassner, M.L. & Blij, H.J.de (1968) : Systematic Political Geography, John Wiley, New York.
2. Kasperson, R.E. & Minghi, J.V. (1971) : Structure of Political Geography, London.

3. Busted, M.A. (1980) : Developments in Political Geography, London.
4. Dikshit, R.D. (1989) : Political Geography : A Contemporary Perspective, Tata Mc Graw Hill, New Delhi.
5. Dikshit, S.K. (2007) : Rajnitik Bhoogol Avam Bhurajni, Vishwavidyalaya Prakashan, Varanasi.
6. Carlson, L. (1971) : Geography and World Politics, Prentice Hall, New Jersey, 1971.
7. Pounds, N. J.G. (1977) : Political Geography, Mc Graw Hill, New York.
8. Dwivedi, R.L. (1980) : Political Geography, Chaitanya Publishing House, Allahabad.
9. Taylor, P. (1985) : Political Geography, Longman, London, 1985.
10. Johnston, R.J. (1982) : Geography and the State, Mac Millan, London.
11. Sinha, Manorama (1995) : Political Geography, Horizon Publication, Allahabad.
12. Sukhwal, B.L. (1985) : Modern Political Geography of India, Sterling Publication, New Delhi.
13. Chauhan, P.R. (1996) : Rajnitik Bhoogol, Vasundhara Prakashan, Gorakhpur.
14. Adhikari, S. (2005) : Political Geography of India, Sharada Pustak Bhawan, Allahabad.

M.A./M.Sc.IVth Semester

Paper V GRP 405: Practical Examination

Project Work & Study Tour	80 MM
(1) Project Work (Related to Optional Paper):	40
Viva-voce	10
(2) Study Tour & Tour Report (Minimum 07 Days)	30

Note – The T.A. & D.A. and related expenses to teacher and supporting staff on tour duty shall be met by the representative institutions. Normally two teachers and one attendant will a company the tour party. Add one teacher on above the every 20 students.
