

GEOGRAPHY DEPARTMENT
NEHRU GRAM BHARATI VISHWAVIDYALAYA

M. A. / M. Sc. GEOGRAPHY:

2 Years Semester Course Outline –2017, 2018, 2019

				Credit hours
SEMESTER ONE				
101	Theory (Core)	01	Contemporary Geographical Thought	04
102	Do.	02	Advanced Climatology	04
103	Do.	03	Cultural Geography	04
104	Do.	04	Natural Resource Management	04
105	Practical	Core 01	Practical	
				(Computer Application in Geography: Theory & Practical) 04
Total of Semester I				20
SEMESTER II				
106	Theory (Core)	05	Advanced Geomorphology	04
107	Theory (Core)	06	Population Geography	04
108	Theory (Core)	07	Regional development in India	04
109	Theory (Core)	08	Area Study (Africa/S.America/SE Asia)	04
110	Practical (Core)	02	Surveying and Map Projection & Basics of Remote Sensing	04
Total of Semester II				20
SEMESTER III				
111	Theory (Core)	09	Water Resource Management	04
112	Theory (Core)	10	Theoretical Economic Geography	04
113	Theory (Core)	11	Environmental Geography	04
114	Theory (Core)	12	Urban & Regional Planning	04
115	Practical(Core)	03	Remote Sensing and Aerial Image Processing	04
Total Semester III				20
SEMESTER IV				
116	Theory (Core)	13	Techniques of Spatial Analysis	04
GROUP 'A'				
117-119	Theory (Elective)	14-16:		12
				(i) Tropical Geomorphology
				(ii) Monsoon Climatology
				(iii) Geographical Dimensions of Hydrology
				(iv) Bio-Geography
				(v) Natural Hazard Management
				(vi) Geography and Eco-System
				OR
GROUP 'B'				
				(i) Urban Geography
				(ii) Political Geography
				(iii) Agricultural Geography
				(iv) Industrial Geography
				(v) Geography of Tourism and Recreation
				(vi) Geography of Crime and Terrorism
				(vii) Geography of Trade and Marketing
				(viii) Geography of Transport and Communication
				(ix) Geography of Health
120	Practical (core)	04:	GIS and Computer Assisted Cartography & Field Excursion	04
Total of Semester IV				20

SEMESTER I to IV (SUMMARY)

Credit hours	
(1) Core Theory Courses	13 x 4=52
(2) Core Practical Courses	4 x 4=16
(3) Elective Theory Courses	3 x 4=12
Grand Total	20 x 4=80

M.A./M.Sc. PREVIOUS GEOGRAPHY

The courses shall be effective from the examinations of 2017. The courses are grouped under Semester I and Semester II. The Syllabi for each theory paper and practical examinations in both the semesters are under:

SEMESTER I

101. Theory Core Course: Contemporary Geographical Thought Time: 3 hours MM: 100 (80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT-I

Development of geography after second half of the 20th century; concept of paradigm; Paradigm shift in geography; Humanistic Geography; Neo-determinism; Behaviouralism; Neo-environmentalism;

Structuralism and Post-modernism.

UNIT-II

Quantitative revolution in geography; Models and theory building; welfare approaches in geography-Radical geography, Marxist geography; New models of environment and resources – Resource management and natural hazards; New models of regional geography; New models of geo-political change Post cold war democracy and human rights, geopolitics in the era of globalization.

UNIT III

Perception and cognition; Mental Maps; Feminist geography-Gender discrimination; Geography in the era of globalization –peripheral capitalization; Crisis of modernity.

UNIT IV

Status of Indian Geography after 1950; Impact of Post colonialism and Gandhianism on Indian Geography; Development in the field of geomorphology, urban geography, rural settlement geography, regional planning and political geography; Future of Indian geography –problems and prospects.

Books Recommended:

1. P.Haggett: Geography –A Modern Synthesis
2. R.J.Chorley and P.Haggett: Models in Geography
3. R.J.Johanston and P.Claval: Geography since the Second World War: An International Survey, Crown Halm, Sydney 1984.
4. R.J.Johnston: The Future of Geography, Methuen, London 1988.
5. V.Edmunds Bunkse: Geography and the Art of Life, John Hopkins University Press Baltimore, 2004
6. Marcus Doel: Post structuralist Geography, The Diabolical Arts of Spatial Sciences, Edinburgh University Press, Edinburgh, 1999.
7. Gray Gaile and Cort Wilmot (Ed) Geography in America at the Dawn of the 21st Century, Oxford University Press, Oxford & New York 2003.
8. Phill Hubbardm et al..Thinking Geographically: Space, Theory and Contemporary Human Geography, Continuum, London, 2002.
9. Richard Peet, Modern Geography Thought, Blackwell, Oxford 1998.
10. Anu Kapur (Ed), Indian Geography Voice of Concern, Concept Pub. Co. New Delhi, 2001.
11. D. Harvey: Spaces of Capital: Towards, a Critical Geography, Edinburgh Uni. Press Edinburgh, 2001.
12. D.Harvey: The Condition of Post Modernity, Blackwell, London, 1989.
13. A Blunt and C .Mc Ewan : Post Colonial Geographics, Continial,2002.
14. R.D.Dixit: Geographical Thought A Critical History of Ideas, Prentice Hall of India, New Delhi, 2001 (English & Hindi).

102: Theory (Core): Advanced Climatology Time: 3 Hours, M.M: 100 (80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT I

Measuring scope and development of Climatology; Atmospheric equilibrium adiabatic temperature change; stability and instability; Upper air circulation and jet stream; Theories of precipitation; Air masses –origin, growth, classification and distribution.

UNIT II

Fronst and fronto genesis: cyclones and anticyclones –theories about the origin of temperate cyclones; Origin of Indian Monsoon—recent views; El-nino, La-Nina, Walker Circulation, Southern Oscillation.

UNIT III

Climatic Classification of Koppen, Hrnthwaite and Oliver- Hidore; Major climate types and biomes; Weather analysis and Weather forecast, weather and human behavior, weather modification.

UNIT IV

Climatic change--causes and theories; Global warming evidences ‘causes and effect; Atmospheric Hazards, Disasters Tropical Cyclones tornadoes, thunderstorms Agrolimatic Planning; Applied Climatology, Micro climate, urban climate, certificial climate.

Books Recommended:

1. R.G.Chorley and R.G. Barry: Atmosphere, Weather and Climate,1995, Methuen a Co. Ltd.London.
2. H.J. Critchfield : General Climatology ,Prentice Hall of India ,New Delhi,2002.
3. E. Aguado and J.E. Burt, Understanding Weather and Climate, Prentice Hall,2001.

4. G.P. Brasseur et al: Atmospheric Climatology and Global Change, Oxford University Press, New Delhi, 1999.
5. J. Hanwell: Atmospheric Processes, George Allen and Unwin, London
6. J.J. Hiddore: Global Environmental Change, Prentice Hall, New Jersey, 1996.
7. J.G. Lockwood: World Climatology, Elbs and Edward Arnold (Pub) Ltd. 1979.
8. A. Miller et al: Elements of Meteorology, Merrill, and Columbus.
9. M.D. Morgon and J.M. Moran: Weather and People, Prentice Hall, New Jersey 1997.
10. J.E. Oliver and J.J. Hiddore: Climatology; An Atmosphere Science, Pearson Education, India, 2003.
11. R.D. Thompson, and A. Perry: Applied Climatology, Routledge: London and New York, 1997.
12. G.T. Trewartha: An Introduction to Climate, Mc.Graw Hill Series in Geography, 1954.
13. G.T. Trewartha: The Earth's Problem Climates, University of Wisconsin Press 1981.
14. D.S. Lal: Climatology, Prayag Pustak Bhawan, Allahabad.
15. Savindra Singh: Climatology, Prayag Pustak Bhawan, Allahabad, 2005.
16. Dayashankar Lal: Jalvayu Vigyan, Sharda Pustak Bhawan, Allahabad.
17. Savindra Singh: Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad.

103. Theory (Core) 03: Cultural Geography Time: 3 hours MM: 100((80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT-I

Concept of Culture; Meaning and scope of cultural geography; Processes of Cultural evolution; Cultural changes--perception, behaviouralism and cultural relativism; Major concepts--cultural diffusion, material culture, cultural landscape, cultural ecology, acculturation.

UNIT-II

Origin and dispersal of man; Cultural hearths; Primitive culture; Agricultural practices, Agricultural innovations; industrial and technological revolution; globalization and cultural development, cultural conflict.

UNIT-III

Origin and dispersal of human races; zone-strata theory; Racial composition of India, Major religions of the world; Religion and economic development; Major linguistic families; world distribution of major languages; Religious composition of India.

UNIT-IV

Environment and Culture; environmental perception; Resources and culture; space adjustment and space intensification; major cultural realms of the world; Major cultural regions of the world.

Books Recommended:

1. J.E. Spencer and W.L. Thomas: Introducing Cultural Geography John Wiley and Sons, New York, 1973.
1. 2.P.J. Wagner and M.W. Mikesell: Readings in Cultural Geography, University of Chicago Press, 1962
2. F. Rostlund: Outline of Cultural Geography, California Book Co. Berkeley.
3. S.N. Dicken & F.R. Pitts: Introduction to Cultural Geography: A Study of Man and his Environment, Gown and Co. Waltham, Mass. 30.
4. C.L. Saltar: The Cultural Landscape, Durbury Press, Clifurnia, 1971.
5. 6.J.M. Broek: Geography of Mankind, Mc.Graw Hill, New York..
6. T.G. Jordon & L. Lawntree: The Human Mosaic-A Thematic Introduction to Cultural Geography, Harper and Row, New York.
7. G.F. Carter: Man and the Land-A Cultural Geography; Reinhardt, New York, 1968.
8. F.E. Dohrs, L.M. Sommers (Ed): Cultural Geography-Selected Readings, Dunn-Donnal Publishing Corporation, New York, 1967.
9. David E. Sopher: Geography of Religions, Prentice Hall, New Jersey.
10. E.F. Frazier: Race and Cultural Contacts in the Modern World, A.A. Knopf, New York 1957
12. R. Coulborn: The Origin of Civilized Societies, Princeton University Press, Prirection, N.J. 1959.
11. P.L. Wagner: Environment of People, Prentice Hall, Englewood, Cliffts 1972.

104: Theory (Core) 04: Natural Resource Management Time: 3 hours MM: (80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT-I

Concept of natural resources; classification of natural resources; Dynamic theory of resources; Problems of resource utilization; Development and resources; resource regionalization.

UNIT-II

Use and Misuse of resources--global and Indian scenario; Imbalance in resource distribution and utilization; Resource and economic development; Globalization and resources; Future prospects of soil, water mineral and forest resources

UNIT-III

Resource appraisal; use of GIS and Remote Sensing in resource appraisal; resource depletion and emerging issues-desertification, deforestation less of bio diversity, energy crisis, water scarcity and conflicts.

UNIT-IV

Sustainable development and conservation of resources; concept of resource planning and resource conservation; Conservation strategies; resource planning and economic development; Community participation and governance; Integrated resource development.

BOOKS RECOMMENDED:

12. J.J.L. Holechek et al: Natural resources: Eulogy Economics and Policy, Prentice Hall, New Jersey, 2000.
13. R.W. Kates and I. Burton (Eds): Geography, Resources and Environment, Vol. II, University of Chicago Press, Chicago, 1986.
2. D.J. Mc Laren and B.J. Skinnet (Eds): Resources and World Development, John Wiley & Sons, New York, 1986.
3. M.D. Newson: Land, Water and Development: River Basin Systems and Management, Routledge London, 1991.
4. S.Owen, P.L. Owens: Environment, Resources and Conservation, Cambridge University Press, New York, 1991.
5. J.Rees: Natural Resources: Allocation, Economics and Policy Methwan, London, 1988.
6. M.Redclift: Sustainable Development: Exploring the Contraction, Methuen London, 1987.
7. I.G.Simmons: Earth, Air and Water Resources and Environment in Late 20th Century, Edward Arnold, 1991.
8. Alan Thomas et al: Environmental Policies & NGO Influence, Rutledge, London, 1995.
9. A.S. Mather and K. Chapman: Environmental Resources, Longman Scientific and Technical, London, 1995
10. C.L.Harper: Environment and Society Human Perspectives on Environment Issues, Prentice Hall, New Jersey.
11. I Burton and R.W. Kates (Ed): Readings in Resource Management and Conservation, 1965.
12. S.W.Allen and J.W. Leonard: Conserving Natural Resources, Mc Graw Hill, New York.
13. G.H.Smith (Ed.): Conservation of Natural Resources, John Wiley, New York.

105. Practical (Core): Computer Application in Geography Time: 3 Hours, M.M: 100

The practical examination shall be conducted by two internal and one external examiners.

Part I: Theory based Laboratory work (Time: 3 Hours) M.M: 30

Part II: Computer Work (3 Hours) M.M: 40

Sessional Record Work M.M 20

Vova-Voce Test M.M 10

PART I: Theory based Laboratory work:

Theory based laboratory work will be 3 of hours duration .It will consist of 4 questions selecting at least one question from each unit of the course. The candidate will be required to attempt 3 questions selecting at least one question from each unit.

UNIT I

Components of a computer, input unit, memory unit, processing unit, out put unit, software; hardware; central processing unit; Types of memory cells: random access memory, serial access memory, volatile memory, destructive memory, non destructive memory, read only memory, main memory and secondary memory.

UNIT II

Storage devices-- Magnetic hard disk, capacity of hard disk, floppy disk, capacity of a floppy disk, magnetic tape; Data representation in computer--data representation in day to day use, decimal representation of character's in computer; standardization of recorded data.

UNIT III

Bytes and work; Representation of integers in computers; binary integer; Kilo and Mega in Binary system; Representation of fractions in computers. Hardware and software requirements for Geography.

UNIT IV

Computer application: Defining spatial characteristic-- point attributes, line attributes, area attributes; measuring polygons, measuring slope, measuring distance, surface analysis -Dot map, choropleth map, dasymmetric map; Spatial analysis -point patterns (quadrant analysis, nearest neighbour analysis, Thiessen polygons), area patterns; linear patterns (reagent neighbours,

connectivity, gravity model).

PART II

Computer work will be of 3 hours duration .It will include computer-based exercises.

Books Recommended

1. Pradeep Kumar Sinha and Priti Sinha : Computer Fundamentals, 3rd Ed. BPB Publications.
2. B.Ram: Computer Fundamentals, New Age International Publication.
3. Information Technology of Uptech Computers Books, Computer Consultancy Ltd.
4. Michael N. Demers: Fundamentals of Geographic Information Systems, 2nd Ed.
5. J.A.Dawson and D.J.Unwin : Computing for Geographers, David and Charles,London1976

SEMESTER II

106. Theory (Core) 02.Advanced Geomorphology Time: 3 hours MM: 100 (80+20)

The course in the paper are arranged in two units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT –I

Methods and approaches to the study of landforms; Basic concepts in Geomorphology related to geomorphic equation, geological structure, geomorphic process and geomorphic scales; Geomorphic theories, uniformitarianism; Theories of landscape development by G.K.Gilbert, Comparison between W.M.Davis and W.Penck,S.A.Schumm and M.Marisawa.

UNIT-II

Plate tectonics; Plate tectonics and continental drift and mountain building; Mass movement of rock waste and resultant land forms; Slope evolution and slope classification; theories of slope development by W.Penck and O. Lehman. Structural geomorphology: fault and fold geomorphology.

UNIT-III

Morphometry of drainage basins; Profile of equilibrium; Channel morphology; Denudation chronology and erosion surfaces; Peneplains, panplains, Pediplains, climatic geomorphology; climatic change and quaternary geomorphology.

UNIT IV

Regional geomorphology of the Peninsular India, Kumaun Himalaya, Ganga Plain and west coastal plains; Applied geomorphology--geomorphic hazards including Tsunamis and their mitigation; Geomorphology and engineering construction; urban geomorphology; Anthropogenic geomorphology--man and coastal processes, man and periglacial processes, Man and river processes.

Books Recommended:

1. A.L.Bloom;Geomorphology,Prentice Hall ,New Jersey
2. A Goudie: Geomorphological Techniques, George Allen and Unwin ,London
3. A.L.Washborn: Periglacial Processes and Environment, Edward Arnold,London
4. A.Young: Slopes, Oliver and Boyd London
5. C.A.M.King: Techniques in Geomorphology, Edward Arnold, London 1968
6. C. Embleton and J. Theories: Processes in Geomorphology, Arnold Hienmann,London
7. D.D.Phodes and G.P.Williams: Adjustment of Fluvial Processes,George Allen and Unwin Boston.
8. I.G.Grass et al : Understanding Earth,the Allemis Press Ltd.Sussex
9. I Tricart and A. Caillaux to Climatic Geomorphology, Longmans ,London.
12. 10.E.Derbyshire, K.J.Gregory and J.R.Hail: Geomorphological Processes, Butterworths, London.
13. 11.K.J.Gregory and D.E.Walling: Drainage Basin Processes and Forms, Edward Arnold, London.
8. K.J.Gregory and D.E.Walling: Man and Environment Processes, Butterworths, London.
14. 13.K.Richards: Rivers, Methuem, London.
15. M.J.Shebly: Hillslope Materials and Processes, Oxford University Press, London.
16. 15.M.Thomas: Tropical Geomorphology, Macmillan, London.
17. R.J.Chorley et al : Geomorphology, Methuem,London
18. 17.R.J.Small: The Study of Landforms, Cambridge University Press, Cambridge,1972.
19. 18.Savindra Singh: Geomorphology, Prayag Pustak Bhawan, Allahabad.
20. 19.V.S.Kale and A.Gupta:Introduction to Geomorphology, Orient Longman, Hyderabad.
21. W.N.Melhorn and R.C.Flemal: Theories of Landform Development, George Allen Unwin, London.
22. 21.Woldenberg and J. Michal (Ed): Models in Geomorphology, Allen and Unwin,Boston.
23. 22.F. Anher: Introduction to Geomorphology,Arnold,London,Sydney,1996.
24. B.W.Sparks: An Introduction to Geomorphology,Longman,London,1988.
25. Savindra Singh: Bhuakriti Vigyan, Vasundhara Prakashan, Gorakhpur,2005.

107: Theory (Core) Population Geography Time: 3 Hours, M.M: 100(80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT I

Relevance of Population studies in Geography; Nature and scope of population geography; Methodological problems in population Geography; recent development in population geography; Development of population geography in India; Sources of population data.

UNIT II

Population growth and distribution –theoretical issues; classical and modern theories in population growth and distribution; world patterns and their determinations, concepts of under and over population; population composition, age sex literacy, urbanization, occupational structure, gender issues.

UNIT III

Population Dynamics- measurement of fertility and mortality; Migration-- national and international patterns- Rural and urban dimensions, Globalisation and labour Mobility.

UNIT IV

Population resource regions; population planning; population policies in developed and development countries, population and socio-economic development; population as social capital; population and human resource; population and environment; Human development index.

Books Recommended:

1. D.J.Bogue: Principles in Demography, John Wiley, New York 1969.
2. Ashish Bose et al : Population in India's Development (1947-2000), Vikas Publishing House, New Delhi.
3. R.C. Chandna: Geography of Population; Concept, Determinants and Pattern, Kolyani Pub. New Delhi,2000.
4. John I. Clarke: Population Ecology, Pergamon Press, Oxford 1973.
5. Nigael Crook: Principles of Population and Development, Pergamon Press New York 1997.
6. B.J.Garnier: Geography of Population, Longman, London 1970.
7. K. Srinivasan & M. Vlassoff: Population Development Nexus in India: Challenges for the Millennium,Tata Mc Graw Hill, New Delhi,2001.
8. K.Srinivasan: Demographic Techniques and Applications, Sage Pub. New Delhi,1998.
9. K.V.Sundaram and Sudesh Nangia (Ed): Population Geography, Heritage Pub. Delhi, 1986..
10. R.Woods: Population Analysis in Geography, London 1979.
11. Wilbur Zelinsky: A Prologue to Population Geography, Prentice Hall,1966.
12. J.I. Clarke: Population Geography, Peargam, Oxford,1972.
13. W.E. Hornby and M Jones: An Introduction to Population Geography, Cambridge University. Cambridge, 1980.
14. R.B. Potter, T.Binns, J.A. Elliott and D. Smith: Geography of Development, London Longman, 1999.
15. H.R.Barret: Population Geography, Oxford and Boyd, Oxford,1997.
16. G.J. Demko, H.M. Rose and G.A. Schnell: Population Geography: A Reader,Mc Graw Hill .New York

108: Theory (Core) 08: Regional Development in India Time: 3 Hours, M.M: 100(80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT I

Concept of Regional Development; Approached to regional development; Intra Regional disparities in development; Regional development and regional planning.

UNIT II

Regional development in India; Disparities in regional development of India; Strategies for Regional Development; Five Year Plans; Achievements of Five Year Plans; Failures of Five Year Plans; Levels of Regional Development.

UNIT III

Multi-Level Planning in India –National level , State level, District level, Block level, Panchayat level; Rural Development, Programme of Rural Development, Planning Regions of India.

UNIT IV

Regional Development Programmes; Hill area development, tribal area development, River basin development, Drought prone area development; Metropolitan area development; Role of private sector and multinationals in regional development of India. Globalization and regional development in India.

Books Recommended:

1. L.S.Bhat: Regional Planning in India, Statistical Pub. Society, Kolkata,1972
2. J.Friedman and W. Alonso: Regional Development and Planning: A Reader, MIT Press, Cambridge, Mass.
3. J.G.M. Hillshorts: Regional Planning, University Press, Rotterdam.
4. R.P.Misra: Regional Planning and National Development, Vikas Publications, New Delhi.
5. R.P.Misra: Regional Planning: Concept Techniques and Case Studies, Concept Pub. Co. New Delhi.
6. R.P.Misra et al : Regional Development Planning in India,Vikas Publishers, New Delhi,1978 .
7. R.P.Misra: (ed) Local Level Planning and Development, Sterling Pub. New Delhi.
8. D.Diamond (ed): Regional Disparities and Regional Policies, Pergamon Press, Oxford, 1982.
9. K.N.Subrahmayam (ed): Economic Development and Planning in India, Pub. New Delhi; 1985
10. K.V.Sundaram,R.P.Misra and V.L.S.P.Rao: Spatial Planning for a Tribal Region ,Inst. Of Development Studies ,Mysore (1971)
11. Regional Science Association, India, IIT Kharagpur 1995.
12. K.V.Prasad: Planning at the Grass Roots, Sterling Pub. Pvt. Ltd.New Delhi.
13. Mahesh Chand and V.K.Puri: Regional Planning in India, Allied, New Delhi, 1983.
14. R.C.Chandna: Regional Planning: A Comprehensive Text, Kalyani Pub., New Delhi,2000.
15. R.C.Tiwari: Geography of India, Prayag Pustak Bhawan, Allahabad,2006.

109: Theory (Cove) : Area Study (Africa /S.America/S.E.Asia)

Time: 3 Hours, M.M: 100(80+20)

The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A compulsory 2 questions from each unit and 5 questions from section B. All the questions of Section A and B shall be comprising and the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

A.AFRICA:

UNIT I

Location,Topography,Drainage,Climate,Natural Vegetation,Soils,Water Resources, Mineral resources.

UNIT II

Population Growth and Distribution; Ethnic Diversity, Language, Religious structure,Agriculture,Industrial Development, Means of Transport and Communication.

UNIT III

Regional Divisions of Africa, North Africa,North East Africa,West Africa, West Central Africa,Southern Africa.

UNIT IV

Geographical study of Egypt,Sudan,Algeria,South Africa and Zaire.

Books Recommended:

1. Majid Hussain: World Geography, Rawat Pub. Jaipur and New Delhi,2004
2. W.M.Adams, G.Andrew, S. & O. Antroy (Eds): The Physical Geography of Africa, Oxford University Press,New York,1996.
3. T.Binns: Tropical Africa, Routledge: London and New York 1994.
4. G.P.Chapman & K.M.Baker :The Changing Geography of Africa and Middle East,Routledge: London and New York.
5. A.A.Gordon and D.L.Gordon (Eds) :Understanding Contemporary Africa ,Lynna Rienner ,Boulder Colo.
6. A.T.Grove : The Changing Geography of India, Oxford University Press, New York,1994.
7. Charles G. Gurdon (Ed) The Horn of Africa ,St.Martins' Press New York.1994.
8. Robert W. Joly: A History of African People 4th Ed. Seribers,New York,1985.
9. David Lamb: The Africans, Random House, New York,1983.
10. J.P.Murdack,1959: Africa its Peoples and their Culture History, Mc. Graw Hill,New

York, 1959.

11. J.M.Pritchard; Landform and Landscape in Africa, Edward Arnold, London, 1979.

12. R.Stock: Africa South of the Sahara: A Geographical Interpretation, Gilford Press, New Delhi, 1995.

13. J.Swift.: The Sahara, Time Life Book Alexandria, 1975.

14. Y.H.Zoubir (ed): North Africa in Transition: State Society and Economic Transformation in the 1990's University Press of Florida Gainesville-Fle, 1999.

B. SOUTH AMERICA

UNIT I

Location, Topographical Features, Drainage, Natural Vegetation; Soils, Water Resources, Mineral Resources.

UNIT II

Population growth and Distribution, Racial Composition; Ethnic Diversity, Languages, Religious structure, Agriculture, Industrial Development, Means of Transport and Communication.

UNIT III

Regional Divisions of South America: Amazon Basin; Andes mountains; Pampass Plains; South America and Antarctica.

UNIT IV

Geographical Study of Brazil, Argentina, Venezuela and Bolivia.

BOOKS RECOMMENDED:

1. Majid Hussain: World Geography, Rawat Pub. Jaipur, 2004.
2. R.Janathan Barton: A Political Geography of Latin America, Routledge: London & New York, 1997.
3. B.K.Becker & C.A.C.Egler: Brazil : A New Regional Power in the World Economy: A Regional Geography, Cambridge University Press, New York, 1992.
4. H.Blackemore & C.T.Smith (Eds) : Latin America : Geographical Perspective, Methuen, London and New York, 1983.
5. M.Brawer : Atlas of South America, Simon & Schuster, New York, 1991.
6. D.L.Glawson: Latin America and Caribbean: Lands and Peoples, Mc Graw Hill, Dabuque, Jova, 2000.
7. C.Marshall Eakin: Brazil: The Once and Future Country, St. Martin' Press New York, 1997.
8. Alen Gilbert : Latin America, Routledge : London and New York, 1990.
9. Perth E. James and C.W. Minkel: Latin America, John Wiley and Sons, New York, 1986.
10. Simons Collier et.al (Eds): The Cambridge Encyclopedia of Latin America and the Caribbean, Cambridge University Press, New York, 1992.

C. South East Asia

UNIT I

Indis Relation with South East Asia; Spatial Factors; Physiography: Drainage; Climate, Natural Vegetation, Mineral Resources.

UNIT II

Population-growth and distribution; Racial composition-Chinese population; regional structure, language, agriculture-plantation farming, industrial development, means of transport and communication.

UNIT III

Colonialism in South East Asia; Post Colonial Scenario; Growing influence of China; Asean, India and South East Asia.

UNIT IV

Geographical study of Indonesia, Malaysia, Vietnam, Thailand, Myanmar and Singapore.

BOOKS RECOMMENDED:

1. I.Majid Hussain : World Geography, Rawat Pub. Jaipur, 2004.
2. Ashok K. Dutt (ed) : South East Asia: Realm of Contrast, Westview Press, Boulder, Colo. 1985
3. C. A. Fisher: South East Asia: A Social Economic and Political Geography. E.P. Datton, New York, 1966.
4. R.D.Hill (Ed) South East Asia Systematic Geography, 26, 1936.
5. D.R.Sar Desai: South East Asia: Past and Present, Westview Press, Boulder, Colo, 1997.
6. C.L.Slater et.al. Essentials of World Regional Geography, 2nd Ed. H.B. College Pub. New York.
7. R. Ulack and G.Pauer: Atlas of South East Asia, Macmillan, New York, 1988.
8. D.Wurfel and B.Burton (Eds): South East Asia in the New World Order, St. Martin's Press, New York.
9. R.C.Tiwari, 2005 : Geography South East Asia.

110. PRACTICAL (CORE): MAP PROJECTION, SURVEYING AND REMOTE SENSING Time: 3 Hours, M.M: 100

The Syllabi for Practical are divided into three sections, Section. A is related to Laboratory work, Section B related to Field Techniques (Surveying) and Section C related to sessional records and viva-voce.

The Practical examination including field study examination under section A, B and C will be of six hours duration divided into two parts of three hours each. The division of marks for each section is as follows:

Section A: Laboratory Work MM 50

Section B Field Techniques (Surveying) MM 30

Section C Sessional Record Work and Viva-Voce MM 20

The laboratory work will be divided into three parts. Five questions will be set selecting at least one question from each sub section. Candidate will have to answer three questions selecting at least one question from each sub section.

The field Technique examination will be of three hours duration in which exercises will be given on surveying and remote sensing. Evaluation of sessional record work and holding of viva-voce will be done during the course of field technique examination.

The courses for paper on Map Projection, Remote Sensing and Surveying are as below:

UNIT I (PRINCIPLES OF MAP PROJECTION)

1. Transformation of Earth's Surface and Co-ordinate System.

- (a) The shape and size of the earth- spherical earth, ellipsoidal earth, geoidal earth; cartographic use of sphere; ellipsoid and geoid; Earth's coordinate system- -latitudes and longitudes; measuring distance direction on the earth's surface.
- (b) Principles of transformation –Developable surfaces, perspective and non-perspective map projections; Maintaining scale, area, shape and direction on map projections; standard parallel, central meridian, Great circle, loxodrome, Rumbline.
- (c) Classifications of Map Projections.
- (d) Use of Map Projections.

UNIT II (CONSTRUCTION OF MAP PROJECTION)

2. Principles of construction map projections.

- (a) Conical Projection- Bonne's, Polyconic, Lambert's Conformal conic.
- (b) Cylindrical Projection –Gall's Projection, Mercator's Projection.
- (c) Zenithal Projection-Zenithal equal area (Polar case), Zenithal Stereographic (equatorial case), Gnomonic Projection (equatorial case)
- (d) Conventional Projection-Sinusoidal and Mollweide Projection (interrupted), Good's homolosine.
- (e) Merits and demerits of map projection.
- (f) Deformation on map projections- visual criterion, scale (world and regional)

UNIT III (BASICS OF REMOTE SENSING)

3. Basics of Remote Sensing:

- (a) Fundamentals-Remote Sensing: definition and scope; electromagnetic radiation: characteristics, interaction with matter and spectral regions; Types of remote sensing; Remote Sensing regions and bands.
- (b) Aerial Photographs-Aerial photos: types, scale, resolution; Stereoscopy; Geometric properties of aerial photos; Stereoscopic parallels; Relief displacement.
- (c) Satellite Imagery- Orbital characteristics of remote sensing satellites; General Characteristics of remote sensing sensors, and remote sensing data.
- (d) Interpretation- Elements of image and patterns interpretation; Elements of visual image processing (VIP); Digital Image Processing (DIP); pre-processing operations, enhancement and image classification; Remote Sensing in resource mapping and environmental monitoring.

UNIT IV (SURVEYING)

- (a) Plane Table Surveying –triangulation, traversing and resection.
- (b) Use of Telescopic Alidade in Plane Table Surveying- measurement of distances and mapping.
- (c) Levelling- Differential and profile levelling
- (d) Use of Indian Clinometers- Determination of spot heights; Interpolation of Contours.
- (e) Use of Theodolite – Triangulation and Traversing.

BOOKS RECOMMENDED:

1. A.H.Robinson et al : Elements of Cartography, John Wiley, New York.
2. J.A.Steers: An Introduction to the Study of Map Projections U.L.P. London.
3. T.P.Kanetkar:Surveying and Levelling, Ara Prakashan.
4. J.C.Pugh: Surveying for Field Scientists, Methuen, London.
5. G.P.Kellawag: Map Projections,B.I. Publications, Delhi 1979.
6. R.P .Misra: Fundamentals of Cartography,Prasaranga ,University of Mysore,1969.
7. R.C.Tiwari & Sudhakar Tripathi: Abhinav Prayogatmak Bhoogol,Prayag Pustak Bhawan,Allahabad.
8. B.C.Purnmia: Surveying,Laxmi Pub. New Delhi,1988.
9. John B. Campbell: Introduction to Remote Sensing ,Taylor & Francis ,London,2002.
10. A.Cracknell et al: Remote Sensing Year Book, Taylar and Francis London,1990.
11. P.J.Curran: Principles of Remote Sensing, Longman, London,1985.
12. B.L.Deeksha Tulu and Y.S.Rajan (Ed) : Remote Sensing ,Indian Academy of

Science,Bangalore,1984.

13. F.S.Floyd: Remote Sensing : Principles and Interpretation , W.H.Freeman,New
york,1986.

14. P.K.Guham: Remote Sensing for Beginers, Affiliated East-West Press Pvt.Ltd.New
Delhi ,2003.

15. B.Hallert: Photogrammetry,Mc Graw Hill Book Co. Inc.

16. R.M.Hord: Digital Image Processing of Remotely Sensed Data, Academic Press, New
York..

17. P.Nag (Ed): Thematic Cartography and Remote Sensing Concept Pub. Co. New
Delhi,1992.

18. R.Spurr: Photogrammetry and Photo Interpretation, The Rolland Press Co.
London,1960 .

19. P.H.Swain and S.M.Davis (Ed): Remote Sensing: The Quantitative Approach,Mc.
Graw ,New York,1978 .

M.A./M.Sc. FINAL GEOGRAPHY

The courses shall be effective from the examinations of session 2017-2018. The Courses are grouped under Semester III and Semester IV. The Syllabi for each theory and practical examinations in both the semesters are as under:

SEMESTER III

111. Theory (Core) 09: Water Resource Management Time: 3 Hours, M.M: 100(80+20)

The question paper will consist of 13 questions. The course in the paper are arranged in four units and the question paper comprises 2 sections (A & B) having short medium answer question of 200 words each and long answer questions of 600 words each respectively. There shall be 8 questions from section A and 5 questions from section B. All the questions of Section A and B shall be comprising the candidates have to answer any five questions from section A and any five questions from section B. Each short medium and long answer question shall carry 7 and 15 marks respectively.

UNIT I

Water on Earth; Hydrological cycle; Elements of hydrological cycle- - precipitation, evaporation, infiltration, surface run off, urban flooding, Human interference in the hydrological cycle;

UNIT II

Occurrence and assessment of surface water resources; Water resources in oceans and seas; Hydrology of river basin- basin characteristics, discharge ratio, use of river basins—catchments and command areas

UNIT III

Origin and occurrence of ground water, ground water recharge and utilization, Man induced problems related to ground water; Glacial hydrology and its significance; Nature of glacial and periglacial discharges; Problems associated with the utilization of glacial water- shrinking of glaciers.

UNIT IV

Concept of water balance; Areas of water surplus and water deficit; Conflict for water resources; water pollution; water management; water conservation, water harvesting, water policy rural and urban water supply; Conservation of water resources of India: indigenous and modern.

BOOKS RECOMMENDED:

1. R.J.Chorley: Water ,Earth and Man., Methuen,London ,1967.
2. J.A. Jones: Global Hydrology: Processes, Resources and Environmental Management, Longman, London,1997.
3. J.R.Matter: Water Resources, Distribution, Use and Management, John Wiley, Marylane, 1984.
4. D.K.Todd: Ground Water Hydrology,John Wiley, New york,1959.
5. R.A.Singh and S.R.Singh: Water Management: Principles and Practices, Tara Pub. Varanasi 1972.
6. R.J.Chorley (Ed): Introduction to Physical Hydrology, Methuen, London 1969.
7. H.Bouwer: Ground Water Hydrology, Mc Graw Hill Book Co. New York,1978.
8. K.R.Karant: Ground Water Assessment: Development and Management, Tata Mc.Graw Hill New Delhi 1987.

9. R.L.Rao : India's Water Wealth, Orient Longman, New Delhi, 1979.
10. H.M.Ragunath: Hydrology, Wiley Eastern Ltd. New Delhi, 1985.
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11. J.V.S. Murty: Watershed Management in India, Wiley Eastern Ltd., New Delhi, 1995.
12. M.M. Yoshino (Ed): Water Balance of Monsoon Asia, University of Hawaii Press, Honolulu.
13. R.J. Reddy: The Text Book of Hydrology, Laxmi Publisher, New Delhi, 1999.
14. T.G.K. Charlu and D.K. Dutt: Ground Water Development in India, Rural Electrification Corporation, New Delhi.
15. E.M. Tideman: Watershed Management: Guidelines for Indian Conditions, Omega, New Delhi.

112. Theory (Core) 10: Theoretical Economic Geography Time: 3 Hours, M.M: 100(80+20)

UNIT I

Nature, Scope and recent trends in Economic Geography; Relation of economic geography with economics and other branches of social science; Historical evolution of world economic systems; Classification of the economies of the world (primary, secondary and tertiary); Theories, concepts and models of development, developing and under developed economies.

UNIT II

Concepts of resources; classification of resources-- Natural resources and human resources; Renewable and non-renewable resources; concept of resource adequacy and resource scarcity; conservation of resources; sustainable developed and resource management.

UNIT III

Resource utilization patterns-- Transformation and communication as factors in resource utilization; agricultural activities (Von Thunen's models of agricultural location); Manufacturing industries; Theories of industrial location--Weber, Hoover, Losch, Isard and Smith; Location of tertiary activities- -central place theory of Christaller.

UNIT IV

Status of quaternary activities in different economic systems-recent trends; Emerging patterns of world trade- Barriers to trade--Dynamics of trade blocks ; Economic development; regional disparities in economic development; economic regions.

BOOKS RECOMMENDED:

1. B.J.L. Berry et al : Geography of Economic Systems, Prentice Hall, Englewood ,Cliff,1976.
2. R.D.Boyce: Bases of Economic Geography, Holt Rinehart and Winston, New York.
3. E.C.Conkling and M. Yeates: Man's Economic Environment, Mc Graw Hill, London..
4. B.W.Hodder and R. Lee: Economic Geography, Field of Geography Series, Methuen & Co. Ltd. London..
5. J.P.Cole: Geography of World Affairs, Butterworths, London.
6. P.E.Lloyd and P.Dicken: Location in Space, Harper and Row, San Francisco.
7. D.M.Smith: Industrial Geography: An Economic Geographic Analysis, John Wiley & Sons.

8. Thomas J. Wilbanks: location and Well –being, An Introduction to Economic Geography , Harper and Row, San Francisco.

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9. W.W.Rostow: The Stages of Economic Growth, Cambridge University Press, London 1960.

10. J.O.Wheeler et al : Economic Geography , John Wiley , New York 1995.

11. T.A.Hartshorne and J.W. Alexander: Economic Geography, Prentice Hall of India, New Delhi, 1994.

12. J.W. Alexander: Economic Geography, Prentice Hall of India, New Delhi, 1974.

13. E.W.Zimmermann: Introduction to World Resources, Harper, New York.

14. G.H.Smith: Conservation of Natural Resources, John Wiley, New York..

113. THEORY (CORE) 11 ENVIRONMENTAL GEOGRAPHY

Time: 3 Hours, M.M: 100(80+20)

UNIT I

Meaning and Scope of environmental geography; basic principles of environmental geography; composition and types of environment; ecological principles; man –environment relationship.

UNIT II

Ecosystem: concept and components; trophic levels; food chains and food webs; energy flow in the ecosystem; circulation of matter in the ecosystem, geobiochemical cycle, ecosystem productivity, ecosystem stability.

UNIT III

Environmental degradation; Extreme events, hazards and disasters (earthquake, volcanoes, cyclones, floods); Environmental pollution (air, water, solid waste, soil and noise pollution); Environmental pollution in India; Environmental Problems- global warming, ozone depletion, land degradation, reduction in biodiversity.

UNIT IV

Environmental management: concept and approaches; environmental dimension, in planning sustainable development; environmental consciousness, environmental policy; environmental legislation; environmental impact assessment; disaster management.

BOOKS RECOMMENDED:

1. Association American Geographers: Perspectives on Environment, Washington D.C.

2. A.N.Strahler and A.H.Strahler: Geography and Man's Environment, John Wiley and Sons, New York.

3. C.C.Park: Ecology and Environmental Management, Butterworths, London.

4. D.B.Botkin and E.A.Keller: Environmental Studies, C.E.Merrill Pub. Co. Columbus.

5. J.B.Easts and L.W.Senger: Remote Sensing Techniques for Environmental Analysis, Hamilton Pub. Co. New York.

6. J.B.Hobbs: Applied Climatology, Butterworths, London.

7. L.R.Singh et al: Environmental Management, Allahabad Geographical Society, Allahabad.

8. National Academy of Sciences: Understanding Climatic Changes, Washington D.C.

9. P.A.Furley and W.W.Neway: Man and the Biosphere, Butterworths, London.

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10. R.Arvid: Man and Environment, Pnguin.

11. R.J.Bennet and R.J.Chorley: Environmental System- Philosophy, Analysis

and Control, Methuen, London.

12. Savindra Singh: Environmental Geography, Prayag Pustak Bhawan, Allahabad

13. T.R. Detwiler: Man's Impact on the Environment, Mc Graw Hill, New York.

14. T.R. Detwiler: and M.G. Marcus: Urbanization and Environment, Duxburg Press, California.

15. Savindra Singh: Paryavaran Bhoogol, Prayag Pustak Bhawan, Allahabad.

16. W.M. Adams: Green Development: Environment and Sustainability in the Third World, Routledge, London, 2001.

17. E.P. Odum: Fundamental of Ecology, W.B. Saunders Co. Philadelphia, 1971.

18. A.S. Mather and K. Chapman: Environmental Resources, Longman Group Ltd. U.K., 1995.

19. A. Goudie: The Nature of the Environment, Oxford, Basil Black Well, 1989.

20. K. Smith: Environmental Hazards: Assessing Risk and Reducing Disaster, Routledge London, 1996.

114. THEORY (CORE): 12 URBAN AND REGIONAL PLANNING

Time: 3 Hours, M.M: 100(80+20)

UNIT I

Concept of planning; Types of planning; Concept of regional planning; Types of regional planning; City as unit of regional planning; Approaches to regional planning; Historical development of regional planning- developed world and developing world.

UNIT II

Methodology and Techniques of Regional Planning; Analytical techniques and procedural techniques; Principles of regionalization; Indications of development and data sources; measures of regional development and regional disparities; Planning processes- sectoral and spatial planning; short medium and perspective planning; Multi regional and multilevel planning.

UNIT III

Regional development strategies: Export base theory, convergence theory, Growth poles and growth centres in regional development; Industrial dispersal and backward area development; Identification of planning regions, Regional planning strategies for backward areas—drought prone area hill area, tribal area and Rural area.

UNIT IV

Role of urban centres in regional planning; urban scenario in India; city regions and their problems; Problems of poorly urbanized areas, strategies for urban planning; metropolitan planning, preparation of master plans, city region planning;

BOOKS RECOMMENDED:

1. R. Abler et al : Spatial Organisation : The Geographers View of the World ,Prentice Hall, Englewood Cliffs, NJ.

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2. L.S. Bhat: Regional Planning in India, Statistical Publishing Society, Calcutta 1973.

3. J. Friedmann and W. Alonso: Regional Development and Planning-A Reader, MIT Press, Cambridge, Mass 1967.

4. Arthur Glikson: Regional Planning and Development, Netherland Universities Foundation for International Co-operation, London, 1955.

5. E.A.J. Johnson: The Organisation of Space in Developing Countries, Harvard University Press, Cambridge, 1970.

6. A.R.Kuhlinski (Ed): Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague, 1972.
7. R.P.Misra: et al: Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.
8. R.P.Misra et al: Multi Level Planning, Heritage Publishers, Delhi, 1930.
9. Peter Hall: Urban and Regional Planning, Penguin Books Ins. New York.
10. J.G.M. Hill: Regional Planning, University Press, Rotterdam.
11. John Glasson: Regional Planning, Hutcherson, London.
12. R.P.Misra: Development Issues of our time, Concept Pub. Co. New Delhi.
13. J.Alden and R. Morgan: Regional Planning: A Comprehensive View, Leonard Hill Books, Beds 1974.
14. J.Glassen: An Introduction to Regional Planning, Hutcherson Educational, London.
15. P.Hall: Cities of Tomorrow, Updated Edition, Blackwell Publishers Ltd. Oxford 1996.

115. PRACTICAL (CORE) 03: REMOTE SENSING AND AERIAL IMAGE PROCESSING

Time: 6 Hours, M.M: 100

The practical examination in Remote Sensing and Aerial Image Processing will comprise two parts. Part I is related to laboratory work (Concepts) of three hours duration and

Part II includes laboratory work (Application) of same duration. The practical examination will

be conducted by two internal and one external examiners.

PART I: Laboratory work (Concepts) (Time: 3 Hours) : 50 Marks

It will include five questions selecting at least one question from each unit. The candidates will be required to attempt 3 questions.

PART II: LABORATORY WORK (APPLIED) Time: 3 Hours MM: 50

(a) Laboratory exercises (3 hours) : 20 marks

(b) Viva-Voce : 10 marks

(c) Sessional record work : 20 marks

UNIT I

Remote Sensing – definition, types and historical development; Physics of remote sensing interaction of EMR with atmosphere and earth surface, atmospheric windows, spectral signatures; types and characteristics of platforms and sensors with special reference to Land sat, SPOT and IRS .

UNIT II

History of aerial photogrammetry; photogrammetry--definitions and concepts; aerial cameras and aerial photographs, geometry of aerial photographs, scale of aerial photographs; image displacement; measurement of height differences; principles of stereo photogrammetry; air photo interpretation; slope, size pattern, tone, texture, shadows, site.

UNIT III

Digital image processing-- definition and concepts; Structure of images; Digital to visual; RGB cube; digital image formats- BSQ, BIL and BIP; Methods of digital image processing – image restoration, image enhancement, image classification, accuracy assessment; Interpretation of SLAR images.

UNIT IV

Airphoto and image interpretations and mapping land use and land cover, land evaluation, urban land use, landform and its processes, weather studies and studies of water resources; Remote Sensing and GIS; remote sensing and hazard management; remote sensing and environmental management.

BOOKS RECOMMENDED:

1. F.F. Sabins (Jr) Remote Sensing: Principles and Interpretations, John Wiley and sons, New York, 1987.
2. J.R. Jensen: Digital Image Processing.
3. P.R. Wolf: Elements of Photogrammetry.
4. T.M. Lillesand and R.W. Keifer : Remote Sensing and Image Interpretation, John Wiley and Sons, New York, 1979.
5. American Society of Photogrammetry: Manual of Photogrammetry, 3rd Ed. Virginia 1966.
6. American Society of Photogrammetry: Manual of Remote Sensing, Virginia 1975.
7. T.E. Avery and G.L. Berlin: Fundamentals of Remote Sensing and Airphoto Interpretation, 5th Ed. Mac Millan, Publishing co. New York 1983.
8. P.J. Curran: Principles of Remote Sensing; ELBS Edn. Longman Hong Kong 1988.
9. Robert G. Reeves (Ed): Manual of Remote Sensing (2 vols), The American Society of Photogrammetry.
10. R.N. Colwell (Ed): Manual of Remote Sensing, 2nd Ed. Falls Church Va: American Society of Photogrammetry, 1983
11. J. Campbell: Introduction to Remote Sensing, Guilford, New York.
12. R.M. Hardy: Digital Image Processing of Remotely Sensed Data, Academic Press, New York.
13. C.P. Lo: Applied Remote Sensing, Longman , Scientific and Technical , Harlow, Essex.
14. W.K. Prater: Digital Image Processing , John Wiley, New York, 1978.
15. D.P. Rao (Eds) ; Remote Sensing for Earth Resources, Association of Exploration Geologists , Hyderabad.
16. H. Verrips: Remote Sensing in Geomorphology, Elsevier Scientific Publication Co., Amsterdam.

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SEMESTER IV

116 Theory (Core) 13: TECHNIQUES OF SPATIAL ANALYSIS

Time: 3 Hours, M.M: 100(80+20)

UNIT I

Types of spatial data: Scales of measurement; methods of data collection and compilation – census, sample survey; Analysis of point pattern: Mean centre, standard distance, nearest neighbor analysis, quadrant count method, population potential.

UNIT II

Analysis of line pattern: Transport network- cyclometric number, L.B.V. index; Drainage Network-Bifurcation ratio , length ratio , drainage density, drainage texture; Slope index; Area- Height diagram, Hypsometric curve, clinograph, slope analysis.

UNIT III

Scatter diagram, correlation by Spearman's Rank Difference and Karl Pearson's Product Moment Methods, regression analysis ; Theory of probabilities distribution; Sampling-- Sampling frame and procedure, standard error and sample size.

UNIT IV

Hypothesis testing- Chi-square test, binomial test, t test, Mann-Whitney U test, Analysis of variance; Multivariate Analysis; Basic principles and elements of

factor analysis and principal component analysis; Gravity potential model; Trend surface analysis – simulation model, diffusion models.

BOOKS RECOMMENDED:

1. David Unwin: Introductory Spatial Analysis, Methuen, London, 1981.
2. S. Gregory: Statistical Methods and the Geographer, Longman, London, 1978.
3. R. Hammend and P.S. Cullagh: Quantitative Techniques in Geography: An Introduction, Clarendon Press, Oxford, 1974.
4. J.P. Cole and C.A.M. King: Quantitative Geography, John Wiley, London, 1968.
5. R.J. Johnston: Multivariate Statistical Analysis in Geography, Longman, London, 1973.
6. G.B. Norcliffe: Inferential Statistics for Geographers Hutchinson, London.
7. B. Blackwell: Statistical in Geography, Basil Blackwell Ltd., 1988.
8. O.D. Durcan et al Statistical Geography, Free Press of Glen co New York, 1961
9. L.J. King: Statistical Analysis in Geography, Prentice Hall, Englewood Cliffs, N.J.
10. Aslam, Mohmood: Statistical Methods in Geographical Studies, Rajesh Publication, Delhi, 1997.
11. J.A. Mathewa: Quantitative and Statistical Approaches to Geography, Rawat, Jaipur, 1981.
12. A.H. Robinson et al: Elements of Cartography, John Wiley and Sons, New York, 1995.
13. R.L. Singh: Elements of Practical Geography, Kalyani Pub. New Delhi.
14. R.C. Tiwari and Sudhakar Tripathi: Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.

117-118 Theory (Optional) Group A

Students have to either opt for Group A or Group B. Out of the Group they have to select their course for their study.

1. TROPICAL GEOMORPHOLOGY Time: 3 Hours, M.M: 100(80+20)

UNIT I

Scope and significance of tropical geomorphology; The Tropical Environment: Climatic elements and its effects, Nature of rocks and their impacts on relief, Natural vegetation and its impact on relief in tropics-morphogenetic regions; Weathering in tropics: processes and types- Duricrusts and laterites, Character of tropical soils.

UNIT II

Mass movement on tropics and their effect in geomorphic evolution slope development and slope stability; Movement of materials down slope; Structural landforms of tropics- domes, tors, scarps- Deccan trap landforms.

UNIT III

Fluvial processes in the tropics- tropical valley forms in humid and arid areas, tropical deltas and estuaries; Tropical coastal landforms- erosional and depositional; Arid landforms- inselberg, pediment, pediplain, landscape of the Thar Desert.

UNIT IV

Human Activities in tropical areas- deforestation action, agricultural and industrial development, urbanization; Methods and techniques of evaluation of tropical land forms mapping and identification; soil loss evaluation; Fragile environment of tropical regions; Conservation strategies for tropical ecosystem.

BOOKS RECOMMENDED:

1. K.R.Dikshit, V.S.Kale and M.N.Kaul: India Geomorphological Diversities,Rawat Publication,Jaipur,1994
2. I. Douglas and J. Spancer: Environmental Changes and Tropical Geomorphology,George Allen and Urwin,London,1985
3. A. Fariran and L.K.Jeje: Humid Tropical Geomorphology,Longman London,1983
4. A.Kellman and R. Tack berry: Tropical Environments,Routledge,London,1997
5. H.S. Sharma: Tropical Geomorphology, Concept, New Delhi,1987
6. M.F.Thomas: Tropical Geomorphology -A Study of Weathering and Landform Development in Warm Climate, Mc Millan,London,1974
7. J.Tricart: The Landforms of the Humid Tropics,Forests and Savannas,Longman,London,1972
8. J.Tricart and A. Cailleux: Introduction to Climatic Geomorphology, Longman Green Ltd.London,1972
9. C.R.Tridale: Analysis of Landform, John Wiley,London,1976
10. H.S.Sharma (Ed) Indian Geomorphology,Concept,New Delhi,1991
11. S.R.Jog (Ed) : Indian Geomorphology, Vols I & II, Rawat Publications, Jaipur,1995
12. Savindra Singh: Geomorphology,Prayag Pustak Bhawan,Allahabad,

1. MONSOON CLIMATOLOGY

UNIT I

Extent of Monsoon Climate; Classical Monsoon, areas of South Asia; Heat budget of the tropics- Role of tropics in the general circulation of the atmosphere; Driving forces-Jet Streams and their influence; Air masses of the tropics and their characteristics; Air masses over South Asia and their seasonal variations.

UNIT II

The Monsoon- Genesis and development of tropical monsoons; Mechanism of the Indian Monsoon; Theories of the origin of monsoon- thermal concept, dynamic concept, role of Jet Streams, Tibet Plateau, el-niño, Southern oscillations; Forecasting Indian Monsoons.

UNIT III

Tropical Disturbances- Cyclones, Thunderstorms, Tornadoes- their characteristics, frequencies and paths; Cyclones in the Bay of Bengal and the Arabian Sea; Tracking of tropical disturbances; Classification of tropical climates-Regionalization of India based on the scheme of Koppen, Thonthwaite and Penman; Water balance: areas of surplus and deficit; Droughts and famines Drought prone areas of India; Floods in India.

UNIT IV

Agro- Climatic regions of India; Human impact on monsoon climate; Desertification in monsoon lands; Man-made climate: urban and industrial centres and related problems; Climatic approach to housing design- surface and building materials and their impact-House Types in the Ganga Valley in relation to climate.

BOOKS RECOMMENDED:

1. J.G. Lockwood: World Climatology and Environmental Approach, Edward Arnold, London,1974 .
2. S.Neuwal: Tropical Climatology,John Willey and Sons Ltd. New York,1977.

3. M.A.Garbell: Tropical and Equatorial Meteorology, Sir Isaac Pitman and Sons Ltd.
4. C.S.Ramage: Monsoon Meteorology, Academic Press,U.K.,1971.
5. H.Riehl: Tropical Meteorology,Mc Graw Hill Co. U.K.,1954.
6. G.T. Trewartha: The Earth's Problem Climates, Metheun & Co. Ltd.London,1962.
7. V.S.Datye et. al. (Ed.) Explorations in the Tropic, Prof. K.R.Dikshit, Feliciation Volume, Pune,1987.
8. V.P.Subrahmanyam: Contributions to Indian Geography, Part III –General Climatology, Heritage Publication,. New Delhi,1983 .
9. A.R.Subrahmanyam: Climatic Variability in India, Annals of NAGI,12-1-2.1992.
10. M.M.Yoshino (Ed) : Water Balance of Monsoon Asia, University of Tokyo, Press Tokyo,1971
11. W.Bach,J.Pankrath and W. Kellogg: Man's Impact on Climate, Elsevier Scientific Publishing Co. New York ,1979
12. J.R. Mather: Climatology: Fundamentals and Applications, Mc Graw Hill Book Co. New York ,1974
13. Savindra Singh: Climatology,Prayag Pustak Bhawan,Allahabad,2006
14. D.S.Lal: Climatology,Sharda Pustak Bhawan,Allahabad

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2. GEOGRAPHICAL DIMENSIONS OF HYDROLOGY

UNIT I

Hydrology: Scope and content, basic concepts; Hydrological cycle; Man's interference on hydrological cycle; Elements of Hydrological cycle- precipitation, evaporation, infiltration, surface runoff; Hydrology of a river basin- basin characteristics, discharge potentials, utilization, constraint-Examples from India.

UNIT II

Ground Water Hydrology-origin, occurrence, movement, discharge, utilization, recharge; Man induced problems related to ground water; Glacial Hydrology-potential, discharge, utilization, problems, examples from India.

UNIT III

Hydrology in monsoon, savannas, desert and polar areas; limestone hydrology; Urban hydrology; Surface and ground water resources of India- potentials, utilization and problems; Water utilization; Concept of water balance; Water pollution rural and urban areas.

UNIT IV

Areas of water surplus and water deficit; Over and under utilization of water resources; Privatization of water resources; Water conflict wars; Water conservation: Present and future perspectives; Watershed development; Water legislation, water harvesting: Traditional and modern methods; water conservation programmes in India.

BOOKS RECOMMENDED

1. R.J.Chorley: Water,Earth and Man, Methuen, London,1967.
2. R.J.Chorley: Introduction to Physical Hydrology, Methuen, London,1967.
3. J.A.Jones: Global Hydrology: Processes, Resources and Water Management, Longman, London, 1997.

4. J.R.Matter: Water Resources: Distribution, Use and Management, John Wiley, Marylane
5. D.K.Todd: Groundwater Hydrology, John Wiley, New York.
6. H .Addison: Land ,Water and Flood, Chapman and Hall, London,1961.
7. H. Bouwer: Ground water Hydrology, Mc. Graw Hill Book Co. New York,1978.
8. K.R.Karant: Groundwater Assessment: Development and Management, Tata Mc Graw Hill, New Delhi,1987.
9. K.L.Rao: India's Water Wealth, Orient Longman, New Delhi,1979.
10. J.V.S.Murthy: Watershed Management in India; Wiley Eastern Ltd. New Delhi,1995.
11. R.J.Reddy: The Textbook of Hydrology, Laxmi Publication New Delhi,1999.
12. T.G.K.Charlu and D.K.Dutt: Ground Water Development in India, Rural Electrification Corporation, New Delhi,1982.
13. R.A.Singh and S.R.Singh: Water Management: Principles and Practices, Tara Pub. Varanasi.
14. E.M.Tideman: Watershed Management: Guidelines for Indian Conditions, Omega, New Delhi.
15. S.K.Sain: The Flood Problem in India, Birala Institute of Scientific Research, Economic Research Division, New Delhi.
16. A.A.Sokolar and T.B. Chapman (Eds): Methods for Water Balance Computations: An International Guide for Research and Practice, The Unesco Press, Paris,1974.

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A. (4) BIO-GEOGRAPHY

UNIT I

Biogeography: Nature, Scope, Significance, Approaches, History, Recent Development; Concept of Ecology, Ecosystem, Succession and Ecological Adaptation.

UNIT II

Historical Evolution of Plants and animals; pattern and causes of plant and animal distribution; Major plant formations of the tropics- forests, grasslands, deserts, mangroves; Biogeographical regions of world and India.

UNIT III

Biodiversity: concept and significance; Biodiversity and global climatic change; Plaeobotanical and plaeo climatological records of environmental change in India; Biogeography of the seas and islands.

UNIT IV

Conservation of wildlife and forests, soil conservation of forestation, reforestry, social forestry, National forest policy of India; International and national efforts for conserving biological resources; Biosphere reserves; Tropical forest Action Plan.

BOOKS RECOMMENDED:

1. M.J.Bradshaw: Earth and Living Planet, ELBS, London,1979.
2. C.B.Cox and P.D. Moore: Biogeography: An Ecological and Evolutionary Approach,

5th Edition . Blackwell,1993.

3. J.B.Hogt: Man and the Earth,Prentice Hall,USA,1992.

4. R.J.Huggett: Fundamentals of Biogeography, Routledge,USA,1998.

5. B.M.Bansereau: Bio-geography-An Ecological Perspective, Ronald Press, New York, 1957.

6. T.Joy: Bio-geography: A Study of Plants in the Ecosphere, Oliver & Boyd, Edinburgh,1977.

7. M.S.Masi (Ed): Bio-geography of India,The Hogue,1975.

8. C. Martin: Plant Geography,Methuen, London,1975.

9. H.S.Mathur: Essentials of Bio-geography,Any Printers,Jaipur,1998.

10. N.Pears: Basic Bio-geography, Education,Longman, London,1985.

11. H Robinson: Bio-geography,Mc Donald, London,1982

12. G.H.Smith: Conservation of Natural Resources,Wiley & Sons, London,1962.

13. H.A.Viles: Bio-geomorphology, Oxford Basil Blackwell, 1988.

14. S.S.Negi: Biodiversity and its Conservation in India: Indus Publishing Co. New Delhi,1993.

15. J.H.Brown and A.C.Gibson: Biogeography, St. Louis, Mesby,1983.

16. B.Seddon: Introduction to Bio-geography, Duckworth, London,1971.

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A. (5) NATURAL HAZARDS MANAGEMENT

UNIT I

Types of natural hazards-Earthquake, Tsunamis, Volcanic eruptions, Landslides, Avalanches, Floods, famines and Droughts, Cyclones, Distribution of natural hazards; Hazard prone areas of the world and India; Man's role in natural hazard.

UNIT II

Natural Hazards in India: Seismic zones, Tsunamis, Landslides prone areas, Flood prone areas, Drought prone areas; Damager due to natural hazards in India; Some natural hazards of recent history-Earthquake-Koyna, Utterkashi, Bhuj; Tsunamis of 2005. Landslides in the Garhwal Himalays; Floods of the Ganga valley; Cyclones along Orissa Coast; Drought prone areas of India.

UNIT III

Management of Natural Hazards- Prediction of natural hazards; Control measures for

natural hazards; Planning for natural hazards- (a) long-term policy.

Recommended Books:

1. C.Enbleton: Natural Hazards and Global Change,I.T.C. Journal,1989,3/4,pp. 169-178.

2. W.J.Petak and A.D.Atkinson: Natural Hazard Risk Assessment and Public Policy, Springer-Verlay,New York,1982.

3. L. Tianch: Landslide Hazard Mapping and Management in China, ICIMOD,Nepal,1996.

4. K.S.Valdiya: Environmental Geology,Tata Mc Graw Hill Co.Ltd.New Delhi,1987.

5. Q.Zareba and V. Mance : Landslides and their Control, Elsevier Amsterdam,1969.

6. G.F.White (Ed): Natural Hazards: Local ,National,Global, Oxford University Press,London,1974.

7. H.K.Gupta: Dans and Earthquakes,Elsever, Amsterdam,1976.

8. I.Burton et al: The Environment as Hazard, O.P.U. New York,1978.

9. B.A.Bolt et al (Ed):Geological Hazards,Spinger Verlay,New York,1950.

A. (6) GEOGRAPHY AND ECO-SYSTEM

UNIT I

Ecosystem concept and its components- functions, trophic levels, niches, energy and nutrients, hydrological cycle, food chains and food webs, ecological succession and equilibrium

UNIT II

Major ecosystems of the world: Tropical and temperate forest ecosystem, boreal ecosystem, grassland ecosystem, desert ecosystem, island ecosystem, mountain ecosystem, aquatic ecosystem; Population growth in the different ecosystems and its effects on environment; Carrying capacity of the earth, Land resources and World food security.

UNIT III

Man-environment relationship: resource use and ecological imbalance; Human activities and disruption of different ecosystems; Human impact on vegetation, animals, soils, waters, climate and atmosphere, Bio diversity and its conservation; Preservation and conservation of ecosystem through resource management.

UNIT IV

Environmental management: Principles, standards, environmental impact assessment, Environmental Authority and quality of life; Environmental legislation- Environmental conferences (Stockholm conference, the Earth Summit), Environmental laws in India; Social Consequences of pollution.

BOOKS RECOMMENDED:

1. E.J. Kormendy : Concepts of Ecology, Prentice Hall, 1989.
2. Nobel and Wright: Environmental Science; Prentice Hall New York 1996.
3. E.P.Odum: Fundamentals of Ecology, W.B.Saunders, Philadelphia,1971.
4. I.G. Summons: Ecology of Natural Resources, Edward Arnold, London..
5. R.L.Smith:Man and his Environment: An Ecosystem Approach : Harper and Raw, London 12.
6. Savindra Singh: Environmental Geography,Prayag Pustak Bhawan,Allahabad.
7. UNEP: Global Environmental, Outlook,U.N.Pub.1983.
8. R.C.Chandna: Environmental Awareness,Kalyani Pub. New Delhi.
9. W.G.Ernost (Ed): Earth System, Processes and Issues, Cambridge University Press
U.K.,2000.
10. P.A.Trick Sborne: Tropical Ecosystems and Ecological Concepts, Cambridge University Press,UK, 2000.
11. Andrew Goudie: The Human Impact on the Natural Environment,IV Edn Blackwell,
Oxford 1993.
12. A.Agrawal and S.Sen: The citizen's Fifth Report, Centre for Science and Environment,
New Delhi,1999.
13. E. Bodkin: Environmental Studies, George Bragiller,New York,1958.
14. R.R.Duport (Ed): Environmental Management: Problems and Solutions,
Lewis Pub.
Boca Raton,S.A. 1998
15. 15sL.R.Singh et al: Environmental Management, Allahabad Geographical Society,
Allahabad, 1983.

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GROUP B:

Students have to select three courses from the following for their study:

B. (1) URBAN GEOGRAPHY

UNIT I

Meaning and Scope of Urban Geography, Changing Paradigms of Urban Geography, Approaches to the study of Urban Geography, Development of Urban Geography in India, Theories of Urban Origin, early urban hearths, The forms of industrial and post-modern city, Urbanization cycle and stages of urban development model, Types of urbanization regions.

UNIT II

National urban systems, Functional Typology, central place theory, urban settlement spread theories, Urban hierarchy and rank size, its applicability rule

UNIT III

Ecological models of Burgess, Hoyt, Harris and Ullman, Vance and white interval structure of city in South Asia, Political, economy perspective, rural – urban fringe and concept of city region and its delimitation

UNIT IV

Third world Urbanization and Theories of urbanization, Peripheral, exo and implosion urbanization, Urban economy and informal sector in Third World city; Third World Urban Problems-Pollution, Slums and Squatter settlements, Urban Poor, Urban Planning of B.J. L. Berry, Couples of garden city and new Town, Sustainable Development of Cities.

BOOKS RECOMMENDED

1. Harold Carter: The Study of Urban Geography, Edward Arnold, London, 1972.
2. H.M. Mayer and C.F. Kohn : Readings in Urban Geography, University Press, Chicago, 1959.
3. A. Fredrickson: Urban Geography: A Social Perspective, Praeger Inc. New York.
4. D.T. Herbert and C.J. Thomas: Urban Geography_ A First Approach, John Wiley, New York.
5. L.S. King and R.G. Goode: Cities, Space and Behaviour, Elements of Urban Geography, Prentice Hall, New Delhi.
6. H.N. Misra (Ed): Urban Geography, Heritage.
7. R.M. Northam: Urban Geography, John Wiley, New York.
8. R.J. Short: An Introduction to Urban Geography, Routledge and Kegan Paul, London, 1984.
9. R.J. Johnston: City and Society, Hutchinson, London.
10. D.T. Herbert: Urban Geography: A Social Perspective, David and Charles, Newton and Abbot, 1977.
11. J.H. Johnson: Urban Geography: An Introductory Analysis, Pergamon Press, London, 1972.
12. R.L. Singh: Urban Geography in Developing Countries, National Geographical Society of India, Varanasi.
13. B.J.L. Berry and F.F. Horton: Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.
14. R. Ramachandran: Urbanization and Urban Systems of India, Oxford, New Delhi, 1993.
15. P.L. Knox and P.J. Taylor: World Cities in a World System, Cambridge University Press, 1995, UK.
16. D. Harvey: Social Justice and the City, Arnold, 1973.

17. J.L.Abu and R.Hay (Jr) : Third World Urbanization, Maarouta Press, 1977.
18. J. Gugler (Ed) : The Urbanization of the Third World, Oxford University Press, 1988.
19. S.Sassen: The Global City, Princeton University Press, 1991.
20. P.Marcuse and R.V. Kempen (Eds): Globalizing Cities: A New Spatial Order, Blackwell.
21. N.Smith: The New Urban Frontier, Routledge.
22. R.Simmonds and G. Hack: Global City Regions, Spon Press, 2000.
23. Om Prakash Singh: Nagariya Bhoogol, Tara Prakashan, Varanasi.
24. S.C.Bansal: Nagariya Bhoogol, Minakshi Prakashan, Meerut.
25. R.C.Tiwari: Adhivas Bhoogol, Prayag Pustak Bhawan, Allahabad..

B (2). POLITICAL GEOGRAPHY

UNIT I

Meaning, Scope and recent development in political geography; approaches to the study of political geography; major schools of thought; concept of state and nation; spatial factors of state; buffer state, core area, ecumene, capital city, frontiers and boundaries.

UNIT II

Concepts of geostrategy; world geopolitics in changing perspectives- colonialism, decolonization, neo-colonialism, federalism; strategic bases and military alliances; nonaligned movement; geostrategic ideas of Mahan, Mackinder, Spyman, Cohen and Seversky and their relevance in the modern world.

UNIT III

Geopolitical significance of the Indian ocean, Role of third world countries; political geography and regional co-operation; geopolitical study of USA, SE Asia, S.W.Asia, S.Asia and Africa.

UNIT IV

Nature and scope of electoral geography; Geography of elections with special reference to India; Changing Political map of India; Interstate issues (like river disputes and riparian claims), insurgency in border states; emergence of new states terrorism.

BOOKS RECOMMENDED

1. B.L.Sukhwal: Modern Political Geography of India, Sterling Publication Pvt.Ltd., 1968.
2. J.R.V.Prescott: Political Geography, Mc Graw Hill New York.
3. H.J.de Blir: Systematic Political Geography, John Wiley, New York, 1968.
4. L. Carlson: Geography and World Politics, Prentice Hall, New Jersey, 1971.
3. R.D.Dikshit: Political Geography-A Perspective, Tata Mc Graw Hill Pub., New Delhi, 1996.
4. N.J.G.Pounds: Political Geography, Mc Graw Hill, New York..
5. R.L.Dwivedi: Political Geography, Chaitanya Pub. Allahabad.
6. R.D.Dikshit: Political Geography -A Century of Progress, Sage, New Delhi, 1999.
7. P.Taylor: Political Geography, Longman, London, 1985.
8. J.R.Short: An Introduction to Political Geography, Routledge London, 1982.
9. E.F.Bergman: Modern Political Geography, WMC Brown.Co. Dubuque, Iowa, 1975.
10. A.J.Nijman: The Geopolitics of Power and Conflict, Belhaven Press, 1993.
11. R.J.Jonston: Geography and the State Macmillan.
12. R.E.Norris and L.L.Haring: Political Geography, Bell and Howell, 1980.

13. R.D.Dikshit: Rajnitik Bhoogol ,Tata,Maga Hill,New Delhi.
14. S.K.Dikshit: Rajnitik Bhoogol,Vasundhara Prakashn,Gorakhpur.
15. Manorma Sinha: Political Geography,Herizon Publication,Allahabad.
16. Manorma Sinha: Electoral Geography of India,Adheyan Publication,New Delhi.
17. R.D.Dikshit:Rajnitik Bhoogol,Tata Mc Graw Hill, New Delhi.
18. S.K.Dikshit: Rajnitik Bhoogol ,Vasundhara Prakashan ,Gorakhpur.

B. (3) AGRICULTURAL GEOGRAPHY

UNIT I

Nature, Scope, Significance and development of agricultural geography; Approaches to the study of agricultural geography-commodity, systematic, regional and systems; origin and dispersal of agriculture –major agricultural hearths; Diffusion of agricultural innovations; Recent trends in Agriculture

UNIT II

Determinants of agriculture- physical, economic, political, technological, Socio-cultural; land reforms, land use survey; Selected agricultural concepts and their measurement cropping pattern, crop concentration, cropping intensity, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions, agricultural development; Green revolution- its impact and consequences.

UNIT III

Theories of agricultural location; Von Thunen's model and its modification- Sinclair's approach; Concept of agricultural region: Whittle Sey's classification of agricultural regions; Agricultural regions and agro-climatic regions of India and their characteristics; land use and land capability classification: methods and applications.

UNIT IV

Agriculture in India: Land use and shifting cropping pattern; New trends in Indian agriculture- Green revolution, white revolution; Food deficit and food supply regions; nutritional index; Problems of India agriculture, agricultural policy in India; Contemporary issues: nutrition and hunger, food security, drought and food security, agriculture and environmental degradation; Sustainable agricultural development

BOOKS RECOMMENDED

1. T.P.Bayliss Smith: The Ecology of Agricultural Systems, Cambridge University Press, London, 1987.
2. H.P.Gregor: Geography of Agriculture, Prentice Hall,New York,1970.
- 3 W.B.Morgon and R.J.C.Norton: Agricultural Geography, Methuen, London,1971.
1. J.Singh and S.S.Dhillon: Agricultural Geography,Tata Mc Graw Hill Pub. New Delhi,1988.
2. J.R.Tarrant: Agricultural Geography ,Wiley, New York,1974.
3. M.Hussain: Agricultural Geography, Inter India Publications, Delhi,1979.
4. B.W.Inberg: Agricultural Geography, Oxford University Press,1985.
5. L.Symons: Agricultural Geography,G.Bells,London,1967.
6. D.Grigg: An Introduction to Agricultural Geography, Hutchinson Publication, London.
7. D.B.Grigg: The Agricultural Systems of the World, Cambridge University Press,New York,1974.

8. A.M.Mansion: Agriculture and Environment Change, John Wiley, London,1995.
9. Carl Sauer: Agricultural Origin and Dispersals American Geographical Society, New York,1952.
10. L.R.Brown: The Changing World food Prospects: The Nineties and Beyond, World Watch Institute, Washington DC,1990.
11. T.Dyson: Population and Food-Global Trends and Future Prospects, Routledge, London,1997.
12. W.B.Morgan: Agriculture in the Third World- A Spatial Analysis, Westview Press, Boulder,1978.
13. B.B.Singh: Krishi Bhoogol, Gyanoday Prakashan,Gorakhpur.
14. Pramila Kumar evm S.K.Sharma: Krishi Bhoogol,Hindi Granth Academy ,Bhopal.
15. R.C.Tiwari evm B.N.Singh : Krishi Bhoogol ,Prayag Pustak Bhawan.

B. (4) INDUSTRIAL GEOGRAPHY

UNIT I

Nature, Scope and recent developments in industrial geography; Factors of industrial location; centralization and decentralization of industries; horizontal, vertical and diagonal linkages of modern industries.

UNIT II

Theories and Models of industrial location: Weber, Losch, Isard and Hoover; Critical review and application of industrial location theories; Distribution and spatial pattern of major industries- iron and steel, textiles, chemicals, petro – chemicals, automobiles, electronics; Major industrial regions of the world.

UNIT III

Historical review of Indian industrialization since 1947; Evolution of industrial regions in India; Development of small scale and cottage industries; Interregional disparities in Industrial development in India; Multinational corporations and India's industrial scenario; Industrial policy of India.

UNIT IV

Problems of industrial development; Industrial development and environmental degradation; Industries and economic development, Impact of globalization on industrial development; Industrial decentralization and its impact on urban fringe; Changing industrial policy; sustainable industrial development.

BOOKS RECOMMENDED

1. M Pacione: Progress in Industrial Geography, Croom Helm, 1985.
2. C Alexanderson: Geography of Manufacturing, Prentice hall, Bombay,1967.
3. J.W.Alexander: Economic Geography, Prentice Hall, Englewood Cliffs,1988.
4. A.Miller: Geography of Manufacturing, Prentice Hall, Englewood Cliffs, New Jercy, 1962.
5. 5.Alfred Weber: Theory of Location of Industries, Chicago University Press, Chicago,1957.
6. 6.E.M.Hoover: The Location and space Economy, Mc Graw Hill, New York,1948.
7. W.Isard: Methods of Regional Analysis, The Technology Press of M.I.T. & John Wiley & Sons,New York,1956. 18
- 8.D.M.Smith: Industrial Location: An Economic Geographic Analysis, John Wiley & Sons,1982.

9. I.M.Clarke: The Spatial Organisation of Multinational Corporation, Croom, Helm, U.K., 1985.
10. Banerjee and S.Guha: Spatial Dimensions of International Capital: Study of Multinational Corporations in India, Orient Longman, 1997.
11. H.D.Watts (Ed) (1980): Large Industrial Enterprise: Some Spatial Perspectives, Croom Helm, 1980.
12. M.R.Chaudhari: Indian Industries, Oxford Book House, 1976
13. V.K.Seth: Industrialization in India: Spatial Perspective, Delhi Commonwealth Publications, 1987.
14. B.N.Sinha: Industrial Geography of India.

B. (5) GEOGRAPHY OF TRADE AND MARKETING

UNIT I

Geography of Trade and marketing-Scope, Content and Contemporary trends; Origins of trade and marketing forms of exchange in simpler and complex societies; Evolution of international trade and structuring of the world economy-patterns in mercantile, colonial and post industrial periods;

UNIT II

Theoretical perspective on trade and marketing- doctrine of free trade and trade barriers; classical, neoclassical and contemporary versions of international trade theory; concepts of equal exchange; spatial dynamics of international trade- pre-war and post-war trends; Trade Integrations of developed and developing countries; Rise of international and supranational Institutions and related changes in world trade-WTO a international trade- impact on environment, economy and society.

UNIT III

Development of marketing systems, Classification of markets-rural, urban, intra-urban, periodic markets; market hinterlands, consumer behaviour, functional hierarchy of market; economic, political and social dimensions of market.

UNIT IV

Globalization and contemporary issues of trade and marketing; Role of MMCS in restructuring of markets; Interface between global to local trade and marketing; Interact trading and marketing; Trade policy in developed and developing countries with special emphasis on India

BOOKS RECOMMENDED

1. E.C.Coskling and R.C.Thoman: : Geography of International Trade, Prentice Hall, Englewood Cliffs, 1967.
2. B.J.L.Barry et.al.: Geography of Economic Systems, Prentice Hall, Englewood Cliff.
3. James E. Vince (Jr): The Merchants World -The Geography of Wholesaling, Prentice Hall Inc.Englewood Cliff, 1970.
4. B.J.L.Berry: Geography of Market Centres and Retail Distribution, Prentice Hall Inc.Englewood Cliff, 1967.
5. J.Beauju- Garsier and A.Delobez: Geography of Marketing.Longman, London, 1979.
6. E.Altvater: The Future of the market, Verso, London, 1992.
7. R.Eckersley(Ed): Markets, the State and the Environment, Macmillan, London
8. B.Harris: State and Market, Concept, New Delhi, 1984.
9. B.M.Hockman and M.M.Kostecki: The Political Economy of World Trading System: from GATT to WTO, Oxford University Press, New York
10. S.S.Acharya and N.L.Agrawal: Agricultural Marketing in India, Oxford and

I.B.H. Publishing Co.,1999

11. S.Page: How Developing Countries Trade ,Routledge,London

12. W.Pereira and J. Sea Brook: Global Parasites,500 Years of Western culture, Earthcare Books,Mubai,1984

13. A.M.M.Hoogvelt: Globalisation and the Post Glovial World: The New Political

Economy of Development, Macmillan London, 1997.

14. H.M.Saxena: Marketing Geography, Rawat Publications, Jaipur, 1990.

15. H.M.Saxena: Rural Markets and Development, Rawat Publications, Jaipur,1988.

16. C.M.Good: Rural Markets and Trade in East Africa, Chicago University Press,1970.

B. (6) GEOGRAPHY OF TRANSPORT AND COMMUNICATION

UNIT I

Meaning, Objective, Scope and development of transport geography; Relevance of transport geography in planning and development; Factors associated with the development of transport and communication system: physical, economic, social, cultural and institutional; relative significance of different mode of transport and communication.

UNIT II

Structural properties of transport network- Accessibility and flow models, network structure, graph theoretic measure, measurement of accessibility, models of network change, Linear programming and gravity models, Theories related to freight rate structure; bases of spatial interaction, complementary intervening opportunity and transferability.

UNIT III

Functioning of transport network systems- Patterns of movement and transport modes, hierarchy networks, movement geometry; Post eighty revolution in communication and I.T.sector- Role of international organisations- Globalisation and associated aspects; Transport and Communication interface; Economic organisation and patterns of transport and communication system.

UNIT IV

Transport policy and planning; Transport and communication development in developing countries; Urban transport and communication system; vehicular pollution and congestion; Transport and Communication development in mega cities of India; Planning rural transport and communication system in India; Sustainable development of transport and communication systems.

BOOKS RECOMMENDED

1. E.J.Taffee and H.L.Gauthier: Geography of Transportation, Prentice Hall ,1973.

2. E. Thurst: Transport Geography- Comments and readings, Mc Graw Hill,New York,1974.

20

3. J.C.Lowe and S. Moryadas: The Geography of Movement, Haughton Mifflin, Boston, 1975.

4. A.Gatrell: Distance and Space: A Geographical Perspective, Clarendon Press, Oxford, 1983.

5. A.Hay: Transport for the Space Economy, Mac Millan,London.

6. R.Abler,D. Janelle, A.Philbrick and J. Sommer: Human Geography in a Shrinking

World , Press ,Duxvurg,1975.

7. G.C.Stable (Ed): Telegraphy, International Institute of Communication, London,1993.

8. N.Law and B. Gleeson: Making Urban Transport Sustainable, Palgrave-Macmillan, 2003.

9. M. Raza and Y. Aggarwal: Transport Geography of India, Concept, New Delhi,1986.

10. S. Munshi: Geography of Transportation in Eastern India under the British Change, Centre for Studies in Social Sciences, Monograph 1, Bagali, Kolkata, 1980.

11. B.S.Houle: Transport and Development, Mc Millan, London,1973.

12. P.Golaing and P.Harris (Eds): Beyond Cultural Imperialism Sage Publications, London,1997.

13. H.Robinson and C.Ganford: Geography of Transport ,Macdonald & Evans, London,1978.

14. H.P.White and M.L.Senior: Transport Geography, Longman,London,1983.

15. P.Haggett and R.J.Chorley: Networks Analysis, Edward Arnold,London,1968.

16. E.L.Ullman: American Commodity, Flow University of WashingtonPress,1957.

B. (7) GEOGRAPHY OF TOURISM AND RECREATION

UNIT I

Leisure, recreation and tourism- definitions and relationships; Meaning, scope and development of geography of tourism and recreation; approaches to the study of geography of tourism; conceptual foundations and models of tourism.

UNIT II

Tourism Types: Cultural, etho- coastal and adventure tourism, national and international tourism; globalization and tourism; Tourism as an industry-structural components and characteristics; Impact of tourism- environmental, economic, socio-cultural.

UNIT III

International pattern of Tourism; major tourist circuits and nodes; Some case studies- Philippines, France, Netherlands, New Zealand, Nepal, Tourism development in India- origin and evolution, spatial pattern, problems and polices, impact on society and environment.

UNIT IV

Planning of Tourism –conflicting issues of development, urban and rural dimensions, concepts of green tourism, eco- tourism, Sustainable tourism; state contribution in tourism development; Community participation; role of foreign capital and impact of globalization in tourism.

BOOKS RECOMMENDED

1. H.Robinson: A Geography of Tourism, Macdonald and Evans, London,1976.

2. D.Milton: Geography of World Tourism, Prentice hall ,New York,1993.

3. C.M.Hall and S.J. Page: The Geography of Tourism and Recreation, Environment, Place and Space, Routledge,London,1999.

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4. G. Shaw and A.M. Williams: Critical Issues in Tourism: A Geographical Perspective, Blackwell ,Oxford,1994.

5. R. K. Kaul: Dynamics of Tourism and Recreation, Inter India, New Delhi,1985.

6. D. Pearce: Tourism Today-A Geographical Analysis, Longman Scientific and Technical, New York,1987.
7. A.K. Bhatia: Tourism Development, Principles and Practices, Sterling, Bagalore,1989.
8. Ryan Cris: Recreational Tourism, A Social Science Perspective, Routledge,London,1991.
9. C.M. Hall and S.J.Page: Tourism in South and South East Asia; Issues and Cases, Butterworth Heinemann,Oxford,2001.
10. N.K.Garg: Tourism and Economic Development, Avishkan, Jaipur,1996.
11. P.C.Sinha: International Encyclopedia of Tourism Management, Vol.1-12,Anmol, New Delhi
12. D.S.Bhardwaj and M.Chaudhary: Contemporary Issues in Tourism, Himalaya ,Mumbai,1997
13. C.Huster and H.Green : Tourism and the Environment: A Sustainable Relationship,Routledge,London,1995.
14. E.Inskeep: Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Rein hold, New York,1991.
15. J. Lee: Tourism and Development in the Third World, Routledge, London,1988.
- 16.Sharma,A.K.(2015), Paryatan ke Vividh Aayam: Uttar Pradesh ek Adhyayan, New Royal book Company, Lucknow.

B. (8) GEOGRAPHY OF HEALTH

UNIT I

Nature, Scope and development of Geography of Health; Distinction between Geography of Health and medical science; Geographical factor affecting human health and diseases –Physical factors (relief, climate, soil and vegetation), social factors (population density, literacy, social customs and poverty), economic factors (food and nutrition, occupation, standard of living), environmental factors (urbanization and congestion, water, air, and noise pollution and solid waste)

UNIT II

Classification of diseases: genetic, communicable and non-communicable; occupational and deficiency diseases; WHO classification of diseases; pattern of world distribution of major diseases-malaria, tuberculosis, cardiovascular, cancer and AIDS

UNIT III

Ecology, etiology and transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, cancer, AIDS and STDS; Spread of diseases and their causes; Deficiency, disorders and problems of mal nutrition in India.

UNIT IV

Healthcare Planning: (i) International level-WHO, UNICEF, Red Cross (ii) National Level- Government and NGOS; Health care planning and policies: availability, accessibility and utilization of health care services; Primary health care; family welfare, immunization, national disease eradication and health for all programme; Health care policy in India

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B. (9) GEOGRAPHY OF CRIME AND TERRORISM

UNIT I

Meaning, Scope and development of Geography of Crime; Indian contribution to the Geography of Crime; Approaches to the study of Geography of Crime; Sources of data on crimes; Reliability of crime data.

UNIT II

Crime –definition and types; causes of crime-physical, economic, social; spatial dimension of crimes, crimes in developed countries; crimes in developing countries with special references to India, seasonality of crimes; crime and poverty, crime and illiteracy.

UNIT III

Urban and rural crimes; crime towards women, children and weaker section of the society; crime as social pollution; Role of police in crimes; Role of political system and judiciary in crimes.

UNIT IV

Terrorism- definition and types; Rise of international terrorism; terrorism and economic and social deprivation; Role of religion in terrorism, Terrorism in India; Controlling crimes and terrorism-international and national efforts and strategy; Rehabilitation of criminals and terrorists.

RECOMMENDED BOOKS:

1. K.D.Harries: The Geography of Crime and Justice,Mc Graw Hill,New York.
2. W.A.Bonger: An Introduction to Criminology,Methuen,London.
3. S.L.Boggs: .urban Crime Pattern,Honter and Row,New York.
4. J.L.Gillin: Criminology and Pesology,Janathan Cape,London,1937.
5. E.C.Lover:The Roots of Crime ,Imago,London,1960.
6. A.S.Gupta: Crime and Police in India,Sahitya Bhawan,Agra.
7. C.R. Walter: The Crime Problem,Bombay.
8. M.M.Lavariya: Aparadh Shastra,Delhi.
9. G.Shah: Aparadh: Karan Aur Nivaran,Banares.
10. R.S.Chandel: Aparadh Samasya Aur Samadhan: Kitabghar,Delhi.
11. D.S.Baghel: Aparadh Shastra: Vivek Prakashan,Delhi.
12. Bhartiya Dard Sashita: Law Book Agency, Allahabad.
13. U.P.Police: 9, Clive Road,Lucknow.

20.Practical (Core) 04: GIS and Computer Assisted Cartography

Time: Six Hour MM :100

This paper of practical of GIS and Computer Assisted Cartography will be conducted by two internal and one external examiners. The syllabi for practical and field study comprise four parts as follows:

MM Time

Part I : Cartographic and Laboratory work : 40, 3 Hours

Part II : Field Techniques : 20, 3 Hours

Part III : Field Excursion and Report : 20

Part IV : Sessional Records and Viva-Voce : 20

The Cartographic and Laboratory work will consists of six questions selecting at least one question from each section of the syllabus and the candidate has to attempt from questions selecting not more than one question from each section.

UNIT I

FUNDAMENTALS OF GIS: Concepts and definitions; Evolution and development of GIS; Computer environment for GIS; Elements of spatial data and their graphical representation- Thematic maps; Scales and symbolization; Map projections; spatial data models and data structure in GIS environment- modeling surfaces, networks' terrain' relief and time –virtual maps.

UNIT II

GIS Technology: Co-ordinate system-basic principles of cartography and computer assisted cartography for GIS; Remote Sensing data as a data source for GIS; Integration of GIS and Remote Sensing-GPS and GIS technology; Creation of location and attribute data bases-Vector and raster formats-digitizing and scanning-data editing and validation-decoding.

UNIT III

Data analysis and manipulation; measurement in GIS-classification, overlay analysis and intergradation of data-buffering- shortest path-interpolation- analysis of surfaces and networks; Modeling physical and environmental processes and human activities; visualization and mapping-forms of output: map, tables, report- Cartographic principles and techniques of graphic representation-inbuilt tools and facilities in a GIS package.

UNIT IV

GIS as decision support system; Application of GIS technology in utilities management and other fields-GIS in land information system, urban management, environmental of management and emergency response system; Adoption of GIS technology in India; GIS project designing and implementation, Future prospects of GIS.

BOOKS RECOMMENDED:

1. S.Aronoff: Geographic Information Systems: A Management Perspective, D.D.L.Publication,Ottawa,1989.
2. P.A.Burrough: Princlples of Geographic Information Systems for Land Resource Assessment, Oxford University Press, New York,1986.
3. D.R.Fraser,Taylor : Geographic Information Systems,Pergaman Press,Oxford,1991.
4. D.J.Peuquet and D.F.Marble: Introductory Readings in Geographic Information Systems, Taylor & Francis, Washington,1990.
5. J.Star and J Estes: Geographic Information Systems: An Introduction, Prentice Hall, England Cliff. New Jersey,1994.
6. Marks S. Monmonier: Computer- Assisted Cartography, Prentice Hall, Englewood Cliff,New Jersey,1982.
7. I.Heywood et al: An Introduction to Geographical Systems, Pearson Education, Ltd.New Delhi, 2002.
8. Christopher B. Jones: Geographical Information Systems and Computer Cartography, Addison Wealey Longman Ltd. England,1997.
9. David Martin: Geographical Information Systems: Socio-Economic Application, IInd Edition, Routledge London & New York,1996.
10. William E. Huxhold: An Introduction to Urban Geographic Information Systems, Oxford University Press, New York.
11. John Pickles (Ed) 1995: Ground Truth: The Social Implications of Geographical Information Systems, the Guilford Press, New York,1995.