

**M.A./M. Sc. GEOGRAPHY  
SEMESTER III (2020-21)**

M.A./M. Sc. Geography Semester III shall consist the following papers:

S. No.	Paper	Title	M. M.		
			Written	Inte. Asse.	Total
1.	XI	Population Geography	80	20	100
2.	X II	Settlement Geography	80	20	100
3.	XIII (A)	Remote Sensing Techniques	80	20	100
	<b>OR</b>	<b>OR</b>			
4.	XIII (B)	Biogeography and Ecosystem	80	20	100
5.	XIV	Research Methodology	80	20	100
	XV	Practical-III : Remote Sensing and Quantitative Techniques	---	---	100

1. The M.A. /M. Sc. Semester III examination in Geography shall consist of 500 marks.  
There shall be four theory papers each of 100 marks and one practical of 100 marks as follows:
 

Paper XI	:	Population Geography
Paper XII	:	Settlement Geography
Paper XIII (A)	:	Remote Sensing Techniques
<b>OR</b>		
Paper XIII (B)	:	Biogeography and Ecosystem
Paper XIV	:	Research Methodology
Paper XV	:	Practical – III: Remote Sensing and Quantitative Techniques
2. The theory papers shall be of three hours duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. (a) In the practical examination the following shall be the allotment of time and marks.
 

(i) Practical record	:	20%
(ii) Lab work (up to Four hours)	:	70%
(iii) Viva on i. & ii. Above	:	10%

 (b) The external and internal examiners shall jointly submit marks.  
 (c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

## **SEMESTER – III (2020-21)**

### **PAPER - XI**

#### **POPULATION GEOGRAPHY**

##### **Objective:**

- To introduce the students to the complex dimensions of population.
- To understand and evaluate the association between demographic and socio-economic attributes of population and the resultant levels of social well-being and economic development.
- To understand the role and relationship between population and environment in an ever changing space – time continuum.

##### **Course contents:**

- UNIT – I Definition and scope of Population Geography. Relation of Population Geography with other subjects of social sciences. Historical development of Population Geography in western countries and in India. Sources of population data, Census and its history.
- UNIT – II Distribution of Population: The concept of population density and its types. Factors affecting population distribution. Distribution & Density of population in the world with special reference to Europe, Asia and India. Growth of population: Measure of decennial and annual rates of population growth, prehistoric and modern trends of population growth in the world. Regional aspect of population growth in India. Population theories. Demographic transition.
- UNIT – III Population composition in terms of age and sex, rural, urban residence, educational status and occupational structure. Significance of these elements in population analysis, factors affecting their composition in population, broad world patterns and detailed spatial patterns in India. Fertility and Mortality of population: Significance and factor. Indices and rates. World pattern and pattern in India. Human Development Index and its Components.
- UNIT – IV Migration of population: Causes, characteristics and types. Methods of estimating value of internal migration. Important international migrations of the world, internal migration in India: Population and Resources: Population-Resource regions. Population Regions: Concept and methods, population regions of India, population policies of India.

## Suggested Readings:

1. Bilasborruw, Richard Ii and Daniel Hogan, Population and Deforestation in the Humid Tropics, International Union for the Scientific Study of Population, Belgium 1999.
2. Boglia, D.J. Principles in Demography, John Wiley, New York 1969.
3. Bose, Ashish et al. : Population in India's Development (1947-2000); Vikas Publishing House, New Delhi, 1974.
4. Census of India, India : A State Profile, 1991.
5. Chandna, R. C. Geography of Population, Concept, Determinants and Patterns. Kalyani Publishers, New York, 2000.
6. Clarke, John I. Population Geography, Pergamon Press, Oxford, 1973.
7. Crook, Nigel Principles of Population and Development Pergamon Press. New York 1997.
8. Daugherty, Helen Gin, Kenneth C.W. Kammeyir, An Introduction to Population (Second Edition), The Guilford Press, New York, London, 1998.
9. Garnier, B.J. Geography of population Longman, London. 1970.
10. Koclihar, Ramesh, The Veclic People : Their History and Geography Orient Longman Ltd., New Delhi, 2000.
11. Mamoria, C.B. India's Population Problem, Kitab Mahal New Delhi, 1981.
12. Mjitra, Ashok India's Population : Aspects of Quality and (control Vol I & II). Abhiman Publications, New Delhi, 1978.
13. Premi, M.K. India's Population : Heading Towards a Billion, B.R., Publishing Corporation 1991.
14. Srinivasan, K. and M. Vlassoff, Population Development Nexus in India :Challenges for the New Millennium Lata Me Graw-Hill, New Delhi, 2001.
15. Srinivasan K. Basic Demographic Techniques and Applications Sage, Publications, New Delhi, 1998.
16. Sundaaram K. V. and Sudesh Nangia., (ed.) Population Geography, Henlage Publications, Delhi, 1986.
17. UNDP : Human Development Report, Oxford University Press, Oxford, 2000.
18. United Nations, Methods for Projections of urban and Rural Population No. VIII, New York, 1974.
19. Woods R.. Population Analysis' in Geography Longman, London, 1979.
20. Zieisky Wilbur, A Prologue to Population Geography, Prentice Hall, 1966.
21. c?ksy] vuqlqb;k % vuqlwfr tkfr;ksa ,oa vuqlwfr tutkfr;ksa esa iztuurk izfr:lk % NRrhx<+ jkT; ds jk;iqj laHkkx ds fo"ks'k lanHkZ esa^] ia-jfo"ka dj "kqDy fo"fo[ky;] jk;iqj] 2002-
22. c?ksy] vuqlqb;k % f"kk"q eR;ZRkk % fla?kbZ ifCy"klZ ,.M fMLV^hC;wVj] jk;iqj] 2004-
- 23- "kekZ] ljk % vkS|ksfxd uxjksa esa tula[k; vkizokl ¼fHkykbZ ,oa dksjck uxj ds fo"ks'k lanHkZ esa½] ia- jfo"ka dj "kqDy fo"fo[ky;] jk;iqj] 2002-

- 24- “kekZ] ljdk % NRrh|x<+ csflu esa xzkeh.k f”k”kq eR;Zrk izfr:lk] ia- jfo”kadj “kqDy fo-fo-] jk;iqj] 2007
- 25- iaMk] ch-ih- % tula[;k Hkwksy] e;/izns”k fgUnh % xzaFk vdkneh] Hkksiky] 2007
- 26- vks>k] j?kqukFk % tula[;k Hkwksy] izfrHkk izdk”ku] dkuiqj] 1992
- 27- ghjkyky % tula[;k Hkwksy] olqU/kjk izdk”ku] xksj[kiqj] 1996
- 28- pUnuk] vkj-lh- % tula[;k Hkwksy] vkj-ds- cqDI] ubZ fnYyh] 2009
- 29- f=ikBh] jkenso % tukafddh vkSj tula[;k v/;u] vkj-ds- cqDI] ubZ fnYyh] 2008
- 30- “kekZ] ljdk % uxjh; f”k”kq eR;Zrk- gksjhtu cqDI] ubZ fnYyh] 2015-
- 31- ekS;Z] ,l-Mh- % tula[;k Hkwksy] “kkjnk iqLrd Hkou] bykgkckn
- 32- f=ikBh] jkenso % tula[;k Hkxksy] olqU/kjk izdk”ku] xksj[kiqj] 2006

### Outcomes:

Classroom discussion may focus on population and development linkage. Students may also be encouraged to consider various quantitative attributes of population from census 2001, India. Discussion may be arranged on the implication of population policies announced from time to time.

On completion of the course, students are able to:

1. Understand the nature, scope and significance of population geography and fundamental concepts in subject.
2. To review the demographic pattern of national and international level.
3. To understand the composition in terms of age and sex, rural, urban residence, educational status and occupational structure of population.
4. To examine the Fertility and Mortality of population.
5. Understand the concept and methods, population regions of India, population policies of India.

**SEMESTER III (2020-21)**  
**PAPER - XII**  
**SETTLEMENT GEOGRAPHY**

**Objective:**

- To familiarize the students with the conceptual theoretical and empirical development in settlement studies in geography, and the current settlement scenario in India.
- To sensitize the students with the problems of population growth and environmental degradation in human settlement.
- To provide the students an idea about international and national concern on settlement issues.

**Course contents:**

- UNIT – I      Meaning, Objectives and Scope of Settlement Geography; Evolution, Distribution, Types and Patterns of Rural Settlements; Rural House Types; Rural Service Centers. Definition, objective and scope of urban geography. General Name of city structure.
- UNIT – II      Evolution and growth of urban settlements; The Geographical setting of Urban Centers: Site, Situation and Location. Rank-size relationship; Cities as Central Places, Central Place Theory, Growth Pole Theory. City-Country Relationship : Umland, Rural-Urban Fringe.
- UNIT – III      Internal structure morphology and land use. theory of Urban structure the Concentric zone Theory, The Sector Theory, the Multiple Nuclei Theory. Commercial Structure of Cities; The Central Business District (CBD). Centrifugal and Centripetal ;forces in Geography, Economic Base of Towns; Basic, Non-basic concept.
- UNIT – IV      Urban f\Functions; Functional Classification of Towns: Webb, Harris, and Nelson Contemporary Urban Planning; Types and elements, Urban problems; Blight and Renuwal, Landuse Planning, Urban and Metropolitan Planning in India

**Suggested Readings:**

1. Alam, Shah Manzoor : Hyderabad Secundrabad (Twin Cities) : A. Study in Urban Geography)
2. Alam, S.M. & V.V. Pokshishevesky : Urbanization in Developing Countries.
3. Berry Brain J. L. : Geographic Prospective on Urban .Systems.
4. Bresse, C. & D.F. Whiteman : An approach to Urban Planning
5. Dickinson, R.E. : City, Religion and Regionalism.
6. Gallion and Fisher : The Urban Pattern.
7. Grifitth, , J.P : A study of Urban Constructions in India.
8. Gibbs : Urban Research Methods.
9. Mayor, H.M. & C.F. Kohn : Readings in Urban Geography.
10. Morgan, F.W. : Ports and Harbours.
- 11 Mumford L. : Culture of cities.
12. Robson, W.A. : Great cities of world.
13. Robson, B.T. : Urban Growth : An approach, Methuen, London.
14. Carter, Harold : Study of Urban Geography, London, Edward Arnold, 1979.
15. Singh R.L. & K.N. Singh : Readings in Rural Settlement Geography, NGSi Varanasi, 1975.
16. flag] mtkfxj % uxjh; Hkwksy] mRrjizns”k fgUnh xzUFk vdkneh] y[kuÅ] 1974
- 17- flag] vks-ih-] uxjh; Hkwksy] rkjk ifCyds”ku] okjk.klh] 1979
- 18- frokjh] vkj-lh-] vf/kokl Hkwksy] vkj-ds- cqDI] ubZ fnYyh] 2009
- 19- ;kno] jkelqjs”k] vf/kokl Hkwksy
- 20- dj.k ,oa ;kno] vf/kokl Hkwksy] fdrkc ?kj] dkuiqj] 2002
- 21- ekS;kZ] ,l-Mh- vf/kokl Hkwksy] “kkjnk iqLrd Hkou] bykgkckn] 2009
- 22- f=ikBh, vkj-Mh- : tula[;k Hkwksy,] olqU/kjk izdk'ku] nkmniqj,] xksj[kiqj] 2011
- 23- oekZ] y{ehukjk;.k % vf/kokl Hkwksy] jktLFkku fgUnh xazFk vdkneh] t;iqj] 2008

**Outcomes:**

1. The students should be trained in the interpretation of settlement pattern from the topographical sheets.
2. They should be encourage to use census and allied data sources to understand hierarchy/ centrally/ functional organization of settlements in space.
3. The students should be taken for the field visits to identify the exact from of relationship between population growths. Changes in morphological structure and environmental degradation and the settlement and should be encourage to write field report based on their observation.
4. Understand the Nature and Scope of Settlement Geography and their evolution, significance and approaches for the study.

5. Understand the settlement types, pattern and nature and process of urban settlement And some basic concept related to settlement geography.

**SEMESTER – III (2020-21)**  
**PAPER – XIII (A)**  
**REMOTE SENSING TECHNIQUES**

**Objective:**

- To introduce to the students the basic principles of remote sensing.
- To introduce the method of visual and digital interpretation of satellite imageries.
- To outline the application value of remote sensing.

**Course contents:**

- UNIT – I      Historical development of remote sensing as a technology - Relevance of remote sensing in Geography - Concepts and basics: Energy source, energy and radiation principles, energy interactions in the atmosphere and earth surface features, remote sensing systems: platform sensors and radiation records. Microwave sensing interpretation of SLAR imageries, thermal imageries. Data Products.
- UNIT – II      Remote Sensing Satellite: platforms LANDSAT, SPOT, NOAA, RADARSAT, IRS, INSAT: principles and geometry of scanners and CCD arrays, orbital characteristics and data products - MSS, TM, LISS I & II, SPOTPLA & MLA, SLAR. Recent trends in Satellite & Sensor System (World & India).
- UNIT – III      Image Processing: Types of imagery, techniques of visual interpretation, ground verification transfer of interpreted thematic information to base maps-digital processing: rectification and restoration, image enhancement - contrast manipulation, Classification: Supervised and Unsupervised, post-classification analysis and accuracy assessment. Selection of appropriate data for different applications.

UNIT – IV Applications : Air photo and image interpretations : mapping land use and land cover, land evaluation, urban land use, landform and its processes, weather studies and studies of water resources : integration of Remote Sensing and GIS. Remote sensing and hazard management, remote sensing and environmental management.

**Suggested Readings:**

1. American Society of Photogrammetry: Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.
3. Compbell J.: Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J.: Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Luder D., Aerial Photography Interpretation: Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P. (eds.): Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
9. Thomas M. Lolllesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
10. Aronoff S. Geographic Information Systems : A. Management Perspective, Publication Offiawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washington, 1991.
14. Mark S. Monmonier. Computer - assisted Cartography, Prentice-Hall, Englewood Cliff, Jersey, 1982.
15. Peuquet D. .1. and D.F.- Marble, Introductory Reading in Geographic. Information System Taylor & Francis, Washington, 1990.
16. Star J. and J. Estes, Geographic Information Systems : An Introduction, Prentice Englewood Cliff, New Jersey, 1994.
17. pkSfu;ky] nsoh nRr % lqnrwj laosnu ,oa HkkSxksfyd lwpuk iz.kkyh] “kkjnk iqLrd Hkou] bykgkckn

**Outcomes:**

- Students may be taken to any nearby remote sensing organization to observe different equipments, techniques, and products.
- Students may be asked to look into weather satellite photographs being published in the daily news papers and to prepare some quick report of weather.
- Students may be asked to visit any nearby ground area with its imagery and to compare the ground reality and the corresponding reality in the imagery.

On completion of the course, students are able to:

1. Understand the modern techniques in geography under this course such as remote sensing and aerial photography.



2. Examining the history, basic theories of EMR, and other concepts.
3. Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera.
4. Review on development of Indian remote sensing and functions of IRS.
5. To understand the types of remote sensing, and types of platforms in remote sensing.
6. To get an knowledge about satellite sensor and types of sensors, and their functions and Characteristics
7. Understand the data product, types of data product and its applications and uses in remote Sensing.

## **PAPER – XIII (B) (2020-21)**

### **BIOGEOGRAPHY AND ECOSYSTEM**

#### **Objective:**

To introduce the student the concept of biology and its, interpretation, information and their application; interaction between living organisms with climate and physical environment, with special reference to India.

The basic objective the course are to appraise the students with the interrelationship between man, the environment within which he lives and his linkage with other organisms. Such linkages from ecosystem, which varies in different biomes. The important of course biodiversity to maintain ecological balance has also been emphasis in the course. Examples of the some man induced ecological change have been highlight and restoration measures suggested.

#### **Course contents:**

- UNIT – I      Definition and scope of Biogeography Environment, Habitat and Plant-animal association, Biome Types.
- UNIT – II      Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed land forms. Zoogeography and its Environmental Relationship. Pale botanical and Palaeo climatological records of environmental change.
- UNIT – III      Ecosystems: concept and components, Ecosystem-form and function: tropic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, food chains and food webs. Major terrestrial ecosystems of the world: agriculture, forests, grassland and desert. Population growth and environment.

UNIT – IV Biodiversity and its Conservation. Preservation and conservation of the ecosystem through resource management, Environment legislation. The Stockholm conference, the Earth summit, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

#### Suggested Readings -

1. Agrawal D.P. : Man and Environment in India through Ages, Book & Books, 1992.
2. Bradshaw, M.J. : Earth and Living Planet, ELBS. London, 1979.
3. Cox, C.D. and Moore, P.D. : Biogeography : An Ecological and Evolutionary Approach 5<sup>th</sup> edn. Blackwell, 1993.
4. Gaur, R. : Environment and Ecology of Early Man in Northern India R. B. Publication Corporation 1987.
5. Hoyt, J.B. Man and the Earth, Prentice Hall, U.S.A. 1992.
6. Huggett. R.J. : Fundamentals of Biogeography, Routledge, U.S. A. 1998.
7. Illes, J. : Introduction to Zoogeography, Mcmillan, London, 1974.
8. Khoshoo, T. N. and Sharma. M. (eds) : Indian Geosphere-Biosphere Har-Anand Publication, Delhi 1991
9. Lapedes, D.N.(ed) : Encyclopedia of Environmental Science, McGraw Hill, 1974.
10. Mathur H.S. : Essentials of Biogeography, Anuj Printers, Jaipur, 1998.
11. Pears, N. : Basic Biogeography, 2<sup>nd</sup> edn. Longman, London, 1985.
12. Simmons, I.G. Biogeography, Natural and Cultural, Longman, London, 1974.
13. Tivy J. : Biogeography: A Study of Plants in Ecosphere 3<sup>rd</sup> edn. Oliver and Boyd, U.S. A., 1992.
14. Ackerman, E.A. : Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958
15. Agarwal, A. and Narain, S. : The Citizens Fifth Report. Centre for Science and Environmental, New Delhi, 1999.
16. Bertalanffy, L. : General Systems Theory, George Bragiller, New York, 1958.
17. Bodkin, E. : Environmental studies, Charles E Merrill Pub. Co., Columbus, Ohio, 1982.
18. Chandana, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1958.
19. Chorley, R.J. : Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
20. Eyre, S.R. and Jones, G.R.J. (eds) Geography as Human Ecology, Edwares Arnold, London, 1966.
21. Kormondy, E.J. : Concepts of Ecology, Prentice Hall, 1989.
22. Manners, I.R. and Mikesell, M.W. (eds.) Prespectives on Environment, Commission on College Geography, Publ. No. 13 Washington, D.C., 1974.
23. Nobel and Wright : Environmental Science, Prentice Hall, New York, 1996.
24. Odum, E.P.: Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
25. Russwurm, L.H. and Sommerville, E. (eds.) : Man’s Natural Environment-A Systems Approach, Duxbury, Massachuselts, 1985.
26. Sharma, H.S. : Ranthambhore Sanctuary – Dilemma of Eco-development, Concept, New Delhi, 2000.
27. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
28. Singh S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
29. Smith, R.L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
30. U.N.E.P. : Global Environmental Outlook, U.N. Pub. , New ork, 1998.
31. World Resources Institute : World Resoources, (Latest Report) Washington.
32. dqyJs’B] dkerk izlkn % tSo Hkwxksy] fdrkc ?kj] dkuiqj 1964
33. gksrk] thrsUnz dqekj % tSo Hkwxksy ,oa ikjffLFkfrd ra=] “krk{kh izdk”ku] lerk dkyksuh] jk;iqj f}rh; laLdj.k 2014] ISBN & 9789351042822

**Outcomes:**

1. The students should be taken on field visit to the local floral fauna zones; they should be acquainted with the local biogeography of the areas.
2. Seminars/lecture should be organized where speakers from the allied disciplines environmental science, ecology, biosciences etc. should be invited to discuss with the students various issues of biogeography with a multidisciplinary approach.
3. There must be more interaction between teacher and students on different aspects of ecology with the help of models, charts and pictures. Emphasis should be given on environmental problems faced by Indian recent years.

**SEMESTER – III (2020-21)**

**PAPER - XIV  
RESEARCH METHODOLOGY**

**Objective:**

- To familiarize the students with the conceptual theoretical and empirical development in scientific Research in geography, and find out the different geographical problems and formulate hypothesis in research design.
- To sensitize the students with the research problems and use different method to data collection of research areas.
- To provide the students an idea about Processing and Analysis of Data
- Finally students should be preparing to research report.

**Course contents:**

UNIT – I	Research Methodology-An Overview; Procedure of scientific Research, Defining Research Problem; Formulating Hypothesis; Research Design.
UNIT – II	Methods of Data Collection: Observation, Questionnaire, Schedule and Interview; Sampling: Sampling Methods, Size of Sample;
UNIT – III	Processing and Analysis of Data: Processing- Editing, Coding, Classification and Tabulation, Analysis ; Measurement of Central Tendency, Dispersion, Correlation.
UNIT – IV	Preparation of Research Reports: Steps, Layout and Types of Reports

### Suggested Reading:

1. Selltitz, C.M. Jahoda, M. Deutsch and others. Research Methods in Social Relations, Holt, . New York, 1961.
2. Goode, W and P.K, Hatt Methods in Social Research, Mc Graw Hill, .Tokyo, 1962.
3. Harvey, David . Explanation in Geography, Edward Arnold, London, 1971
4. Chorley, R.J. and P. Haggett (ed) Models in Geography, Methuen, London, 1967.
5. Minshull, R. Introduction to Models in Geography. Longman London, 1975.
6. Sheskin, I.M. Survey Research for Geographers Scientific Publisher, Jodhpur, 1987.
7. Kothari, C. R. Research Methodology : Methods and Techniques, Wishwa Prakashan, 1994.
8. Misra H.N. and V.P. Singh Research Methodology in Geography: Social, Spatial and Policy Dimensions, Rawat Publications New Delhi, 1998.
9. Har Prasad Research Methods and Techniques in Geography, Rawat Publications, New Delhi. 1992.
10. vkgwtk jke lkekftd vuqla/kku] jkor ifCyds”ku] t;iqj] 2015-
- 11.”kqDyk larks’k ¼laiknd½ “kks/k fof/kra= ,oa HkkSxksfyd fo”ys’k.k] o/kZeku egkohj [kqyk fo”ofok;] dksVk ¼jktLFkku½ 2009
12. “kekZ] ohjsUnz izdk”k fjlpZ esFksMksykth] iap”khy izdk”ku] t;iqj] 2008
13. ;kno] ghjkyky] “kks/k izfof/k ,oa ek=kRed Hkwxksy] 2008] fnYyh
- 14.f=osnh] vkj-,u- ,oa Mh-ih- fjlpZ esFksMksykth] dkyst cq d fMiks] “kqDyk] t;ijq] 2013
15. tSu] ch-,e-] fjlpZ esFksMksykWth] fjlpZ ifCyds”ku] t;iqj] 2012
- 16- f=osnh] vkj-,u- fjlpZ esFksMksykWth] dkyst cq d fMiks] t;iqj

### Outcomes:

On completion of the course, students are able to:

1. Examining the introduction of research, motivation in research, types of research significance of research, research process and criteria of good research.
2. To understand the research problems, selecting research problems, literature review and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research.
3. To understand the research design, need, features basic principal and developing of research plan, and sampling design and its basic types, steps, characteristics of sampling design.
4. Study about type's data and methods of data collection and study the processing and analysis of data using different statistical methods.
5. Understand the interpretation and report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report.

### **SEMESTER – III (2020-21)**

#### **PAPER - XV PRACTICAL –III**

#### **Objective:**

- To introduce to the students the basic principles of Photogrammetric in remote sensing.
- To introduce the method of visual and digital interpretation of aerial photography and satellite imageries.
- To outline the application value of remote sensing.
- To introduce some basic statistical procedures to the students to be applied to various themes in geography.
- To indicate the assumptions, limitations and interpretation of these procedures and results.
- To train the student to handle these statistics towards analyzing the geographical problems.

#### **Course contents:**

**Remote Sensing, Interpretation of Topographical Sheets and Quantitative Techniques**

- **Principles of Photogrammetry:** - Air Photo- Stereo test, Orientation of stereo model under mirror stereoscope, Preparation of photo/line index and determination of photo scale, Use of parallax bar and determination of heights, Identification of features on aerial photograph, Tracing of details from stereo pair, Interpretation of physical and cultural details, Preparation of Land use map pre field interpretation, Field visit for ground truthing.
- **Remote Sensing:**– Study of satellite Image – Annotation Identification of features on FCC imageries, Tracing of details from satellite imageries, Basic Principles of Image interpretation, Interpretation of Physical and Cultural details and preparation of land use and land cover map using IRS Images. Pre field visit.
- **Land use Processing System:-** Familiarization and startup procedure, Visualization of satellite image data, importing data, Creating a subset image, Identification of object on video display, Display of Histogram and image information, Image rectification and registration, Image to image registration, Image Enhancement techniques, Filtering techniques, Band Rationing, Principal component Analysis, Image classification.

#### **Statistical Techniques:**

Product moment and Rank Correlation Coefficients, Linear Regression. Hypothesis Testing: Chi-Square test, t-test & F test, Sampling Techniques, Point, Line and Area Sampling.

#### **Suggested Readings:**

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A. 1983.
2. Barren E.C. and I...F. Clirtis : Fundamentals of Remote Sensing and Air Photo Interpretation 'on, Memillan, New York, 1992.
3. Conipbell .1. : Introduction to Remote Sension, Glinford, "New York, 1989.
4. Clirran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Date, Academic, New York,1983
6. Luder D., Aerial Photographly Interpretation : Principles and Application, Cc Graw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P.. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicisi, Hederabad, 1998.
9. Thomas M. Lollesand and Ralph W. Keler, Remote Sensing and Image Interpretation, Wiley & sons. New York, 1994.
10. Aronoff S. Geographic Information Systems: A Management Perspective, Publication Offawa, 1989.
11. Burroligh P..A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchiln and D.W. Rhind (eds.). Geographic information System Principles and Application. Taylor& Francis, Washingron, 1991.
14. Mark S. Monrnonicr. Computer-assisted Cartography, Prentice Hall, Englewood Cliff, Jersey, 1982.

15. Peuquer D.J. and D.F. Marble, Introductory Reading in Geographic Information System Taylor & Francis, Washington, 1990.
16. Star J. and J. Estes, Geographic Information Systems; An Introduction, Prentice Eaglewood Cliff, New Jersey. 19

**Outcomes:**

On completion of the course, students are able to:

1. Understand the modern techniques in geography under this course such as remote sensing and aerial photography.
2. Examining the history, basic theories of EMR, and other concepts.
3. Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera.
4. Review on development of Indian remote sensing and functions of IRS.
5. To understand the types of remote sensing, and types of platforms in remote sensing.
6. To get an knowledge about satellite sensor and types of sensors, and their functions and characteristics
7. Understand the data product, types of data product and its applications and uses in remote sensing.
8. Students are able to known the Product moment and Rank Correlation Coefficients of sample data.
9. Students are understood the types and characteristics of data for which hypothesis testing are required to analysis.

**M.A./M. Sc. GEOGRAPHY  
SEMESTER IV (2020-21)**

M.A./M.Sc. Geography Semester IV shall consist the following papers:

S. No.	Paper	Title	M. M.		
			Written	Int. Ass.	Total
1.	XVI	Geography of Health	80	20	100
2.	XVII	Agricultural Geography	80	20	100
3.	XVIII (A)	Geographical Information System	80	20	100
	<b>OR</b>	<b>OR</b>			
4.	XVIII (B)	Environmental Geography	80	20	100
	XIX	Field Work (Physical and Socio-Economic)	---	---	100
5.	XX	Practical-IV: Geographical Information System and Quantitative Techniques	---	---	100

- The M.A./M.Sc. Semester IV examination in Geography shall consist of 500 marks. There shall be three theory papers and one Field Work report each of 100 marks and one practical of 100 marks as follows.

<b>S. No.</b>	<b>Paper</b>	<b>Title</b>
1.	XVI	: Geography Of Health
2.	XVII	: Agricultural Geography
3.	XVIII (A)	: Geographical Information System
<b>OR</b>		
	XVIII (B)	: Environmental Geography
4.	XIX	: Field Work (Physical and Socio-Economic)
5.	XX	: Practical-IV: Geographical Information system and Quantitative Techniques

- The theory papers shall be of three hours duration.
- Candidates will be required to pass separately in theory and practical examinations.
- Candidates will be required to submit their Field Report in three copies in hard bound at least one hundred pages for Valuation.
- In the practical examination the following shall be the allotment of time and marks.

(i) Practical record	20%
(ii) Lab work (up to Four hours)	70%
(iii) Viva on i. & ii. above	10%
  - The external and internal examiners shall jointly submit marks.
  - All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

### **PAPER XVI (2020-21)**

### **GEOGRAPHY OF HEALTH**

#### **Objective:**

- To acquaint the students with the role of geographical factors, viz., physical, demographic, social and economy, influence the spatial distribution of diseases;
- To highlight the relation of health with nutrition, environmental degradation and urbanization.
- To decipher the causes of the changing disease pattern.
- To make the students abreast of existing health care facility, so as to train them with better health care planning for the country.

#### **Course contents:**

UNIT – I Nature, scope and significance of Health Geography, Development, specialization and relation with other science. Geographical factors effecting human health and



diseases; Physical factors, Social factors, Economics factors and Environmental factors.

- UNIT – II Disease Ecology and epidemiology, Basis of Classification of disease; genetic, biological, occupational and deficiency diseases, International Classification of diseases (ICD); Communicable and non-communicable diseases, WHO Classification of diseases, pattern of world distribution of major diseases, transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, Asthma, fever, jaundice, arthritis, diabetic, BP, eye disease, anemia, Mental Disease, Cancer, AIDS and STDS. Diffusion and Causes of diseases. disease differential by seasons.
- UNIT – III Nutrition and deficiency disease: Food stuffs and their nutritional contents and human requirements, concept of balanced Diet, hunger and malnutrition. Deficiency disorders and problems of malnutrition in India. Changing pattern of food habits in India and originates new health problem, regional distribution of food habits in India.
- UNIT – IV Health Care Planning: Role of Health Programmes in the eradication of various diseases, their preventive and promotive aspects. International level; WHO, UNICEF, Red Cross, National Level; Government and NGOs, Health care planning and polices; availability, accessibility and utilization of health care services, Primary Health Care (PHC); spatial inequalities in health care services in India, Family Welfare, immunization, Reproductive Child health programmes, AIDS/HIV control programme, Health Care Delivery Systems, Allopathic, Ayurvedic and Traditional health card systems of India.

### **Suggested Readings:**

1. Banerjee, B. and Hazra J. : Geo-Ecology of Cholera in West Bengal, University Calcutta, Calcutta 1980.
2. Cliff, A and Haggett, P.: Atlas of Disease Distribution. Basil Blackwell, Oxford, 1989.
3. Digby, A, and Stewart. L. (eds.) : Gender, Health and Welfare. Routledge, New York 1996.
4. Hazra, J. (ed.) Health Care Planning in Developing Countries. University of Calcutta, Calcutta 1996.
5. Learmonth A.T.A. : Patterns of Disease and Hunger. A Study in Medical Geography David & Charles, Victoria. 1978
6. May, J.M. Studies in disease Ecology. Hafner Pub., New York, 1961.
7. May. J.M. Ecology of Human Disease. M.D. Pub. New York 1959.
8. May, J.M. : The World Atlas of Diseases, Nat. Book Trust, New Delhi, 1970.
9. Mc. Glashan, N.D. : Medical Geography, Methuen, London. 1972.
10. Narayan, K.V.: Health and Development- Inter-Sectoral Linkages in India, Rawat Pub., Jaipur, 1997.
11. Phillips, D.R. : Health and Health Care in the Third world. Longman, London, 1990.
12. Pyle, G. : Applied Medical Geography. Winston Halsted Press, Silver Springs, Md, U.S.A.1979.
13. Rais, A. and Learmonth, A.T.A. (eds) : Geographical Aspects of Health and Diseases in India, Concept Publishing Company New Delhi, 1985.
14. Shannon, G.M. et. al : The Geography of AIDS, Guilford Press. New York. 1987.
15. Smith, D. : Human Geography - A Welfare Approach, Arnold Heinemann, London 1997.

16. Sochin, A. A. : Fundamentals of Medical Geography, Dept. of Army Tran, M.J. 5264, Washington D.C. 1968.
17. Stamp, L.D.: The Geography of Life and Death. Cornell University, Ithaca, 1964.

**Outcomes:**

There should be interactions between the teacher and students. The teacher should cite examples from neighboring localities. Day trips to health centers may be of interest to the students. Video shows may be arranged where facilities are available.

On completion of the course, students are able to:

1. Understand fundamental concepts, approaches, development and challenges of health care in India.
2. Learn the geographical factors affecting on human health.
3. Get the knowledge of genetic, communicable, non-communicable and occupational diseases.
4. Understand diffusion of diseases and causes major diseases.
5. Understand rural environment and health and health problems of tribes in India.
6. Get the knowledge about urban environment and health; pollution.

**SEMESTER – IV (2020-21)**  
**PAPER – XVII**  
**AGRICULTURAL GEOGRAPHY**

**Objective:**

To familiarize the students with the concept, origin, and development of agriculture; to examine the role of agricultural determinants towards changing cropping pattern, intensity, productivity, diversification and specialization. The course further aims to familiarize the students with the application of various theories, models and classification schemes of cropping pattern and productivity.

Its objectives is also discuss environmental, technological and social issues in agricultural sector with special reference to India.

**Course contents:**

- UNIT – I Nature, scope, significance and development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional systems. Origin and dispersal of agriculture. Sources of agricultural data.
- UNIT – II Determinants of agricultural land use - Physical, economic, social, and technological Land holding and land tenure systems, Land reforms, land use Agriculture policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions and agricultural development.
- UNIT – III Theories of agricultural location based on several multi-dimensioned factors:-Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; land use and land capability. Agro-climatic & Agriculture Ecological region.
- UNIT – IV Contemporary Issues: Food, nutrition and hunger, food security, drought and food-security, food aid Programmers; role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless labourers, woman, children: occupational and agricultural activities.

### **Suggested Readings:**

1. Bayliss Smith, IP.: The Ecology of Agricultural Systems. Cambridge University London, 1987.
2. Berry, B.J.L et. al. : The Geography of economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond, World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Future Prospects. Routledge. London, 1996.
5. Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change, John Wiley, London, 1995.
9. Mitra, Manju : Agriculture Geography of Chhattisgarh Basin, Sahitya Ratnalaya Kanpur, 1980
10. Morgan W.B. and Norton , R.J.C. : Agricultural Geography. Methuen, London, 1971.
11. Morgan, W.B.:Agriculture in the Third World - A Spatial Analysis. Westview Boulder, 1978.
12. Sauer, C.O. : Agricultural Origins and Dispersals,. M.I.T. Press, Mass, U.S.A., 1988.
13. Singh, J. and Dhillon, S.S. : Agricultural Geography. Tata McGraw Hill' Pub.; Delhi, 1988.
14. Tarrant, J.R. : Agricultural Geography. Wiley, New York, 1974.
15. c?ksy] vuqlqb;k % d`f`k Hkwxksy] gksjhtUl cqDI] ubZ fnYyh] 2015
- 16- tks"kh] ok;-th- % ueZnk csflu dk d`f`k Hkwwxksy] e;/izns"k fgUnh xzaFk vdkneh] Hkksiky] 1972

17- dqekj] izfeyk % d`f`k Hkwxksy] e;/izns”k fgUnh xzaFk vdkneh] Hkksiky] 2008

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19- dqekj] izehyk ,oa Jh dey “kekZ % d`f`k Hkwxksy] e;/izns”k fgUnh xzaFk vdkneh] Hkksiky] 1985

**Outcomes:**

On completion of the course, students are able to:

1. Understand about the introduction to agriculture, nature, scope, significance and Development of agriculture geography, study approaches applied in agriculture.
2. Understand the influence of physical, Economic and Technological factors on agriculture patterns.
3. To understand the agricultural system its meaning and concept, Von Thunen's theory of agricultural location, whittlesey’s classification of agricultural system, types of agricultural, study the types of agricultural in respect of area, salient features and their problems.
4. Understand the agricultural regionalization and modes in agricultural geography and their classification of agricultural models and some theories.
5. Understand definition and characteristics of arid and semi-arid regions and study about droughts and famines, role of irrigation and dry farming.

**SEMESTER – IV (2020-21)**

**PAPER – XVIII (A)**

**GEOGRAPHICAL INFORMATION SYSTEM**

**Objective:**

- To introduce GIS (Geographical Information System) as a techniques of spatial science.
- To indicate the basic elements of GIS and mythology of GIS.
- To outline the steps and areas of application of GIS.

**Course contents:**

UNIT – I Spatial Science : Geography as a spatial science, maps and spatial information dynamics of spatial information, elements of information technology, Geographic

objects and their relations definition and development of GIS, computer environment for GIS.

- UNIT – II Spatial Data: Elements of spatial data: data sources: Primary and secondary census and sample data, quality and error variations Raster and vector data structures, data conversion comparison of raster and vector data bases, methods of spatial interpolation – GIS data formats for the computer environment.
- UNIT – III GIS Technology: Coordinate 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, data generation and limitations – visualization in GIS-Digital Elevation Models (DEM and TINS).
- UNIT – IV GIS Application: GIS as a Decision Support System –expert system for GIS-basic flow chart for GIS application – GIS standard legal system and national GIS policy application of GIS in Land Information System, Urban Management, Environmental Management and Emergency Response System.

### **Suggested Readings:**

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M.:Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Luder D., Aerial Photography Interpretation : Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
9. Thomas M. Lollsand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
10. Aronoff S.Geographic Information Systems: A. Management Perspective, Publication Offiawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washingron, 1991.
14. Mark S. Monmonier. Computer-assisted Cartography,Prentice-Hall, Englewood Cliff, Jersey, 1982.
15. Peuquet D. .1. and D.F.- Marble, Introductory Reading in Geographic. Information System Taylor & Francis, Washington, 1990..
16. pkSfu;ky] nsoh nRr] % lqnwj laosnu ,oa HkkSxksfyd lwpuk iz.kkyh-

### **Outcomes:**

On completion of the course, students are able to:

- Understand the all fundamental concept of GIS, potential of GIS, concept of space & time, objectives of GIS, elements of GIS, GIS tasks, history of GIS and GIS applications in different field.
- To examine and understand the spatial and non spatial data models and all its functions components and applications in geography.
- Extract the knowledge and information about geospatial analysis and database query and GIS data analysis the various concept and problems in analyzed in GIS environment.
- Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes in geography.
- GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land use planning.

**SEMESTER – IV (2020-21)**  
**PAPER – XVIII (B)**  
**ENVIRONMENTAL GEOGRAPHY**

**Objective:**

- To understand the concept, characteristics, classification and interrelation between man and environment.
- The basic objective the course are to appraise the students with the interrelationship between man, the environment within which he lives and his linkage with other organisms. Such linkages from ecosystem, which varies in different biomes.
- To be able to explain territorial diversity and complexity, and the interrelations of natural environmental phenomena with economical, social and cultural phenomena.

- To identify the cause of environmental management and policy, laws. Preservation and conservation of environment.

### **Course contents:**

- UNIT – I Environment: Meaning, definition, concepts and theories related to environment. Environment and its components: Classification, Characteristics and their interdependent relationship, Development of the environmental studies and their approaches: Development of environmentalism in Geography.
- UNIT – II Environment and development. Ecological concepts; Geography as human ecology; Ecosystem: meaning definition, Concept and components. Main terrestrial ecosystems of the world-forests and agriculture.
- UNIT – III Environmental hazards- natural and human made, environmental pollution : meaning definition, nature and types-air, water, noise and others. Ecological impacts of pollution. Resource use and ecological imbalance with special reference to soil, forests and water resources.
- UNIT – IV Environmental Management : meaning, importance and approaches, need for environmental policy and laws. Preservation and conservation of environment through resource management (Green revolution, Chipko movement, National Parks). Environmental Actions: Concept, need and importance Stockholm Conference, Earth Summit, E.I.A. definition and methods and need for EM Environmental education and People's participation.

### **Suggested Readings :**

1. Agrawal, Anil and Sunita Narain. Dying Wisdom : The Fourth citizen Report. Centre for Science and Environment, New Delhi, 1998.
2. Burton I.; R.W. Kates & G.F. Whiley. The Environment as Hazards. O. U.P. New York, 1978, Carledge, Bryen. Population and the Environment, O.U.P., New York, 1995.
3. Chandna, R.C. Environmental Awareness Kalyani Punlishers, New Delhi, 1998.
4. Dawson, J. and J.C. Doornkamp, eds.: Evaluating the Human Environment. Edward Arnold, London, 1975
5. Detwyler, J.R.: Man,s impact on Environment. Pelican, 1970.
6. Edington, J.M. & M.A. Edington : Ecology and Environmental Planning. Chapmap & Hall, London, 1977.
7. Goudie, Andrew. The Human Impact on the Natural Environment, Blackwell Oxford, U.K. 1994
8. Jain, R. K., L.V. Urban and G.S. Stacy; Environmental Impact Analysis-A New Dimension in Decision-Making. Van Norstrand Reinhold Co. New York, 1977.
9. Khoshoo, T.N. Environmental Concepts and Strategies. Ashish Publishing House, New Delhi.
10. Mohan, M. Ecology and Development. Rawat Publications; Jaipur, 2000.

11. Munn, R.E. Environmental Impact Assessment : Principles and Procedures. John Wiley & Sons, New York, 1979.
12. Narain, Sunita. The Citizen Fifth Report. Centre for Science and Environment, New Delhi 2003.
13. Mukherji, A and V. K. Agnihotri : Environment and Development. Concept Pu. Co. New Delhi, 1993.
14. Rudig Wolfgang. Environmental Policy Edward Elger Publishing Ltd. UK. 1998.
15. Saxena, H.M. Environmental Management. Rawat Publications, Jaipur, 2000
16. Sharma, B.L. & Puar P: Global Environmental Challenges. Rohini Books, Publishers & Distributors, Jaipur, 2004.
17. Singh, K.N. and D.N. Singh : Population Growth, Environment and Development Issues, Impacts and Responses. Environment & Development Study Centre, Varanasi, 1991.
18. Singh, R. B. and S. Mishra : Environmental Law in India : Issues and responses, Concept Pub. Co. New Delhi, 1966.
19. Singh, S. Environmental Geography. Prayag Pustak Sadan, Allahabad, 2000.
20. Smith, R.L. : Man and his Environment: An Ecosystem Approach. Harper & Row. London, 1992.
21. U.N.E.P.: Global Environmental Outlook. U.N. Pub. New York.
22. voLFkh ,u- ,e- ,oa vkj-ih- frokjh i;kZoj.k Hkwxksy] e;/izns" k xzFk vdkneh, Hkksiky A
23. usxh] ih- ,l- % ifjLFkfrdh; fodkl ,oa i;kZoj.k Hkwxksy] jLrksxh ,UM dEiuh] esjB] 1995A
24. j?kqoa"kh v:.k vkSj pUnzys[kk j?kqca"kh % i;kZoj.k rFkk iznw'k.k] e;/izns" k fgUnh xzFk vdkneh] Hkksiky] 1989 A
25. lfoUnz flag % i;kZoj.k Hkwxksy] iz;kx iqLrd lnu bykgkckn] 1993 A
26. "kekZ] ch ,y % i;kZoj.k % lkfgU; Hkou] vkxjk] 1992A
27. frokjh] fot; dqekj % i;kZoj.k vkSj ifjLFkfrdh] fgeky; ifCyf" kax gkml] fnYyh 1998 A
28. frokjh] fot; dqekj] % i;kZoj.k v/;;u] fgeky; ifCyf" kax gkml] fnYyh] 1998 A
29. izlkn xk;=h] xkSre vYdk] i;kZoj.k Hkwxksy
30. jkedqekj xqtZj ,oa tkV ch-lh-] i;kZoj.k v/;;u] iap" khy izdk"ku] t;iqj
31. O;k] gfj"kpUnz % ikfjLFkfrdh ,oa i;kZoj.k] iap" khy izdk"ku] t;iqj
32. vkljs] jke] i;kZoj.k Hkwxksy] vkj- ds- ifCyds"ku] ubZ fnYyh] 2009
33. ekS;Z] ,l-Mh- % lalk/ku ,oa i;kZoj.k] iz;kx iqLrd Hkou] bykgkckn] 2006
34. jko] ch-ih- % lalk/ku ,oa i;kZoj.k] olqU/kjk izdk"ku] xksj[kiqj] 2010

**Outcomes:**

- There must be more interaction between teacher and students on different aspects of ecology with the help of models, charts and pictures. Emphasis should be given on environmental problems faced by Indian recent years.
- The student should be made to do seasonal assignments on different environmental problems, policy and find out some suitable remedies for relevant topics.



- Students are able to know the different environmental policy which has been taken by national and international level.

## **SEMESTER – IV (2020-21)**

### **PAPER - XIX**

#### **FIELD WORK (PHYSICAL AND SOCIO- ECONOMIC) Physical**

##### **Objective:**

- The main objective of the field work is to conducted an extensive survey of a contiguous wider region and identify salient landforms; their generous and their impact on human life, flora and fauna.
- The aim of the field work is to provide the students with the understanding of ground reality of a chosen village/ town by observation. Mapping of land quality, land use and cropping pattern and conducting socio- economic survey of the households with the help of special prepared questionnaire.

##### **Course contents:**

UNIT – I Trace the prominent features of area to be surveyed. Identify salient landform features of selected area on a topographical sheet. Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

UNIT – II Identity and classify the Bio-diversity in the area (Flora & fauna). Observe the relationship of various landforms, flora and fauna with land-use, settlement structure and life style of people.

##### **Socio – Economic:**

UNIT – III Procure a cadastral map of the village/town for field mapping of the features of land-use and land quality. Procure/prepare the settlement –site map through rapid survey to map the residential, commercial, recreational (parks, playground), educational, religious and other prominent features. Conduct a socio-economic survey of the households with a structured questionnaire. Supplement the information by personal observations and perceptions.

UNIT – IV Based on observations of the land-use and results of the socio-economic enquiry of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

**Outcomes:**

1. The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to land-use/ settlement pattern.
2. The exercise should familiarize the students with basic-economic characteristics of the chosen area/ settlements through lab experiments. Followed by field visit and conducting enquiry at the village/town/household level.
3. This is also training report writing for the students.

**SEMESTER – IV (2020-21)**

**PAPER – XX**

**PRACTICAL-IV**

**Objective:**

- To introduce of GIS is a modern scientific analysis in different branches of Geography.
- To indicate the basic elements and methodology of GIS.
- To outline the steps and areas of application of GIS.

**Course contents:**

**GEOGRAPHICAL INFORMATION SYSTEM AND QUANTITATIVE TECHNIQUES**

**Geographical Information System**

An overview of GIS software, Elements of GIS: Data capture-verification and preprocessing-data storage and maintenance of databases-Database Management Systems: Spatial data creation, Editing the layers and table creation, Creation of non Spatial data, data manipulation, analysis (integrated analysis of spatial and attribute data, overlay analysis, neighborhood operations and connectivity functions) and spatial modeling-output format and generation. Buffer analysis, Network Analysis, Creation of DEM & TIN Generation of thematic map.

GPS – Demonstration and handling of Hand held GPS receivers. Ground truthing. Checking and updating of existing map, Use of GPS to Check/update the existing topographical map.

**Quantitative Techniques:**

Running mean, Mean centre, Nearest Neighbor Analysis; Lorenz Curve, Normal distribution curve, Probability.

### **Suggested Readings:**

1. Singh, R.L. & P.K. Dutt : Elements of Practical Geography Students trends.
2. Monkhouse, F.J. & H.R. Wilkinson; Maps and Diagrams Mathuen, London.
3. Mahmood, Aslam 1971 : Statistical Methods in Geographical studies Rajesh Pub., New Delhi.
4. Gregory, S. Statistical Methods and The Geographer.
5. Hammond & Mccullah 1977 : Quantitative Techniques in Geography, Clarendon Press,Oxford.
6. Fitz, Gomid, B.P. : Science in Geography, Developments in Geographical Method, Oxford University Press.
7. Yeaters, M. : An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
8. ekWd gkml rFkk fofYdUlu 1976 % ekufp= rFkk vkjs[k] e-iz- dsnkjukFk ] jkeukFk] esjB-
9. usxh] Mh-,l- % Hkwxsy esa vk/kkjHkwr lkaf[;dh] dsnkjukFk ] jkeukFk] lsB-
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11. vkj-lh- frokjh ,oa lq/kkdj f=ikBh % vfHkuo iz;ksxkRed Hkwxsy] iz;kx iqLrd Hkou] bykgkckn-
12. JhokLro] oh-ds- % Hkwxsy dh lkaf[;dh; fof/k;kj] olqU/kjk izdk"ku] xksj[kiqj] 2007

### **Outcomes:**

On completion of the course, students are able to:

1. Understand the all fundamental concept of hardware, peripherals of GIS environment,
2. To examine and understand the spatial and non spatial data models and all its functions components and applications in geography through computerized GIS.
3. Extract the knowledge and information about geospatial analysis and database query and GIS data analysis the various concept and problems in analyzed in GIS environment.
4. Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes through GIS.
5. The different modern techniques like GPS, DEM, TIN, and Network analysis are used in GIS for better understand of Physical Geography as well as human geography.
5. GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land use planning.