

**University of Rajasthan
Jaipur**

SYLLABUS

M.SC.

(GEOGRAPHY)

2015-2016 (I & II SEMESTER)

2016-2017 (III & IV SEMESTER)

Assit. Registrar (Acad-I)
University of Rajasthan
JAIPUR

M.A./M.Sc. GEOGRAPHY

(Semester Scheme)

1. Eligibility:

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

2. Scheme of Examination:

- (1) Each theory paper EoSE shall carry 100 marks out of which internal assessment shall carry 20 marks. The EoSE will be of 3 hours duration part 'A' of theory paper shall contain 08 Short Answer Question of 16 mark based on knowledge, understanding and application of the topics/texts covered in the syllabus. Each question will carry two mark for correct answer.
- (2) Part "B" of paper will consist of four questions with internal choice (except in cases where a different scheme is specifically specified in the syllabus) each carrying 16 marks. The limit of answer will be five pages.
- (3) Each Laboratory EoSE will be of four/six hour duration and involve laboratory experiments/exercises, and viva-voce examination with weightage in ratio of 80:20

3. Course Structure

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

Course Category

CCC: Compulsory Core Course

ECC: Elective Core Course

OEC: Open Elective Course

SC: Supportive Course

SSC: Self Study Core Course

SEM: Seminar

PRJ: Project Work

RP: Research Publication

Contact Hours

L: Lecture

T: Tutorial

P: Practical or Other

S: Self Study

Relative Weights

IA: Internal Assessment (Sessional Test, Assignment, Classroom Presentation, regularity and discipline)

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First Semester

S. NO.	Subject Code	Course Title	Course Category	Credit	Contact Hours Per Week			EOSE Duration (Hrs.)	
					L	T	P	Thy	P
1.	Geo 101	Evolution of Geographical Thoughts (upto 1800AD)	CCC	6	5	1	0	3	0
2.	Geo 102	Structural and Dynamic basis of Geomorphology	CCC	6	5	1	0	3	0
3.	Geo 103	Principles and Theory of Economic Geography	CCC	6	5	1	0	3	0
4.		Core Elective –I	ECC	6	5	1	0	3	0
5.	Geo 111	Practical	CCC	12	0	0	18	4	2

Second Semester

S. NO.	Subject Code	Course Title	Course Category	Credit	Contact Hours Per Week			EOSE Duration (Hrs.)	
					L	T	P	Thy	P
1.	Geo 201	Modern and Contemporary Geographical Thought (19 th century onwards)	CCC	6	5	1	0	3	0
2.	Geo 202	Climatology and Oceanography	CCC	6	5	1	0	3	0
3.	Geo 203	Principles and Theory of Economic Geography	CCC	6	5	1	0	3	0
4.		Core Elective –II	ECC	6	5	1	0	3	0
5.	Geo 211	Practical	CCC	12	0	0	18	4	2

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Third Semester

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

Fourth Semester

S.NO.	Subject Code	Course Title	Course Category	Credit	Contact Hours Per Week			EOSE Duration (Hrs.)	
					L	T	P	Thy	P
1.	Geo 401	Geography of Rajasthan	CCC	6	5	1	0	3	0
2.		Core Elective -VI	CCC	6	5	1	0	3	0
3.		Core Elective -VII	CCC	6	5	1	0	3	0
4.		Core Elective -VIII	ECC	6	5	1	0	3	0
5.	Geo 411	Practical	CCC	12	0	0	18	4	2

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Elective Core Course

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

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Section A

Beginnings and geosophical nature of geography: ancient Indian geographical thought (the puranic geography), Ancient classical period: contribution of Greek scholars (Herodotus and Eratosthenes), Greeco-Roman scholar (Posidonius), Roman scholars (Strabo and Ptolemy), and Chinese scholars.

Section B

Implications of dark age in Europe, development and nature of Geography during medieval period: contributions of Al-Biruni, Al Muquaddassi, Al-Masudi and Al Idris, Ibn Battuta and Ibn Khaldun.

Section C

Impact of renaissance on geography: main inventions, discoveries and explorations, cosmographic tradition and position of geography among sciences: Sebastian Munster, Philip Cluverious, Nathanael Carpenter, Varenius, Anton Friedrich Bushing, Immanuel Kant and Conrad Malte Brun.

Recommended Readings:

Adhikari, S. 2009. Fundamentals of Geographical Thought. Chaitanya Publishing House, Allahabad.

बंसल, सुरेश चन्द 2008 ण भौगोलिक चिन्तन के मूल तत्व। मीनाक्षी प्रकाशन मेरठ।

Dickinson, R. E. 1967. The Makers of Modern geography. Routledge & Kegan Paul Limited. London.

Dear, M.J. and Flusty, S. (ed.) 2002: The spaces of Post modernity: Readings in Human Geography, Blackwell Publishers Ltd, Oxford.

Dikshit, R. D. 2004. Geographical Thought. A Critical History of Ideas. Prentice-Hall of India, New Delhi. (in English and Hindi).

जैन, एस.एम. 2005: भौगोलिक चिन्तन एवं विधि तंत्र। साहित्य भवन पब्लिकेशन्स, आगरा।

जाट, बी.सी. 2013: भौगोलिक चिन्तन का इतिहास। मलिक एण्ड कम्पनी, जयपुर।

Hartshorne, R. 1987: Perspective on the Nature of Geography Scientific Publishers, Jodhpur (Copyright 1959 by the Association of American

Holt-Jensen, A. 1988. Geography: History and Concepts – A Student's Guide. Sage, Los Angeles (Fourth Edition).

James, P.E.; All Possible Worlds 1972: A History of Geographical Ideas; Odessey Press, 622 pages.

Johnston, R, Gregory D, Pratt G, Watts M. and Whatmore S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.

कौशिक, एस.डी. 2005-06, भौगोलिक विचारधाराएँ एवं विधि तंत्र। रस्तोगी पब्लिकेशन्स, मेरठ, आठवां संस्करण (पुनमुद्रित)।

मौर्य, एस.डी. 2007, भौगोलिक चिन्तन का इतिहास, प्रयाग पुस्तक भवन, इलाहाबाद।

Majid. H. 2004. Evolution of Geographical Thought. Rawat Publications, Jaipur (Reprinted 2007- Revised & Enlarged).

सक्सेना, एल.के. व तिवारी, ए.के. 2003, भौगोलिक चिन्तन। राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर।

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Section A

Interior structure of the earth, thermal state of the earth's interior, Isostasy: views of Airy, Pratt, Hayford and Bowie, Joly and Holmes, Origin of the continents and oceans, earth movements: eperiogenic and orogenic- Mountain building theories of Jeffreys, Kober, Joly, Daly, Holmes and Plate Tectonics.

Section B

Definition, nature and scope of geomorphology, major concepts in geomorphology, Denudation: weathering, mass movements, erosion and sediment regimes, various models of landscape evolution: Davis, Penck, King, Hacks, Morisawa, Schumn.

Section C

Topographies: fluvial, glacial-periglacial, Aeolian, karst and coastal, element of slope and various models of slope development: Wood, Davis, Penck, King, Strahler.

Recommended Readings:

- Chorley, R.J. 1972: Spatial Analysis in Geomorphology. Methuen, London.
Cooke, R.U. and Doornkamp, J.C.(1974): Geomorphology in Environmental Management-A introduction. Clarendon Press, Oxford.
Dury, G.H.; 1959: The Face of the Earth. Penguin Harmondsworth.
Fairbridge, R.W. 1986: Encyclopedia of Geomorphology. Reinholdts, New York.
Garner, H.F. 1974: The Origin of Landscape-A Synthesis of Geomorphology. Oxford University Press, London.
Goudie, A. 1993: The Nature of the Environment. Oxford & Blackwell, London.
जाट, बी.सी. 2004: भू-आकृति विज्ञान। रावत पब्लिकेशन्स, जयपुर।
Mitchell, C.W. 1973: Terrain Evaluation. Longman, London.
Ollier, C.D. 1979: Weathering Longman, London.
Pitty, A.F. 1971: Introduction to Geomorphology. Methuen, London.
प्रसाद, गायत्री 2004: भू-आकृति विज्ञान। शारदा पुस्तक भवन, इलाहाबाद।
Sparks, B.W. 1960: Geomorphology. Longman, London.
Sharma, H.S. (ed) 1980: Perspectives in Geomorphology. Concept Publishing Company, New Delhi (Vol. I to IV).
Skinner, B.J & Porter, S.C. 1995: The Dynamic Earth. John Wiley, New York.
Stoddart, D.R.(ed) 1996: Process and Form in Geomorphology. Routledge. New York.
Singh, S. 1998: Geomorphology. Prayag Publication, Allahabad.
- Spark, B.W. 2004: Geomorphology, Longmans, London.
Thornbury, W.D 1960: Principles of Geomorphology. John Wiley, New York.
Young, A. 1972: Slopes. Longmans, London.

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Sumitran

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Paper code: Geo 103: Principles and Theory of Economic Geography

Section A

Changing nature of economic geography, approaches to economic geography, agricultural typology-with special reference to: subsistence plantation agriculture, mediterranean agriculture, mixed farming, commercial grain farming, livestock rearing.

Section B

Energy resources: detailed study of conventional and non-conventional energy resources, spatial patterns and supply problems, industries: iron & steel, aluminium industry, paper and pulp, cotton textile, chemical fertilizer and auto mobile.

Section C

Decision making process: location decision-behavioural view, international trade: major regional trade and economic integration block, major trends and patterns, economic region: concept and methods of delineation, need of economic regionalization for area development and planning-economic regions of India.

Recommended Readings :

- Alexander, J.W. 2001: Economic Geography. Prentice Hall of India, New Delhi.
- Bengston, N.A. and Royen, M.V.: Fundamentals of Economic Geography (prentice Hall New York).
- Boesh, H.: A Geography of World Economy.
- Chapman, K and Walker, D. 1991: Industrial Location: Principles and Policies. Blackwell, Oxford.
- Grigg, D. 1995: An Introduction to Agricultural Geography. Second edition, Routledge, London.
- James, O. W. and Peter, O. M. 1986: Economic Geography. John Wiley and Sons, New York.
- Jarret, H. R. 1977: A Geography of Manufacturing. Trans-Atlantic Publishers, London.
- Leong, G.C. and Morgan, G.C. 1982: Human and Economic Geography, Oxford University Press, London.
- Lloyd, P.E. and Dicken, P. 1977: Location in Space: A Theoretical Approach to Economic Geography. Harper & Row, Publishers, London.
- Mandal, R. B. 1982: Land Utilization – Theory and Practice. Concept Publishing Company, New Delhi.
- Prasad, Rama 2007: कृषि पारिस्थितिकी एवं नियोजन। राधा प्रकाशन, नई दिल्ली।
- Scott, A. J. 1988: New Industrial Spaces. Pion, London.
- Shafi, M. 2000: Agricultural Geography of South Asia. Macmillan, New Delhi.
- Singh J. and Dhillon, S. S 2004: Agricultural Geography. Tata Mc-Graw-Hill, New Delhi.
- Singh, Kashi Nath and Siddiqui, A.R. 2012: Economic Geography, Prayag Pustak Bhawan, Allahabad.

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Smith, D. M. 1981: Industrial Location – An Economic, Geographical Analysis. John Wiley, New York.

Wheeler, J.O. and Muller, O.P. 1995: Economic Geography. John Wiley, New York.

Paper code: Geo A01: Man and Natural Environment

Section A

Definition and scope of environmental geography, its relation with other subjects, elements of the environment, man and environmental relationships: environmental determinism, possibilism and neo determinism, biosphere and its components, concept of ecology and ecological succession, types of ecosystems, energy flow in the ecosystem, soil system, geobiochemical cycles, major biomes of the world .

Section B

Environmental degradation and natural disasters, environmental crises: ozone depletion, green house gas effects, El-Nino, global warming and climate change, water scarcity, acid rain, sea level change, desertification, environmental pollutions: water, air, soil, noise and radioactive.

Section C

Environmental quality, sustainable development, environmental management, soil and forest resources management, water management, wildlife conservation, biodiversity and its conservation, environmental awareness and education, international efforts of environmental conservation.

Recommended Readings :

Agarwal, A. and Narain, S. 1997: Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting System. Centre for Science and Environment, New Delhi.

Economic and social commission for Asia and the Pacific United Nations 1989: Guidelines for the preparation of National Master Water Plans.

Govt. of India, 1980: Ministry of Energy and Irrigation. Rashtriya Barh Ayog (Report-National Commission of Floods. Vol. I & II, New Delhi).

Govt. of India, 1972: Ministry of Agriculture Report of the Irrigation Commission. Vol. I to IV, New Delhi.

गुर्जर, आर.के. एवं जाट, बी.सी. 2001: पर्यावरण भूगोल। पंचशील प्रकाशन, जयपुर।

Gulhati, N.D 1972: Development of Inter-State Rivers: Law and Practice in India. Allied Pub., Bombay.

International Water Resource Association and Central Board of Irrigation & Power, Water of Human Needs, 1975: Vols. I to V Proceedings of the Second World Congress on Water Resources, 12-16 December, New Delhi.

Jones, J.A. 1997: Global Hydrology: Processes, Resources and Environmental Management. Longman.

Kates R.w. and Burton, I. (ed.) 1980: Geography, Resource and Environment. Ottawa.

Krutilla, John V. and Eckstein, O. 1958: Multiple Purpose River Development: Studies in Applied Economic Analysis. John Hopkin's Press, Boston.

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- Law, B.C. (ed.) 1968: Mountains and Rivers of India IGU. National Committee for Geography, Calcutta.
- Matter, J.R., 1984: Water Resources Distribution, Use and Management. John Wiley, Marylane.
- Michael, A.M. 1978: Irrigation: Theory and Practices. Vikas Publishing House Pvt., New Delhi.
- Newson, M. 1992: Land, Water and Development River Basin systems and their Sustainable Management. Routledge, London.
- Pareira, H.D. 1973: Landuse and Water Resources. Cambridge University Press, Cambridge.
- Rao, K.L. 1979: India's Water Wealth. Orient Longman, New Delhi.
- सिंह, जगदीश 2003: पर्यावरण एवं संविकास। ज्ञानोदय प्रकाशन, गोरखपुर।
- शर्मा, पी.डी. 2009: पारिस्थितिकी एवं पर्यावरण। रस्तोगी पब्लिकेशन्स, मेरठ।
- Singh, R.A. and Singh, S.R. 1979: Water Management: Principles and Practices. Tara Publication, Varanasi.
- Singh, Savindra 2006: Environmental Geography. Prayag Pustak Bhawan, Allahabad.
- Smith, K. 1972: Water in Britain. A Study in Applied Hydrology and Resource Geography. McMillan, London.
- श्रीवास्तव, वी.के. एवं राव, बी.पी. 2002: पर्यावरण और पारिस्थितिकी। वसुन्धरा प्रकाशन, गोरखपुर।
- Tideman, E.M. 1996: Watershed Management. Guidelines for Indian Conditions, Omega, New Delhi.
- Tebbutt, T.H.Y. (ed.) 1985: Advances in Water Engineering. Elsevier Applied Science Pub., London.
- Todd, D.K. 1959: Ground Water Hydrology. John Wiley, New York.
- U.S.D.A. 1955: The Year Book of Agriculture: Water. Oxford and I.B.H. Publishing Co., New Delhi.
- Verghese, B.G. 1990: Water of Hope: Integrated Water Resource Development and Regional Co-operation within the Himalayan-Ganga. Brahmaputra-Barak Basin, Oxford IBH, New Delhi,
- White, G.F.L. 1977: Environmental Effects of Complex River Development. Westriver Press, Boulder, Colorado.

Paper code: Geo A02: Cultural Geography

Section A

Definition, nature and scope of cultural geography, the evolutionary approaches and conceptual framework, evolution of man and human society from Palaeolithic to Pleistocene period, rise and dominance of *homo-sapiens* and their spatial distribution over the continents, distribution and characteristics of primary races of the world, zone and stata theory.

Section B

Begining of plant domestication, animal domestication and their regions, evolution of civilization: Mesopotamian, Nile, Indus and Hwang Ho Valley with respect to racial, ethnic, religious, linguistic, demographic, and organizational characteristics. School of cultural determinism, cultural adaptation, assimilation, integration diffusion and Environmental

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perception. Major cultural hearths, realms and regions of the world, basic similarities and differences.

Section C

Major linguistic families and their distribution in the world, bases of cultural diversity: race, religion, language and nationalism, culture and environment, human settlements-origin, types, pattern and distribution, westernization, sanskritization and cultural urbanization.

Readings Recommended:

- Anderson, J. 2009: Understanding Cultural Geography-Places and traces. Routledge, USA.
- Anderson, K., Domosh, M., Pile, S. And Thrift, N. (eds.) 2003: Handbook of Cultural Geography. Sage Publications, London.
- Ahmad, Aijazuddin 1999: Social Geography. Rawat Publication, New Delhi.
- Crang, Mike 1999: Cultural Geography. Routledge, London.
- Chapman, K. 1979: People, Pattern and Process-An Introduction to Human Geography. Edward Arnold Ltd., London.
- Dreze Jean, Sen Amartya 1996: Economic Development and Social Opportunity. Oxford University press, New Delhi.
- Dubey, S.C. 1991: Indian Society. National Book Trust, New Delhi.
- Haq, Mahbubul: Reflection on Human Development. Oxford University Press. New Delhi.
- Mitchell, D. 2000: Cultural Geography: A Critical Introduction. Blackwell Publishers, Inc. USA.
- Norton, W. 2006: Cultural Geography. Environments. Landscapes. Identities. Inequalities. Oxford University Press, Toronto. 2nd edition.
- श्रीवा, गायत्री 1991: सांस्कृतिक भूगोल। तारदा पुस्तक भण्डार, इलाहाबाद।
- Robertson, Iain, and Penny Richards 2003: Introduction in Studying cultural landscapes, ed. Iain Robertson and Richards, 1-18.
- Rubenstein, J. M. And Becon, J. M. 1990: Cultural Geography, John Wiley and Sons Inc., New York.
- शर्मा, मुनीरुद्दीन 2001: सांस्कृतिक भूगोल। राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर।
- Scott, A. J. 1997: The Cultural Economy of Cities. International Journal of Urban and Regional Research, 21(2), 323-339.
- Saberwal, Vasant K. 1996: Pastoral politics: Gaddi grazing, degradation, and biodiversity conservation in Himachal Pradesh, India. Conservation Biology 10, no. 3: 741-749.
- Sen, Amartya and Dreze Jean 1996: Indian Development Selected Regional Perspectives. Oxford University Press.
- Sopher, D. 1980: An Exploration of India: Geographical Perspectives on Society and Culture. Cornell University Press, Ithaca, New York.
- Smith, D.M. 1977: Human Geography: A Welfare Approach. Edward Arnold Publication, London.
- Spencer, J. E. And Thomas, W. L. 1969: Cultural Geography. John Wiley and Sons Inc., New York.
- Subba Rao. Personality of India 1958: Pre and Proto Historic Foundation of India and Pakistan. M.S. University, Baroda, Vadodara.
- Wagner, P.L. & Mikesell, H.W. (eds.) Readings in Cultural Geography.

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Seminar

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- Mukherjee, A.B. and Aijazuddin, A. 1985: India- Culture, society and economy. Inter India publications, New Delhi.
Broke, J.C. and Webb, J.W. 1978: A geography of Mankind, McGraw Hill, New York.

Paper code: Geo 111: Practical

Minimum Marks: 36	Bifurcation of marks	Max. Marks: 100
Written Test on Lab. Work (4 Questions)	48	4 hours
Record Work & Viva-Voce.	20+12	
Internal Assessment	20	
Total	100	

N.B. In written test there shall be 2 questions from each section. Candidates have to answer 4 questions selecting at least one question from each section. All questions carry equal marks. Examination be conducted in batches of not more than 20 candidates in any case. 12 hours for teaching practicals be provided for a batch of 20 students per week.

SYLLABUS

Section A

History of cartography, types of maps, enlargement and reduction and finding of area on map using planimeter, study of geological maps and preparation of their cross sections and interpretation, interpretation of weather maps and weather forecast, elementary trigonometry, classification of map projections and their specific uses.

Section B

Mathematical construction of projections: cylindrical (equal area, Mercator's and Gall's stereographic); conical (with one standard parallel two standard parallels, Bonne's, polyconic and modified polyconic (international)).

Section C

Mathematical construction of projections: zenithal (equidistant- polar and equatorial case, equal area - polar and equatorial case, gnomonic- polar and equatorial case, stereographic- polar and equatorial case and orthographic- polar and equatorial case), and conventional: Sinusoidal and Mollweide, map policy of India and projections used for map output in India.

Recommended Readings:

- चौहान, पी.आर. 2005: प्रयोगात्मक भूगोल। वसुन्धरा प्रकाशन, गोरखपुर।
Dickinson, G.C. 1973: Statistical Mapping and Mapping Statistics. London.
Khullar, D.R. 2000: Essentials of Practical Geography. New Academic Publishing Co.,
Jalandhar.

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Robinson, A.H. et al. 2004: Elements of Cartography. John Wiley & Sons, Inc., New York.

Rampal, K.K. 1993: Mapping and Compilation: Methods and Techniques. Concept Publishing Company, New Delhi.

शर्मा, जे.पी. 2010-11: प्रयोगात्मक भूगोल की रूपरेखा। रस्तोगी पब्लिकेशन्स, मेरठ।

Singh, R.L. and Singh RPB 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.

तिवारी, आर.सी. एवं सुधाकर, त्रिपाठी 2009: प्रयोगात्मक भूगोल। प्रयाग पुस्तक भवन, इलाहाबाद।

**Paper code: Geo 201: Modern and Contemporary Geographical Thought
(19th century onwards)**

Section A

Definition, scope, purpose and philosophy of geography, themes and basic concepts in geography; impact of Darwinism on Geographical thoughts, Foundations of modern geography: German school (Humboldt, Ritter, Ratzel, Richthefen, Hettner, Schluter), French school (Blache, Brunhes) British school (Mackinder) and Russian scholars during the 19th century, focus on geography as a science of chorology and landscape morphology.

Section B

Rise of Anglo American School of geography: (Semple and Hartshorne) implications of geography as spatial science, relationship between geography, economics and planning (regional science) paradigms and revolutions: quantitative revolution, behaviouralism, radical geography, approaches of integrated geography and modern synthesis.

Section C

Philosophical pluralism: empiricism, positivism, humanistic geography (idealism, phenomenologism and existentialism) and structuralism, post-modernism and various paradigms/ schools of geographical thought during post-modern period, dualism in geography: physical and human geography, systematic and regional geography environmentalism and possibilism, qualitative and quantitative, idiographic and nomothetic, Indian geography: development, emerging trends and professional challenges.

Recommended Readings:

Dear, M.J. and Flusty, S. (ed.) 2002: The spaces of Post modernity: Readings in Human Geography. Blackwell Publishers Ltd. Oxford.

Dikshit, R. D. 2004: Geographical Thought. A Critical History of Ideas. Prentice-Hall of India Private Limited, New Delhi.

Doi, R. D. 2002: Geographic Thought: A Spectrum of Compilation to Coherence. University Book House (Pvt.) Ltd., Jaipur.

Dikshit, R. D. 1994 (ed.): The Art and Science of Geography – Integrated Readings. Prentice-Hall of India Private Limited, New Delhi.

Gaile, G. and Wilmott, C. (eds.) (2003): Geography in America at the Dawn of the 21st Century. Oxford University Press, Oxford and New York.

Gold, John R. 1980: An Introduction to Behavioral Geography. Oxford University Press, Oxford.

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- Haggett, P. 2001: Geography: A Global Synthesis. Prentic-Hall Pearson Educational, New York.
- Hartshorne, R. 1987: Perspective on the Nature of Geography. Scientific Publishers, Jodhpur (Copyright 1959 by the Association of American Geographers.
- Holt-Jensen, A. 2009: Geography: History and Concepts – A Student's Guide, SAGE, Los Angeles, London.
- Haggett, P. 1983: Geography: A Modern Synthesis. Harper and Row, New York.
- Harvey, D. 1969: Explanation in Geography. Arnold, London.
- जाट, बी.सी. 2013: भौगोलिक चिन्तन का इतिहास। मलिक एण्ड कम्पनी, जयपुर।
- जैन, एस.एम. 2005: भौगोलिक चिन्तन एवं विधि तंत्र। साहित्य भवन पब्लिकेशन्स, आगरा।
- Johnston, R. J. 1983: Philosophy and Human Geography. Edward Arnold (Publishers) Ltd. London.
- Johnston, R. J. and Sidway, J. D. 2004: Geography and Geographers. Arnold, London.
- Johnston, R, Gregory D, Pratt G, Watts M. and Whatmore S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford.
- Johnston, R.J. 1985: The Future of Geography. Methuen and Company Ltd., New York.
- Kapoor, A 2001: Voice of Concern. The Concept Publishing Company, New Delhi.
- Minca, C. 2001 (ed): Postmodern Geography. Blackwell Publishers Ltd, Oxford.
- मौर्य, एस.डी. 2007: भौगोलिक चिन्तन का इतिहास। प्रयाग पुस्तक भवन, इलाहाबाद।
- Peet, R. 2003: Radical Geography, Rawat Publishers, Jaipur.
- Peet, R. 1998: Modern Geographical Thought. Blabkwell Publishers Ltd, Oxford.
- Soja, E. (1989): Post-modern Geographies. Verso Press, London. Reprinted 1997: Rawat Publications, Jaipur and New Delhi.
- Taylor, G 1960: Geography in the Twentieth Century. Methuen & Co. Ltd. London.

Paper code: Geo 202: Climatology & Oceanography

Section A

The basis of modern climatology, composition and layered structure of atmosphere, atmospheric energy: air temperature, the energy balance, atmospheric pressure and pressure belts, wind circulation: the planetary wind system, monsoon winds and local winds, adiabatic non-adiabatic processes, stability and instability, evaporation, factors affecting evaporation, humidity and its expression, clouds: types and characteristics, precipitation: types and world precipitation pattern.

Section B

Air masses, fronts: cyclones (tropical and extra tropical) and anticyclones. Koppen and Thonthwaite classification of world climates; major climatic types: Equatorial, savanna, monsoon, Mediterranean and West European.

Section C

Scope of oceanography, horizontal and vertical distribution of temperature, salinity, factors and distribution patterns, dynamics of oceanic water: currents, sea waves, tides and tidal theories currents of Atlantic ocean, Pacific ocean, Indian ocean and other seas, oceanic bottom relief, (Atlantic, Pacific and Indian oceans) oceanics deposits, coral reef formation, atolls and coral islands, theories of coral reef formations, Man and oceans, marine resources- biotic and abiotic, (mineral and energy resources) and their utilization.

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Recommended Readings:

- Critchfield, H.J. 1983: General Climatology. Prentice-Hall of India, New Delhi.
- Glantz, M.H., 2001: Currents of Change: Impacts of El Nina and La Nina on Climate and Society. Cambridge University Press, Cambridge.
- गौतम, अल्का 2010: जलवायु एवं समुद्र विज्ञान। रस्तोगी पब्लिकेशनस, मेरठ, द्वितीय संस्करण।
- गुप्ता, एस.एल. 2000: जलवायु विज्ञान। हिन्दी माध्यम कार्यालय निदेशालय, दिल्ली विश्वविद्यालय, दिल्ली।
- Oliver, J.E. and Hidore, J.J. 2011: Climatology : An Atmospheric Science, Dorling Kindersky. India Pvt. Ltd., Licensees of Pearson education in South Asia, New Delhi.
- Sharma, R.C. and Vatal, M. 1999: Oceanography for Geographers. Chaitanya Publishing House, Allahabad.
- Singh, S., 2007: Climatology. Prayag Pustak Bhawan, Allahabad.
- Singh, S., 2008: Oceanography. Prayag Pustak Bhawan, Allahabad.
- Siddartha, K. 2000: Oceanography. A Brief Introduction, Kisalaye Publications, New Delhi.
- सिंह, एस. 2006: जलवायु विज्ञान। प्रयाग पुस्तक भवन, इलाहाबाद।
- Trewartha, G. T. and Horn, L.H. 1980: An Introduction to Climate. McGraw-Hill, New Delhi.

Paper code: Geo 203: Principles and Theory of Economic Geography

Section A

Simple model of economy, environmental relations of the economy, spatial structure of economy, geographical basis of economic activities, evolution of world economic system.

Section B

Manufacturing: factors of production, theories of plant location: Weber's Least cost theory, Losch's economics of location, Isard's space economy, Smith's spatial margins, webber's uncertainty effect, industries-iron & steel, aluminium, paper and pulp, cotton textile, chemical industries-fertilizer, spatial variation in transport costs: location of transport routes and structure of transport costs.

Section C

Spatial organisation of land use: laws of return, concept of rent, Vonthunen's general theory of landuse, dynamic agricultural location theory, Thunian location theory in the late 20th century world, classical central place theory: range of good, threshold, central place system and hierarchy, Christaller's hexagonal trade areas, loss and uniform plain, modification of Christaller's model.

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Recommended Readings :

- Alexander, J.W. 1988: Economic Geography. Prentice Hall. India, New Delhi.
- Berry, B.J.L. et al 1976: Geography of Economic System. Prentice hall, Englewood, Cliff.
गौतम, अलका: आर्थिक भूगोल। रस्तोगी प्रकाशन, मेरठ।
- Guha and Chaterjee 1989: A New Approach to Economic Geography.
- Huntington, Ellsworth 1940: Principles of Economic Geography. New York: John Wiley and Sons, Inc.
- Hartshorn, T.A. and Alexander, J.W. 2000: Economic Geography. Prentice Hall, New Delhi.
- Hodder B.W. and Lee, R. 1974: Economic Geography. Methuen, London.
हारून, एम. 2006: संसाधन भूगोल। वसुन्धरा प्रकाशन, गोरखपुर।
- Janaki, V.A. 1985: Economic Geography. Concept Publishing Co., New Delhi
- जाट, बी.सी. 2014: आर्थिक भूगोल। पंचशील प्रकाशन, जयपुर।
- काशीनाथ सिंह, जगदीश सिंह: आर्थिक भूगोल के मूल तत्व। वसुन्धरा, गोरखपुर।
- Leong, G.C. and Morgan, G.C. 1982: Human and Economic Geography. Oxford University Press, London.
- Lloyd, P.E. and Dicken, P. 1977: Location in Space: A Theoretical Approach to Economic Geography. Harper & Row, Publishers, London.
- Prasad, Rama 1992: Impact of Consultation on Landuse. Rupa Publisher, Jaipur.
प्रसाद, रामा 2007: कृषि पारिस्थितिकी एवं नियोजन। राधा प्रकाशन, नई दिल्ली।
- प्रसाद, रामा एवं यादव, सतवीर 2007: कृषि पारिस्थितिकी एवं नियोजन। राधा प्रकाशन, नई दिल्ली।
- Ramesh, A. 1984: Contributions to Indian Geography. Volume V, Resource Geography, Heritage Publishers, New Delhi.
- श्रीवास्तव, वी.के. एवं राव, बी.पी. 2002: आर्थिक भूगोल। वसुन्धरा प्रकाशन।
- Siddhartha, K. 1999: Economic Geography. Kisalaya Publication Pvt. Ltd., Patna.
- Sihag, M.S. and Sihag, Savita, 2011: Resource Geography. Gauttam Book Company, Jaipur.
- Wheeler, J.O. et al 1995: Economic Geography. John Wiley, New York.
- Zimmeman, E.W. 1951: World Resources and Industries. Harper & Co. New York.

Paper code: Geo B01: Population Geography

Section A

Population geography: definition, nature and scope and interdisciplinary study, theories of population growth – pre-Malthusian views, Malthus' theory, Marxist theory, Optimum population theory, demographic transition model, world population distribution, growth trends and determinants.

Section B

Migration: history, theories, trends and patterns of international and internal migration, population dynamics: fertility and mortality- measurement, determinants and distribution, world population composition and characteristics, world population urbanization, trend pattern and challenges.

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Section C

India- population characteristics and relationship with development; population control movement and policies; urbanization and population explosion; post independence development-reproductive and child health programme, contemporary issues – ageing of population; declining sex ratio; hiv/aids.

Recommended Readings:

- Bhende, Asha, A. and Kanitkar, 2002: Principles of Population Studies. 14th Edition, Himalaya Publishing House, Mumbai.
- Chandna, R. C. 2013: Population Geography. Kalyani Publishers, Delhi.
- Chandna, R.C. 2006: Jansankhya Bhugol. Kalyani Publishers, Delhi.
- Garnier, J. B. 1978: Geography of Population. Longman, U.K.
- Hassan, M.I. 2005: Population Geography. Rawat Publication, Jaipur.
- Kundu, A. Lopamudra, R.S 2012: "Migration and Exclusionary Urbanisation in India". *Economic & Political Weekly*, XLVII (26/27): 219-227.
- Kundu, A. 2006: Trends & patterns of urbanization and their economic implications. India Infrastructure Report, pp. 28-41.
- Newbold, K. B. 2010: Population Geography: Tools and Issues. Rowman & Littlefield Publications, London.
- Premi, M.K. 1991: India's Population Heading Towards a Billion. B.R. Publishing Coporation, New Delhi.
- Rural Urban Dynamics and the Millennium Development Goals 2013: Global Monitoring Report.
- Woods, R. 1997: Theoretical Population Geography. Longman, U.K.
- Weeks, J. R. 1988: Population: An Introduction to Concepts and Issues. Springer, Wadsworth.
- www.un.org/esa/population/publications/worldageing19502050/
- www.who.int/ageing/en/
- India.unfpa.org/drive/NationalPopulation-Policy2000.pdf
- UNAIDS Report on Global AIDS Epidemic, 2010.

Paper code: Geo B02: Quantitative Techniques in Geography

Section A

Probability: theory of probabilities- law of addition and multiplication probabilities of distribution: normal, binomial, poisson-sampling: basic concepts, sample units and design, sampling frame and procedures, standard error and sample size, testing the adequacy of samples, hypothesis testing: needs and types of hypotheses-goodness of fit and significance and confidence levels-parametric and non-parametric procedures; contingency tables, chi-square test, binomial test, t-test, mann-whitney u test,

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Section B

Bivariate analysis; forms of relation and measuring the strength of association and relation-construction and meanings of scatter diagram simple linear and regression analyses-spearman's rank and product moment correlation coefficients-the ordinary least square method of fitting a regression line-construction of regression line: interpolation, prediction, explanation and residual-statistical tests of significance of the estimates; residuals and their mapping.

Section C

Multivariate analysis; basics of multiple regression-partial correlation coefficient regression analysis, analysis of variance and anova-testing the overall significance of a regression auto correlation-multicollinearity- basis principles and elements of factor analysis and principal component analysis, surface and models: gravity potential; model-spatial interpolation and trend surface analysis-simulation models: random walk and diffusion models-markov chain model similarity indices and region building-construction of thiessen polygons.

Recommended Readings:

- Gupta, S.P. 1979: Statistical Methods. Sultan Chand & Sons, New Delhi.
Mahmood, A. 1998: Statistical Methods in Geographical Studies. Rajesh Publication, New Delhi.
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Nagar, K.N. 1992: Sankhiki Ke Mool Tatva. Meenakshi Prakashan, Meerut.
Unwin, D. 1981: Introductory spatial Analysis. Methuen, London.
Gregory, S. 1978: Statistical Methods and Georapher. Longman, Landon.
Hammond R and P.S. McCullagh 1974: Quantitative Techniques in Geography: An Introduction. Clearendan Press,Oxford.
John P. Cole and Cuchlanie A.M. King 1968: quantitative Geography, John Wiley,London.
Johnston R.J. 1973: Multivariate Statistical Analysis in Geography. Longman, London.
Kautsoniannis 1973: Theory of Economitrics. Mcmillan, London.
Maurice Yeats 1974: An Introduction to Quantiative Analysis in Human Geography. McGraw Hill, New York.
Peter Haggett, Andrew D. Cliff & Allan Frey 1977: Location Methods. volI and II, Edward Arnold, London.

Paper code: Geo 211: Practical

Minimum Marks: 36	Bifurcation of marks	Max. Marks: 100
Written Test on Lab.Work (4 Questions)	32	4 hours
Record Work & Viva-Voce.	16+08	
Project Report & Viva-Voce.	16+08	
Internal Assessment	20	
Total	100	

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N.B. In written test there shall be 2 questions from each section. Candidates have to answer 4 questions selecting at least one question from each section. All questions carry equal marks. Examination be conducted in batches of not more than 20 candidates in any case. 12 hours of teaching practicals be provided for a batch of 20 students per week.

SYLLABUS

Section A

Preparation of frequency table, graphical representation of data: histogram, frequency polygon, frequency curve and cumulative frequency curve or ogive, finding skewness, computation of mean, median and mode, dispersions: mean and standard deviation and computation of correlations: Karl Pearson's and Spearman's rank, coefficient of variability, theoretical basis of nearest neighbour analysis and exercises.

Section B

Locational analysis of urban centres, measurement of disparities, using latest data base: state, district, tehsil and development block level, preparation of choropleth, isopleths and isochrone map, population potential surface map, population pyramids map and cartograms.

Section C

Three dimensional diagrams: spherical and block pile, drawing of polygraphs, semi-log and log graphs, network analysis, trilinear chart, circular graph, climatograph, annual water budget graphs (surplus and deficiency).

Project Report: A candidate is to prepare project report of a village area for one week away from the Headquarter of the institution. The marking on the project report will be awarded by the external examiner in consultation with the internal examiner concerned. The project should be based on primary data obtained by the candidate. The data should be represented by suitable cartographic methods.

Books recommended

- Dickinson, G.C. 1973: Statistical Mapping and Mapping Statistics. London.
Lawrence, G.R.P. 1971: Cartographic Methods. Methuen, London.
Mahmood, A. 1998: Statistical Methods in Geographical Studies. Rajesh Publications, New Delhi.
Robinson, A.H. et al. 2004: Elements of Cartography. John Wiley & Sons, Inc., New York.
Rampal, K.K. 1993: Mapping and Compilation: Methods and Techniques. Concept Publishing Company, New Delhi.
शर्मा, जे.पी. 2010-11: प्रयोगात्मक भूगोल की रूपरेखा। रस्तोगी पब्लिकेशन्स, मेरठ।
Singh, R.L. and Singh RPB 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.
तिवारी, आर.सी. एवं सुधाकर, त्रिपाठी 2009: प्रयोगात्मक भूगोल। प्रयाग पुस्तक भवन, इलाहाबाद।

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Paper code: Geo 301: Advanced Geography of India

Section A

Geological structure and its relation with distribution of minerals, physiographic divisions; climate:- various seasons and weather associated with these seasons, mechanism of Indian monsoon, major climatic regions; soil:- characteristics, distribution and major soil regions; drainage system and watersheds.

Section B

Resource potential and evaluation, water resources & Multi-purpose irrigational projects, vegetational resources, agriculture: typology, major crops, changing pattern of crops and green revolution, animal resources, mineral resources, human resources & population policies.

Section C

Resources development and utilization: power, industries and transport, river basins of India, riverine problems of sharing water and their planning, industrial regions and economic regions of India, regional problems.

Recommended Readings:

Bansil, B.C. 1975: Agricultural Problems in India, Delhi.

Deshpande, C.D. 1992: India-A Regional Interpretation. Northern Book Centre, New Delhi.

Gopal Krishnan, R. 2001: Geography of India. Jawahar Publishers & Distributions, New Delhi.

Govt. of India: National Atlas of India, NATMO Publication, Calcutta.

Govt. of India 1965: The Gazetteer of India, Vol. I & II Publication Division, New Delhi.

India 2004, Ministry of Information and Broad Casting. Govt. of India, New Delhi.

Khullar, D.R. 2006: India a comprehensive Geography. Kalyani Publishers, New Delhi.

Krishna, D. 1971: The New Agricultural Strategy. Delhi.

Kurdue, A. & Raza, Moonis: Indian Economy the Regional Dimension.

ममोरिया, सी. 1999: आधुनिक भारत का वृहत् भूगोल। साहित्य भवन पब्लिकेशन्स, आगरा।

Mahesh Chand and V.V. Puri, Regional Planning in India.

Md. Noor., Perspectives in Agricultural Geography. New Delhi.

Misra, R.P., Regional Planning: Concepts, Techniques and Policies.

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119

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- Mitra, A. 1967: Levels of Regional Development India Census of India. Vol. I, Part I-A (i) and (ii), New Delhi.
- Paul Claval, An Introduction to Regional Geography. Survey of Agriculture and Survey of Industry. 2003, Hindu Publication.
- Singh, G 1998: A Geography of India. Atma Ram & sons, Delhi, Sixth Edition
- Singh, R.L. (ed.) 1971: India: A Regional Geography. National Geography Society, India, Varanasi.
- Siddhartha, K. 1998: India: The Physical Aspects. Tran world Media and Communication Ltd., Patna.
- Tirtha, R 2000: Geography of India. Rawat Publications, Jaipur.
- Wadia, D.N. 1967: Geology of India. McMillian & Co., London.

Paper code: Geo C01: Research Methodology

Section A

Research: meaning, objectives, significance, types of research, research approaches, problems of geographical research, relevant and applied research, hypothesis and its basic concepts, testing of hypothesis, models and paradigm, formulation of research proposal and research design, types of research projects and report writing.

Section B

Sources of data, methods of data collection, processing, analysis and results, observation and interview questionnaire and field schedule, sampling theory, sample size, sampling techniques, selected techniques of spatial analysis, concentration and dispersal of economic activities, interaction theories, scaling techniques, measurements of disparities and inequalities, methods of delimitation of economic, industrial, agricultural and planning regions.

Section C

Regional population analysis, population projections, network analysis, delimiting sphere of city influence, core and marginal area, morphometric analysis, drainage basin analysis and slope analysis, biogeochemical cycles, integrated, area development planning, use of software for quantitative geographical analysis, introduction to remote sensing and geographical information system in land use analysis.

Recommended Readings:

- आहूजा, राम 2010: सामाजिक अनुसंधान। रावत पब्लिकेशन्स, नई दिल्ली।
- डी.डी. चौनियाल 2006: सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली। शारदा पुस्तक भवन, इलाहाबाद।
- Guthrie, G. 2010: Basic Research Methods—An Entry to Social Science Research. SAGE Publications, India Pvt Ltd., New Delhi.
- Gupta, S.P. 1979: Statistical Methods. Sultan Chand & Sons, New Delhi.

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Harvey, D. 1969: Explanation in Geography. Arnold Heinemann, London.

Har Prasad 1992: Research Methods and Techniques in Geography. Rawat Publication, Jaipur.

K.R. Sharma 2004: Research Methodology. National Publishing House, Jaipur.

Kothari, C.R. 1990: Research Methodology—Methods and Techniques. Wishwa Prakashan, New Delhi.

Mishra, H.N. and Singh, V.P. 1998: Research Methodology in Geography. Rawat Publication, Jaipur.

Mahmood, A. 1998: Statistical Methods in Geographical Studies. Rajesh Publication, New Delhi.

Mishra, R.P. 1989: Research Methodology. Concept Publishing Company, New Delhi.

Pal, S.K. 1998: Statistics for Geoscientists – Techniques and Applications. Concept Publishing Company, New Delhi.

Sharma, P.R. and Yadav, R.S. 2011: Research Methodology: Concepts and Studies. R.K. Books, New Delhi.

श्रीवास्तव एवं प्रसाद 2008: भूगोल की सांख्यिकी विधियाँ। वसुन्धरा प्रकाशन, गोरखपुर।

वीरेन्द्र प्रकाश शर्मा 2001: रिसर्च मैथाडोलोजी। पंचशील प्रकाशन, फिल्म कॉलोनी, चौड़ा रास्ता, जयपुर।

Paper code: Geo C02: Disaster Perception and Management in India

Section A

Concept of disaster management, institutional framework of disaster management in India, stakeholders in disaster management, hazards, risks, vulnerability and disasters, types of hazards and disasters: manmade and natural, livelihoods and climate change.

Section B

Floods, drought, earthquakes, landslides, cyclones, forest fire and Tsunamis, forest degradation, construction of dams, diversion of river channels, mining and quarrying, haphazard urban growth and unplanned industrial development, coping with manmade disaster.

Section C

Management authorities and community participation: pre disaster phase, emergency phase and post disaster management, disaster preparedness, mitigation and response. disaster management and risk reduction mechanism in India: public awareness, agencies, resources, early warning system, policies, action plans and training in disaster management.


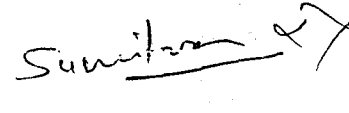
Recommended Readings:

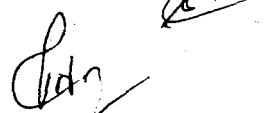
Alexander, D. 1993: Natural Disasters. UCL Press, London.

Dasgupta, R. 2007: Disaster Management and Rehabilitation. Mittal Publications, New Delhi.


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- Government of India 2004: Disaster Management in India – A Status Report. Ministry of Home affairs, National Disaster Management Division, New Delhi.
- Govt. of India 2009: National Policy on Disaster Management. National Disaster Management Authority (NDMA).
- GUPTA , K. C.: DISASTER MANAGEMENT IN INDIA. Allied PUBLISHERS, New Delhi.
- Hewitt, K. 1997: Regions of Risk: A Geographical Introduction to Disasters. Longman, London.
- Kapur, A. 2010: Vulnerable India–A Geographical Study of Disasters. Sage Publications India Pvt. Ltd., New Delhi.
- Kapur, A. 2005: Disasters in India. Studies of Grim Reality, Rawat Publications, Jaipur.
- Kasperson, J.X., Kasperson, R.E. and Turner, B.L. 1995: Regions at Risk: Comparisons of Threatened Environments. United Nation, University Press, Tokyo.
- Murthy, D.B.N. 2008: Disaster Management: Text and Case studies. Deep & Deep Publications, New Delhi.
- Paraswamam, S. and Umikrishnan, P.V. 2000: India Disaster Report. Oxford University Press, New Delhi.
- पवार, जे. 2006: सुनामी का विज्ञान। नमन प्रकाशन, नई दिल्ली।
- Singh, Savindra 2006: Environmental Geography. Prayag Pustak Bhawan, Allahabad.

Paper code: Geo D01: Principles and Applications of Remote Sensing and Geographical Information System

Section A

Remote sensing: definition and scope of remote sensing, elements of remote sensing: electro-magnetic radiation and interaction with earth surface features, data products and users, atmospheric windows, remote sensing systems: platforms, sensors, resolution and radiometric characteristics, elements of image interpretation and keys, types of aerial photographs, aerial cameras types of mosaics, relief displacement and parallax, Satellites: landsat- Mss & Tm, Spot, Noaa-Avhrr, Irs, Modis, Radarsat, Ikonos, Quickbird & Cartosat.

Section B

Digital image processing and classification: pre-processing and image enhancement techniques- rectification and restoration, contrast manipulation, density slicing, spatial filtering and band ratio, classification- supervised and unsupervised, post-classification analysis and accuracy assessment, microwave remote sensing, advantages over optical, unique capabilities of microwave, SAR & SLAR.

Section C

RS applications: mapping and monitoring of land use and land cover, forestry and desertification, soil and water resources, remote sensing and hazard mapping and environmental monitoring. introduction to GIS, fundamentals of GIS- geospatial databases.

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data structure and formats, projections and coordinate system, raster and vector data infrastructure and analysis, integration of remote sensing and GIS.

Recommended Readings:

American society of Photogrammetry 1983: Manual of Remote sensing. ASP, Falls Church, V.a..

Barrett E.C. and L.F. Curtis, 1992: Fundamentals of Remote sensing and Air photo Interpretation. Mcmillan, New York.

Compbell J. 1989: Introduction to Remote Sensing. Guilford, New York.

Curran, paul J. 1985: Principles of Remote Sensing. Longman, London.

चुनियाल, डी.डी. 2004: दूरसम्बेदन तथा भौगोलिक सूचना प्रणाली। शारदा पुस्तक प्रकाशन, इलाहबाद।

Hord R.M. 1989: Digital Image Processing of Remotely Sensed Data. Academic, New York.

Lilsand, T., Kiefer, R.W. and Chipman, J. 2007: Remote Sensing and Image Interpretation. John wiley & Sons, New York.

Jalan, Seema 2010: Image Processing, Sahityagaar, Jaipur.

Luder D. 1959: Aerial photography Interpretation: Principles and Application. McGraw Hill, New York.

Pratt W.K. 1978: Digital Image Processing. John Wiley & Sons, New York.

Rao D.P.(ed.) 1988: Remote Sensing for Earth Resources. Association of Exploration Geophysicist, Hyderabad.

Thomas M. Lillesand and Ralph W. Kefer 1994: Remote Sensing and image interpretation. John wiley & Sons, New York.

Paper code: Geo D02: Urban Geography

Section A

Meaning, aims, importance and scope of urban geography, factors affecting recent trends the growth of town cities different historical periods during neolithic period, greek and roman period. dark ages, medieval period renaissance period, industrial revolution. and modern times, chief characteristics of the towns, trends of urbanisation in the world, urbanisation in india since 1901 and its problems, definitions of urban centres, chief characteristics of modern town, city conurbation metropolian and megalopolis, spatial pattern and distribution of urban centres origin and evolution of urban settlement, types of cities-central placed, urban transportation.

Section B

Functions and functional classification of towns, urban rank-size relationship, concept of urban economic functions and its urban hierarchy based on functions law of promate city, urban morphology, unplanned growth of towns, urban master plans, morphology of indian cities, functional structure of towns, characteristics of C.B.C. residential area, and other functional areas central place theory (christaller and losch) and models of urban structure theori of urban structure (burgess, hoyt, harris & ullman, mann, white).

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Section C

Centrifugal and centripetal forces in urban geography. development of suburbs, rural, urban fringe, satellite towns, ring towns, sphere of urban influence (umland) and its delimitation control of urban problems: environmental, urban poverty, slums, transportation, housing, crime, principles of town planning, preparation of a master plan, study of master plan of Jaipur city, principles of regional planning.

Recommended Readings:

- A.E. Smailes: The Geography of Towns. Hutchinson, University Library, London.
Abercrombie: Town and Country-Planning. Oxford University Press, London.
बंसल, एस.सी. 2010: नगरीय भूगोल, मीनाक्षी प्रकाशन, मेरठ।
Carter, Harold 1995: The Study of Urban Geography, Arnold (Publisher) Pvt. Ltd., London.
Dickinson, R.E.: City Region and Regionalism. Routledge and Kegan Paul London.
Herrold M. Mayer: Readings in Urban Geography, Central Book Depot, Allahabad.
N.V. Sovani: Urbanization and Urban India. Asia publishing House, Bombay.
P.C. Malhotra: Survey of Bhopal City and Bairaigarh (Asia publishing Bombay)
R.L. Singh: Bangalore as Urban Survey. National Geographical Society of India, B.H.U., Varansi.
Shah Manzoor Alam: Hyderabad and Secuderabad, Twin City Studies in Urban Geography. Allied Published, Delhi.
Singh, R.L.: Banars A study in Urban Geography. Student Friends, Allahabad.
Taylor G.: Urban Geography. Muthuen and Co., London.
V.K.R.V. Rao: Socio-Economic survey of Greater Delhi. Asia Publishing Bombay.
V.L.S. Prakash Rao: T Gowns of Mysore state. Statistical Publishing House, Calcutta.

Paper code: Geo E01: Political Geography

Section A

Definition, scope nature and importance of political geography: its relation with other social sciences, history and development of political geography: pre-modern phase (before 19th Century), geopolitics and German school of thought. Global strategic views: views of Mackinder, Spykman, Meining, Hooson, De Seversky, World's geostrategic regions, types of approaches, trends of politics in the world modern phase (19th to 2000 AD).

Section B

State and nation, idea of state: elements of the state: territory, population, organization and power, concept of nation, nationalism, heart of the state: core areas, the focus: capital city, frontiers and boundaries: definitions, classification and concepts, boundaries as economic barriers, Indias, borders and their problems, buffer zones, the concept of territorial sea and maritime boundaries, landlocked states: problem of access, growth of nations and

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disintegration of empires: unitary and federal states, the dying colonialism and resurgent nationalism, supernationalism: form state of blocks.

Section C

Extending dimensions of political geography, politics and transportation, geography of foreign aid & economic development, emergence of third world block, politico-geographical study of india, political geography of administration, politico-geographical implications of space research. function, methods and trends of electrol geography: voter's participation before voting predection, conceptual model of the voting decision, operationalisation of conceptual decision, garrymending in relation to India.

Recommended Readings:

- Adhikari, S. 2004: Political Geography. Rawat Publications, Jaipur.
Alexander I.M. 1966: World Political Patterns. John Murray and Co., London.
De Blij, H.J. and Glassner, Martin 1968: Systematic Political Geography. John Willey, New York.
Deshpande, C.D. 1992: India- A Regional Interpretation. Northern Book Centre, New Delhi.
Dikshit, R.D. 1982: Political Geography: A Contemporary Perspective. Tata McGraw-Hill Publishing Co., New Delhi.
East, W.G. and Spate, O.H.K. 1966: The Changing Map of Asia. Methuen, London.
Fellmann, J., Getis, A. and Getis, J. 1995: Human Geography: Landscapes of Human Settlements. WCB Brown Publishers, Dubuque.
Guha, J.L. and Chattoraj, P.R.: A New Approach to Economic Geography. World Press, Kolkatta.
Pounds, N.J.G. 1972: Political Geography. McGraw Hill, New York.
Short, J.R. 1982: Political Geography of the 20th Centaury: A Global Analysis. New York.
सक्सेना, एच.एम.: राजनैतिक भूगोल के सिद्धान्त। रस्तोगी पब्लिकेशन्स।
Taylor, P. 1985: Political Geography. Longman, London.

Paper code: Geo E02: Advanced Geomorphology

Section A

Fundamental concepts of geomorphology; schools in geomorphology, recent trends in geomorphology, earth movements: epirogenic, orogenetic types and classification of weathering, mass movement erosion. plate tetonics, seismicity, vulcanicity, orogenic structures with reference to the evolution of Himalaya, various models of landscape evolution (Davis, Penck, King, Hacks, Morisawa, Schumn, polycyclic evolution of landscapes.

Section B

Geomorphic processes, dynamics of fluvial, glacial, Aeolian, marine, and karst processes and resultant landforms, polycyclic landforms, various models of slope development (Wood,

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Davis, Penck, King, R. Savigear, Strahler, Fisher-Lehmann, Young), concept of morphogenetic region, Systems in geomorphology; Models in geomorphology, erosion surfaces-techniques of identification and correlation.

Section C

Terrain evaluation, geomorphic mapping. geomorphic hazards and mitigation measures; Digital Elevation Model (DEM) and Triangulated Irregular Network (TIN) unit, land capability and land suitability classification, hydro-geomorphology, urban geomorphology, environmental geomorphology, geomorphic hazards.

Recommended Readings:

- Ahmed, E. 1985: Geomorphology. Kalyani Publishers, New Delhi.
 Bloom, A. L. 1998/2001: Geomorphology. Prentice Hall of India, New Delhi.
 Chorley, R.J., Schumm S A and Sugden D E. 1984: Geomorphology. Methuen and Company Ltd., London.
 Cooke, R.U. and Doornkamp, J.C. 1974: Geomorphology in Environmental Management-A introduction. Clarendon Press, Oxford.
 Chorley, R.J. 1972: Spatial Analysis in Geomorphology. Methuen, London.
 Dayal, P. 1994: A Text Book of Geomorphology. Kalyani Publishers, New Delhi.
 Dury, G.H. 1959: The Face of the Earth. Penguin Harmondsworth.
 Fairbridge, R.W. 1986: Encyclopedia of Geomorphology. Reinholdts, New York.
 Goudie, A. 1993: The Nature of the Environment. Oxford & Blackwell, London.
 Garner, H.F. 1974: The origin of landscape-A Synthesis of Geomorphology. Oxford University Press, London.
 Jog, S. R. (ed.) 1995: Indian Geomorphology (2 vols.). Rawat Publications, Jaipur.
 Kale, V. and Gupta, A. 2001: Introduction to Geomorphology. Orient Longman, Hyderabad.
 Mitchell, C.W. 1973: Terrain Evaluation. Longman, London.
 Ollier, C.D. 1979: Weathering Longman. London.
 Pitty, A.F. 1971: Introduction to Geomorphology. Methuen, London.
 Singh, S. 2004: Geomorphology. Prayag Pustak Bhawan, Allahabad.
 Stoddart, D.R. (ed) 1996: Process and Form in Geomorphology. Routledge, New York.
 Sparks, B.W. 1986: Geomorphology. Longmans, London.
 Thornbury, W.D. 2005: Principles of Geomorphology. John Wiley and Sons, New York.
 Thornbury, W.D. 1960: Principles of Geomorphology, John Wiley, New York.

Paper code: Geo 311: Geography Practicals

Minimum Marks: 36	Bifurcation of marks	Max. Marks: 100
Written Test on Lab. Work (4 Questions)	48	4 hours
Record Work & Viva-Voce.	20+12	
Internal Assessment	20	
Total	100	

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N.B. In written test there shall be 2 questions from each section. Candidates have to answer 4 questions selecting at least one question from each section. All questions carry equal marks. Examination be conducted in batches of not more than 20 candidates in any case. 12 hours of teaching practicals be provided for a batch of 20 students per week.

SYLLABUS

Section A

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

Section B

Interpretation of topographical maps: a brief history of topographical maps of the world with special reference to India and their interpretation, detailed study of such topographical sheets which depict typical geomorphological and cultural landscapes, scanning and digitization of maps (Raster- Vector Image).

Section C

Calculation of scale, number of runs/strips and aerial photographs in a strip, knowledge of stereoscopic vision and use of stereoscope, Air photo interpretation and exercise on the determination of height on Air photo using Parallax Bar.

Recommended Readings:

- Robinson, A.H. et al. 2004: Elements of Cartography. John Wiley & Sons, Inc., New York.
Singh, R.L. and Singh RPB 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.
Rampal, K.K. 1993: Mapping and Conflation: Methods and Techniques. Concept Publishing Company, New Delhi.
Monkhouse, F.J. and Wilkinson, H.R. 1971: Maps and Diagrams. Methuem, London.
Sharma, J.P. 2011: Practical Geography. Rastogi Publications, Meerut.
Tiwari, R.C. 2009: Practical Geography. Prayag Pustak Bhawan, Allahabad.

Paper code: Geo 401: Geography of Rajasthan

Section-A

Physical aspects of rajasthan: geological structure, relief, climate, drainage, natural vegetation, environmental pollution-causes and types, drought, desertification, soils, soil erosion and conservation ,availability, problems and conservation of water resources.

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Section B

Economics aspects: irrigation, sources, types, irrigation intensity, crop wise irrigation, quality of irrigation water, problems, irrigation projects: detailed study of Indira Gandhi canal project, Chambal valley project, Mahi bajaj sagar project on physical and socio-economic aspects,

Agriculture: development under five year plans, problems of agriculture development. general land use: live-stock and dairy development, minerals, industries: textile, sugar, cement, marble and granite, fertilizer, zinc and copper smelting, power & energy: hydro-electricity, coal, petroleum, solar energy, bio-energy. transport & trade, development of tourism. desert development programme, tribal areas development programme, Aravali hill development programme.

Section C

Cultural and development aspects: population-number, growth, distribution and density, rural and urban, male and female population, literacy status, occupational structure, schedule castes and schedule tribes, population problems, study of Bhil, Meena and Garasia, settlement: types, building materials and house types and factors affecting settlements in Rajasthan.

Recommended Readings :

- Bhalla L.R. 1996-97: Geography of Rajasthan. Kuldeep Publications, Ajmer.
Dhaisariya, S.S. 1988: Desert Spread and Desertification. Environmentals, Jaipur.
Govt. of Rajasthan Techno-Economics Survey Of Rajasthan. Govt. of Rajasthan Publication.
Gujar, R.K 1992: Geography of Indira Gandhi Canal. Rajasthan Hindi Granth Academy.
Jat, B.C. 2014, Rajasthan Manchitravali, RBD Publication, Jaipur.
Lodha, R. & Maheshwari, D. 2001: Geography of Rajasthan. Shahitya Bhawan Publication, Hospital Road, Agra.
Maheswari, D. 2008: Geography of Rajasthan. Shahitya Bhawan Publication, Hospital Road, Agra.
Mishra, V.C. 1967: Geography of Rajasthan. National book trust of India, New Delhi.
Sharma H.S. and M.L. Sharma 2014: Geography of Rajasthan. Panchcil Puplicher, Jaipur.
Singh, Atar 1992: Flood Prone Areas of India. Aviskar Publishers Jaipur.
Sharma B.L. 1984: Agricultural Typology of Rajasthan.
Sing, R.L. 1977: Regional Geography of India.

Paper code: Geo F01: Applied Geography

Section A

Meaning, nature and scope, principles and approaches, application of geographical methods of survey and geospatial tools in analysis of resource base, its appraisal, micro, regional planning and demographic attributes.

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Section B

Delineation of resource regions, regional divisions according to variations in levels of socio-economic development, special purpose regions-river valley regions, national capital region, problem regions- hilly regions, tribal regions, regions of drought and floods.

Section C

Planning for a region's development, state capital region (Jaipur), indicators of development and their data sources, measuring levels of regional development and disparities-case study of Rajasthan, land use policy implications in India with special reference to India, review of policies related to decentralized planning formulation at national, state, district, block and grass root level.

Recommended Readings:

- Bhat, L.S. et al 1976: Micro-Level planning: A Case Study of Karnal Area, Haryana, K.B. Publications, New Delhi.
- Blair, J. P. and Carroll, M. C. 2009: Local Economic Development – Analysis, Practices, and Globalization. SECOND EDITION, SAGE PUBLICATIONS, INC.
- Chandna, R. C. 2008: Regional Planning and Development. Kalyani Publishers, Ludhina.
- Dutta, A.K., Mishra, H.N. and Chatterjee, M. 2008 (eds.): Explorations in Applied Geography. Printice-Hall of India Private Limited, New Delhi.
- Friedmann, J. 1992: Empowerment: The Politics of Alternative Development. Blackwell, Oxford.
- Gosal, G.S. and Krishan, G. 1984: Regional Disparities in Levels of Socio-Economic Development in Punjab. Vishal Publications, Kurukshetra.
- Gupta, P., and Sdasyuk, G. 1968: Economic Regionalization of India: Problems and Prospects. Census of India, New Delhi.
- Johnson, E.A.J. 1970: The Origanisation of Space in Developing Countries. Harvard University Press, Cambridge.
- Kundu, A. and Raza, M. 1982: Indian Economy, The Regional Dimension. Spectrum Publishers, New Delhi.
- Misra, R. P. (ed.) 1992: Regional Planning: Concepts, Techniques, Policies and Case Studies. Concept Publishing Company., New Delhi.
- Nangia, S. 1976: Delhi Metropolitan Region. Rajesh Publication, Delhi.
- Pacione, M. 2009 (ed.): Applied Geography: Principles and Practice. Routledge, London.
- Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Association., Kolkata.
- Raza, M. 1988: Contributions to Indian Geography. Volume X, Regional Development, Heritage Publishers, New Delhi.
- श्रीवास्तव, वी.के. 1997: प्रादेशिक नियोजन और सन्तुलित विकास। वसुन्धरा प्रकाशन, गोरखपुर।
- Sundaram, K. V. 2004: The Trodden Path: Essays on Regional and Micro Level Planning. Anaunya Publications., New Delhi.

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Section A

Conceptual and theoretical framework of regional planning, principles and determination of regional planning, multi-level planning and inter-regional stresses, regional hierarchy, role of geography in preparation of a regional plan, significance of the term integration (political, economic and spatial) for regional planning.

Section B

The process of regional development: indicators of development; levels of regional development and disparities, strategies for development. regional planning in India: concept and indicators of development; regional imbalances; type of regions and methods of regionalization, growth pole and growth centers, environmental issues in regional planning for sustainable development, demarcation and planning regions of India.

Section C

Role of remote sensing, global positioning systems (GPS) and geographic information system (GIS) in modern regional planning, case studies from selected countries: regional planning in USA (TVA), regional planning in India (DVC and NCR) regional planning in Netherlands, Principles of town and country planning.

Recommended Readings:

- Dube K. N. (ed) 1990: Planning and Development in India. Asia Publishing House, New Delhi.
- Govt. of India 1986: Regional Plan 2001 - National Capital Region. NCRPB, Ministry of Urban Development, New Delhi.
- Bhat, L. S. 1973: Regional Planning in India. Statistical Publishing Society, Kolkata.
- Blair, J. P. and Carroll, M. C. 2009: Local Economic Development - Analysis, Practices, and Globalization. SECOND EDITION, SAGE PUBLICATIONS, INC.
- Chandna, R. C. 2008: Regional Planning and Development. Kalyani Publishers, Ludhina.
- Journal of Geography and Regional Planning (JGRP) is an open access.
- Hufschmidt, M.M. 1969: Regional Planning: Challenges and Prospectus. Praeger and Company, New York.
- Mishra, R.P. 1978: Regional Planning and National Development. Vikas Publications, New Delhi.
- Mishra R.P. (ed) 1992: Regional Planning: Concepts, Techniques, Policies and Case Studies. Concept Publications, New Delhi.
- श्रीवास्तव, शर्मा एवं चौहान 2008: प्रादेशिक नियोजन और संतुलित विकास। वसुन्धरा प्रकाशन, गोरखपुर।
- www.academia.edu/Papers/in/Economic_Geography
- www.jstor.org/stable/143805

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Section A

Definition and scope of water resource geography, inventory and distribution of world's water resources, water resources of India, groundwater, hydrological cycle, demand and use of water, irrigation methods.

Section B

Salinity, alkalinity, overexploitation of groundwater and arsenic problem. water pollution, river water pollution, demand and water supply in industries, flood management, drought and dry land farming.

Section C

Water conservation/participatory approach, traditional methods of water conservation in India and Rajasthan, integrated basin planning, watershed management, river water disputes, water management by remote sensing technology, environmental disasters and water crisis.

Recommended Readings:

- Agarwal, Anil 2001: Drouht: Try Capturing the Rain, Briefing paper, Down to Earth. Centre for Science and Environment, New Delhi.
- Agarwal, Anil and Narain Sunita, 1998, (eds.): Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting System. Centre for Science and Environment, New Delhi.
- Black, Magie, 2005: The No-Nonsense Guide to Water. Rawat Publications, Jaipur.
- Black, Magie, 2004: A Matter of Life and Health. OUP, New Delhi.
- Barlow and Clark Tony, 2002: Blue Gold: The Battle Against Corporate Theft of the World's Water. Earthscan, London
- भारती, राधाकांत, 1998: भारत की नदियाँ। नेशनल बुक ट्रस्ट ऑफ इण्डिया, नई दिल्ली।
- Climate Change, 2001: International Pannel on climate Change. Cambridge University Press.
- Clarke, Robin 1991: Water: The International Crisis. Earthscan, London.
- Dams and Development 2000: Report of the World Commission on Dams. November.
- Das, P.K. 1996: The Monsoon. National book Trust, India, New Delhi.
- Dhuruv Narain, V.V., Shastry, G. and Patnaik U.S. 1990: Watershed Management. ICAR, New Delhi.
- Dakshinamurti, C., Michael, A.M. and Mohan, S., 1972: Water Resources of India and their Utilization in Agriculture. IARI Monograph No. 3, New Delhi.
- गुर्जर, आर.के. एवं जाट, बी.सी. 2012: जल संसाधन भूगोल। रावत पब्लिकेशन, जयपुर।
- Gurjar R.K., Jat B.C., 2011: Geography of Water Resource. Rawat Publication.
- गुर्जर, आर.के. एवं जाट, बी.सी., 2001: जल प्रबंध विज्ञान। पोइंटर पब्लिशर्स, जयपुर।
- Gurjar, R.K. 1990: Geographical Perspectives on Irrigation. Rawat Publications, Jaipur.
- Goudie, A., 1997: The Nature of the Environment, Blackwell, London.
- जाट, बी.सी. 2007: जलग्रहण प्रबन्धन पोइंटर पब्लिशर्स। जयपुर।
- Jat. B.C., 1999: Watershed Prioritization and Rainfall Runoff Modelling Using Remote Sensing and GIS Approach. IIRS, Dehradun.

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31

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- Kirmerslay, David, 1988: Troubled Water: River, Politics and Pollution, Hillen Shipman, London.
- Mahnot, S.C. and Singh, P.C., 1993: Soil and Water Conservation. Intercooperation Coordination Office, Jaipur.
- Narain, Sunita, 2004: Down to Earth, February 29, 2004.
- Park, C., 1997: The Environment: Principles and Application. Routledge, London .
- Rao, K.L., 1975: India's Water Wealth. Orient Longman, New Delhi.
- Singh, Gopal, 2004: A Geography of India. Atma Ram & Sons, New Delhi.
- Shiva, Vandana, 2002: Water Wars: Privatization, Pollution and Profit. Pluto Prees, London.
- Sata Water Resources Plan, 1998: Volume, I, II, III : Tahal consulting Engineer. Ltd. Tel Aviv, Israel.
- Sidhartha, K., 1990: Flood in India: A Model for Generating Factors. Cender Patna.
- Sidhartha, K., 1989: Drought in India: Spatio Temporal Variations. H.T. Patna.
- Singh, R.L., 1971: India: A Regional Geography. NAGI, New Delhi.
- World, C., 1997: Reflected in Water: A Crisis of Social Responsibility. Cassed London.

Paper code: Geo G02: Agricultural Geography (Elements & Applied)

Section A

Agriculture geography: nature and development, origin dispersal and development of agriculture, field survey and mapping in agriculture geography, geographical determinants of agricultural land use: relief and climate, soils, human determinants of agriculture.

Section B

Models in agricultural geography, diffusion of agriculture innovations, land use and land capability classification, agricultural efficiency productivity, agricultural evaluation, techniques: crop ranking intensity, crop diversification and crop combination regions.

Section C

Agricultural regionalization, agricultural typology, green revolution, agricultural scenario in India, agro-climatic zones: India and Rajasthan, agricultural policy in india.

Recommended Readings:

- Ali Mohammad 1981: Situation of Agricultural Geography. Rajesh Publication, New Delhi.
- Ali Mohammad : Situation of Agricultural, Food and Nutrition in Rural India. Concept Publishing Co., Delhi.
- Ali Mohammad : Synamics of agriculture Development in India. Concept Publication Co., Delhi.
- ICAR (1956-71): Soil and Water Conservation Research.
- ICAR : Soil Conservation of India.
- Jat, B.C. 2013: Arthik Bhugol. Panchsheel Prakashan, Jaipur.
- Kostowickie, Z. : Agricultural Typology. Polish Academy, Warsaw.
- Symon Lesin 1967: Agricultural Geography. G. Gell and Sons Ltd., London.
- Singh, R.L. (Ed.) : Applied Geography. BHU Press, Varanasi.

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Singh P.P. Govind Raju, K.C. and others : new Seeds Adoption and Yield, Sterling Publication Pvt. Ltd., New Delhi.

Singh, Jasbir : Agricultural Atlas of India. vishal Publishers.

Singh, Jasbir : Agricultural Geography of Haryana.

Noor Mohammad : Agricultural Land use in India. Inter-India Public, Delhi.

Paper code: Geo H01: Industrial Geography

Section A

Evolution of industrialization (India and World), location factors of industries, theories: least cost school, transport cost school, market areas school, marginal location school and behavioural school, new trends in industrial geography, concept of entrepreneur, significance of enterprise and firm, significance of cost and price.

Section B

Formation and delineation of industrial regions, industrial complexes, industrial regionalization, industrial regions in India: Hooghly side industrial regions, Damodar valley industrial regions, Delhi-Mumbai industrial corridor, industrial policies of India, liberalization, privatization and globalization (special reference of India); special economic zones, industrial regions of World: Ruhr basin industrial region, Great lakes industrial region.

Section C

Industries: cotton, jute, textile, iron and steel, aluminium, fertilizer, paper and pulp, copper, chemical and pharmaceutical, ship building, automobile, cottage and agro-based industries, tourism industry, concept of optimum location, geographical inertia, multi-location industries, market oriented industries, foot loose industries, raw material oriented industries, manufacturing industries, processing industries.

Recommended Readings:

Lloyd and Dicken: Location in Space: A theoretical Approach to Economic Geography.

M.C. Cart and Lindberg Hodder and Lee Economic Geography: A preface to Economic Geography.

Smith, D.E. Cox K.P. Man: Industrial Location. A Economic, Geographical Analysis Location and Behavior-An Introduction to Human Geography.

Riley, R.C. 1973: Industrial Geography. Chalton and Windus, London.

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Alexanderson Gnnar: Geography of Manufacturing. Englewood Cliffs, N.J..

Alexander, J.W. : Economic Geography. Prentice Hall, New York.

Jat, B.C. 2013: Arthik Bhugol. Panchsheel Prakashan, Jaipur.

Bengston, N.A.: Fundamentals of Economic Geography. Prentice Hall, New York.

Besoh, H.: A Geography of world Economy, D. Van Nostrand.

Britton, John. N.H.: Regional Analysis and Economic Geography. G. Bell and Sons, London.

Estall, R.C. and Buchanan, R.O.: Industrial Activity and Economic Geography. Hutchinson and Co., London.

Ghose, B.C.: Industrial London.

Hoover, E.M.: The Location of Economic Activity. McGraw Hill Books Co. New York.

Saxena, Economic Geography,

Paper Geo H02: Biogeography

Section A

Definition, scope and significance nature, approaches, history, recent trends and developments, plant and animal ecology forms and functions of eco system, ecosystem with special reference to mountain and desert factors influencing distribution of flora, taxounomical and ecological classification of plant, ecological succession, ecotone and community, patterns of distribution of world vegetation.

Section B

Nature and classification of animals, dispersal and migration of animals: type and causes – case studies, geographical isolation. the zoo-geographical region, biogeography of the seas: island biogeography.

Section C

Conservation and management of forest and wild life with reference to India, process of desertification, its censequences and management principals, projecting into the future: climate change: biogeographical consequences of global change: changing communities and biomes, effect of climate change on biological diversity, environmental hazards and problems of pollutions.

Recommended Readings:

Anjuneyulu, Y. 2002: Environmental Impact Assessment Methodologies. B.S. Publications, Hyderabad.

Anjuneyulu, Y. 2004: Introduction to Environmental Science. B.S. Publications, Hyderabad.

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34

Sunita

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- Beaikie, P. Cairnon, T. and Davis, I. (eds.) 2004: At Risk: Natural Hazards Peoples Vulnerability and Disasters. Routledge, London.
- Clarke, J.I. Curson, P. Kayastha, S.L. and Nag, P. (eds.) 1991: Population and Disaster. Basil Blackwell, U.S.A.
- Cox, C.B. Moore, P.D. 2010: Biogeography- An Ecological and Evolutionary Approach. Johnwiley and Sous, U.S.A.
- Huggett, R.J. 1998: Fundamental of Biogeography. Routledge, London.
- Ladle, R.J. and Whittaker, R.J. 2011: Conservation Biology. Blackwell Publications Co., U.S.A.
- Mathur, H.S. 1988: Essentials of Biogeography. Pointer Publishers, Jaipur.
- Macdonald, Geen, 2002: Biogeography: Introduction to Space-Time and Life. John Wiley, New York.
- Odum, E.P. 1975: Ecology, Rowman and Littlefield. Lanhan U.S.A.
- Robinson, H. 1982: Biogeography. Eles, Mc. Donald and Evans London.
- Singh, A.K., Kamra, V.K. and Singh, J. 1986: Forest Resource: Economy and Environment. Concept Publishing Company, New Delhi.
- सिंह, एस. 2013: जैव भूगोल। प्रयाग पुस्तक भवन, इलाहाबाद।

Paper code: Geo 411: Practical

Minimum Marks 36	Bifurcation of Marks	Max. Marks 100
Written Test (Four Hours)	32 Marks	
Record Work and Viva-Voce.	12+04	
Field Survey and Viva-Voce. 2 hours	12+04	
Camp Work and Viva-Voce.	12+04	
Internal Assessment	20	
Total	100 Marks	

N.B. In written test there shall be 2 questions from each section. Candidates have to answer 4 questions selecting at least one question from each section. All questions carry equal marks. Examination be conducted in batches of not more than 20 candidates in any case. 12 hours of teaching practicals be provided for a batch of 20 students per week.

SYLLABUS

Section A

The art of surveying, history of surveying, scope and utility, problems and classification of surveying, use of plane table survey, types of traversing, resectioning in plane table survey: two and three point problems, use of Indian pattern clinometer.

Section B

Use of dumpy level, practical contouring cross sectioning, use and application of abeny level, theodolite: its parts and their functions, use, traverse and traverse computation, independent coordinates.

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35

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Section C

Use of total station and GPS, interpretation and identification of cultural and physical features on aerial photographs, photo interpretation of land use and settlements in the field.

Camp Work: A topographical survey of about 100 hectares in a settlement for one week away from the headquarter of the institution. Survey reports of the same will be prepared with the help of computer technology (word programme & AutoCAD). The marking on the survey report will be awarded by the external examiner in consultation with the internal examiner concerned.

Recommended Reading:

B.C. Punmia 1988: Surveying and Field Work. Vol. I, Laxmi Publications, New Delhi.
Breed. C.B. and Hosmer, G.L.: The Principle of Surveying. Vol.I and II, New York.
Devis, R.E. and Foot, F.S.: Surveying theory and practice. Mc-Graw Hill Book Co., New York.
Gautam, N.C.: Urban Land use studies through Airphoto Interpretation .
Roorke Engineering College: Mannual of Surveying.
T.R.Tracy: Surveying theory and practice. John Willey and Sons, Inc., New York.
Thrilfall, H.S., A.: Text Book of surveying and Levelling. Charles Graffilin, London.
Techniques: Pink Publishing House, Mathura.

S.K. Kishor

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