

Shivaji University, Kolhapur
REVISED SYLLABUS
(Introduced from June, 2008)
M.A./M.Sc. (Geography) Semester - I, II, III, IV
Structure

M.A / M.Sc Part I Semester I From June 2008

Paper No

I Geomorphology - I

II Climatology - I

III Economic Geography*

IV Geography of India

Pr. I Landforms Analysis and Surveying

Pr. II Analysis of Climatic data

M.A./M.Sc Semester II From November 2008

Paper No

V Geomorphology -II

VI Climatology -II

VII Social & Cultural Geography

VIII Geohydrology & Oceanography*

Pr. III Statistical Techniques in Geography

Pr. IV Analysis of Socio Economic Data

M.A./M.Sc. Sem. III From June 2009

Paper No

IX Agricultural Geography

X Settlement Geography

XI Regional Development & Planning in India

XII Biogeography*

Pr.V Quantitative Techniques in Geography

Pr.VI Computer Applications in Geography

M.A./M.Sc Sem. IV From November 2009

Paper No

XIII Development of Modern Geography

XIV Remote sensing application in Geography*

XV Political Geography

XVI (1) Geography of Tourism. or

(2). Population Geography or

(3) Medical Geography. or

(4) Geography of Marketing . or

(5) Geographical Information System.

Pr. VII Remote Sensing

Pr. VIII Field Studies and Project work.

Note:

i) Each paper & Practical Consists of 100 marks

ii) Each Semester consists of 4 theory & 2 Practical papers

iii) In the beginning of Sem. IV, the Concerned department will declare the number of optional papers open for the students to Optional Paper No. XVI.

iv) Figures at the end of each topic of all papers (Theory & Practical) indicate tentative number of lecture to be delivered on respective topic of theory paper or exercise to be conducted in case of Practical.

v) Nature of Question paper is given in Appendix- I

vi) Equivalence for old semesters are given in Appendix II

***Bold - Papers are opened for Credit by Choice**

Shivaji University, Kolhapur
M.A./ M.Sc Semester I
Paper I - GEOMORPHOLOGY - I

Unit I

Meaning of geomorphology and Development of geomorphic thought: a brief Review of Principle of uniformitarianism Contribution of Hutton, Gilbert, Dutton, and Davis.(15)

Unit 2

Constitution of the Earth's interior. Earthquakes, Volcanoes and associated features (15)

Unit 3

Factors controlling landform Development –Exogenetic and Endogenetic forces, Denudational processes Types of weathering, Erosion and mass wasting.(15)

Unit 4

Geosynclinal theory of Kober, Holmes Convective current theory. The Theory of Isostasy : (15)

REFERENCES:

1. Bloom A.L. (1991) Geom. 2nd Ed Englewood Cliffs, M.J. Prentice.
2. Christopherson R.W. (1995) Elemental ecosystem Prentice Hall, N.J. Oum 1985 Ecology, London.
3. Chorley, J.R. S.A. Schumm and DE Slogden (1984) Geom. Methun, N.Y. London.
4. Christopherson, R.W. (1995) Elemental Geosystems : A Foundation in Physical Geography, Prentice Hall Englewood Cliffs, New Jersey.
5. Dayal. P, (1996) : A Textbook of Geomorphology, Shukla Book Depot, Patna.
6. Fairbridge, R.W. (1968) (ed): Encyclopaedia of Geomorphology Reinhold, New York.
7. Thurman, H.V. 1994 Introductory Oceanography 7th Ed. Macmillan Pub. Co. New York.
8. Whittone, J. 1984 Dictionary of physical Geography, Penguin Books.
9. Spark B. W. : An Introduction to Geomorphology, Longman, London.
10. Spark B. W. : Geomorphology, Longman, London.
11. Savinder Singh (1998) Geomorphology, Prayag Pustak Bhavan, Allahabad.
12. Morgan R.S. & Wooldridge S.W (1959): Outline of Geomorphology the Physical basis of Geography, Longmans Green, London.
13. Worcester P. G (1948) : Textbook of Geomorphology, Princeton, D. van, Nortrand.

Semester I
PAPER-II : CLIMATOLOGY -I

Unit 1

Atmosphere: Composition & Structure. Insolation & terrestrial heat balance.
Distribution of Temperature – Vertical & Horizontal.(10)

Unit 2.

Pressure belts & planetary winds, Mechanism of Monsoon, rainfall generated by monsoon, Local & variable winds.(15)

Unit 3.

Humidity & the process of saturation, Atmospheric Equilibrium, Stability & Instability. Condensation & precipitation types. Types of air masses – properties, frontogenesis & frontolysis, Polar front & Intertropical Convergence.(20)

Unit 4.

Atmospheric Disturbances- Tropical Cyclones, Anticyclones, Thunderstorms, Tornadoes, Water spouts. Optical Phenomena of the Atmosphere – Nature of Light, Reflection, Refraction, Mirages, Rainbows, Halos, Sundogs, Solar Pillars, Glory, Corona. (15)

REFERENCES :

1. Byers R.H. : “General Meteorology “McGraw Hill BKCo New York 1974
2. Pettersons : “Introduction to Meteorology “ -----,,----- 1969
3. Richl H : “Introduction to Atmosphere”-----,,----- 1972
4. Sellers W.D : “Physical Climatology”University of Chicago Press. 1965
5. Trewartha G.T: An Introduction to climate “McGraw Hill BK Co. New York 1968.
6. Das P. K. : The Mansoon, Prayag pustak Bhavan, Allahabad.
7. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
8. Lal D. S.: Climatology. Prayag pustak Bhavan, Allahabad.
9. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
10. Savindra Sing (2000) : Climatology, Prayag Pustak Bhavan, Allahabad.
11. Mather J. R. (1975) : Climatology : Fundamentals & Applications. Mc Gray Hills Book Co., New York.
12. Hobbs J.E. (1980) : Applied Climatology, Butterworth, London
13. Crist Field : Principles of Climatology; Prentice Hall, London.
14. Oliver J. E. (1973) : Climate & Mans Environment, John Wiley & Sons; New york.

Semester –I
Paper –III: Economic Geography
(For Credit By Choice)

Unit 1.

Basic Economic processes : Production, exchange & consumption. Classification of economic Activities – primary, secondary, tertiary & quaternary – and their characteristics, Location of Economic activities and spatial organization of economics. (15)

Unit 2.

Definition & Importance of manufacturing – Standard Industrial classification Principles of Industrial Location – Profit maximization - Least cost location – Substitution –Interdependence – Territorial production complexes- Location theories – Weber & Losch. (15)

Unit 3.

Renewable & Non-renewable resources, World energy situation – sources of energy- Coal, Oil, OPEC-energy crisis. (10)

Unit 4.

Models of transportation and transport cost, Accessibility and connectivity; Interregional and Intraregional: Ullman's tried- Complementarily- intervening opportunity- transferability. Evolution of world trade- structure & pattern of trade prior to first world war. EEC, GAATT, WTO. (20)

REFERENCES

1. Alexander J.W. (1976): Economic Geography. Prentice Hall of India. New Delhi.
2. Alexandersson G. (1988): Geography of manufacturing. Prentice Hall of India. New Delhi.
3. Berry, Conkling & Ray (1988): Economic Geography Prentice Hall of India New Jersey.
4. Hurst Elliott (1986): Geography of Economic Behaviour. Unwin, London.
5. Johnson R.J. & Taylor D.J. (1989): A world in crisis. Basil-Blackwell, Oxford.
6. Losch (1954): Economics of Location. Yale University Press New York.
7. Redcliff M. (1987): Development & the environmental crisis. Methuen. London.
8. Sinha B.N.(1971): Industrial geography of India
9. Watts H.D. (1987): Industrial Geography, Longman scientific and Technical New York.
10. Haggett, Peter: Modern Synthesis in Geography.
11. Robinson H & Bamford C. G. (1978): Geography of Transport, Macdonald & Evans USA.
12. Misra R. P.: Regional Planning, concepts, New Delhi.
13. Jones & Darkenwald : Economic geography.

SEMESTER-I
PAPER-IV : GEOGRAPHY OF INDIA

Unit 1.

India – Location & space relations, Broad Outline of historical geography & geostrategy. A) Physiography – Structure, relief, physiographic divisions & natural drainage system of India. (B) Climate – climatic types & regional variations. (C) Natural vegetation – Vegetation types & regions, forests & their utilization and conservation (D) Soil types and conservation in India. (15)

Unit 2.

Irrigation, Agriculture & live stock in India, Problems of Agricultural Development. Agro based (Sugar, Cotton textile, Jute) (15)

Unit 3.

Mineral & Power resources. Development of Iron, Mica, Manganese, Hydel, Coal, Petroleum. Major industries - Mineral based (Iron & steel, Copper, Aluminium) & Industrial region of India. Transport and communication systems in India – Roads, Railways, Inland Waterways & Air Ways, Major ports & Sea Routes. Telecommunication Network and its significances. (20)

Unit 4.

Population as a resource- Distribution, Growth and Problems.(10)

REFERENCE :

1. Sharma, T.C. & Coutinho: "Economic, & Commercial Geography of India". Vikas Pub. House, Delhi.
2. Negi, B.S: "Economic & Commercial Geography India."Kedar Nath Ram Nath, N.Delhi.
3. Mamoria, C.B. "Economic & Commercial Geography of India".
4. Singh, Gopal: "Geography of India".
5. Kuriyan. George: "India- A General Survey". National Bk. Trust.
6. Stamp, L.D. : "Geography of Asia".
7. Spate, O.H.K.& Learmonth, A.T.A: "Geography of India & Pakistan".
8. Robinson: "India- resources & their Development.
9. Dobby, E.G.H:" Monsoon Asia.
10. Tirtha Ranjit (1996): Geography of India, Rawat Jaipur.
11. Tata McGraw Atlas: Socio Economic Atlas of India.
12. Singh R. L.: Regional Geography of India.

Semester – I

PRACTICAL– I : OF LANDFORMS ANALYSIS & SURVEYING

Unit 1.

A) Methods of Representation of Relief : I) Pictorial ii) Mathematical. B) Maps- I) Definition: ii) Types of maps iii) Indexing of Topographical sheets. Identification & Mapping of Landforms from Topographical Maps I) Ridge ii) Saddle iii) Col. iv) Pass v) Spur; vi) Plateau vii) Escarpment viii) Cliff ix) Waterfall x) River Terraces xi) U-shaped Valley xii) V shaped Valley.(15)

Unit 2.

A) Identification & Mapping of drainage patterns: I) Dendritic; ii) Trellis; iii) Radial Drainage Patterns. B) Calculation of Bifurcation Ratio & Drainage density. Identification & Mapping of Slopes: I) steep & ii) uniform; iii) Gentle; iv) Concave v) Convex Slope; vi) Terraced Slopes.(15)

Unit 3.

Profiles: i) Super-imposed; ii) Projected; iii) Composite iv) Transverse Profile; vi) Longitudinal Profile. Gradient & Slope: Significance of slope determination. A) Calculation of Gradient. B) I) Calculation of Scale of slope; 2) Methods of average slope determination: I) G.H.Smith's method of slope Analysis; ii) Wentworth's Method (15)

Unit 4.

Surveying: (A) Definitions, uses of surveying, classification of surveying. (B) Surveying and Preparation of Contour map, Cadastral map using (i) Theodolite, (ii) Total Station. (15)

REFERENCE:

1. Davis, Peter, (1974): Science in Geography Data Description & Presentation, Vol.3, Oxford University Press, London.
2. Hanwell, J.D.& Newson, M.D. (1973): Macmillan Education Ltd., London.
3. Mishra, R.P. (1973): Elements of Cartography. Prasaranga, University of Mysore.
4. Monkhouse, F.JR & Wilkinson, H.R: Maps and Diagrams, Mathwn & Company, London.
5. Robinson, A.H & Sale R.D.: Elements of Cartography. Johns House & Sons, London.
6. Sing R. L. (1996) : Map Work & Practical Geography, Central Book Dept. Allahabad.
7. Singh & Kanaujia (1973) : Map Work & Practical Geography, Central Book Dept. Allahabad.
8. N. N. Basak (1994): Surveying and Leveling, Tata McGraw Hill Publishing Company LTD., New Delhi.

SEMESTER –I
PRACTICAL–II: ANALYSIS OF CLIMATIC DATA

Unit 1.

Nature and sources of climatic data, Indian daily weather report and its format, Reproduction Of weather details by Weather Signs & symbols. Reading and interpretation of weather maps of representative seasons Analysis of upper air data- Tephigram (Temperature Height diagram). (15)

Unit 2.

Simple and compound & Octagonal wind rose Interpolation of isotherms isobars, & Isohytes. Comfort diagrams- Climographs. Hythergraph. Climatograph. (10)

Unit 3.

Line Graphs, Preparation of trend graphs- moving averages semi-Average line water budget and its graphical analysis. (10)

Unit 4.

Dispersion graphs: Temperature and rainfall dispersion Diagram Central tendency of climatic Data, calculation and interpretation, Spatial correlation of climatic variables: Graphical analysis. Erogographs. (Crop Calendar). (25)

REERENCES:

1. Ashish sarakar: Practical Geography A systematic approach. Orient Longman Limited, Kolkatta.
2. Critchifield: Principles of Climatology.
3. Lawrence, G.R.P.: Cartographic methods. Mathur co., London
4. Mather J.R. (1974) Climatology, Fundamentals and applications. Mc Grew Hill Book co., New York
5. Monkhouse, F.J.R and: Maps and Diagrams, Wilkinson, H.R. Methuen and Co. London.
6. R.L.singh & Rana p.B.Singh: Element of Practical Geography. Kalyani Pub. New Delhi (1999).
7. Trewartha G.T.: An Introduction to climate McGraw – Hill Book Co. New York.

SEMESTER –II
PAPER-V: GEOMORPHOLOGY-II

Unit 1.

Evolution of continents and Ocean basins- Continental drift and plate tectonics.(15)

Unit 2.

Dynamic agencies of denudation and their work- fluvial, Glacial, marine, aeolian and Karst. (15)

Unit 3.

Concept of cycle of Erosion- Davis and Penk. Slope development – views of Davis, Penk, Wood and King. (15)

Unit 4.

Applied geomorphology and recent trends in geomorphology. (15)

REFERENCE:

1. Bloom A.L. 1991 Geom. 2nd Ed Englewood Cliffs, M.J. prentice.
2. Christopherson R.W. 1995 Elements ecosystem prentice Hall, N.J.
3. Chorley, J.R. S.A. Schumm and DE slogden 1984 Geom. Methuen, N.Y. London.
4. Christopherson, R.W. 1995 Elemental Geosystems: A Foundation in physical geography, Prentice Hall Englewood Cliffs, New Jersey.
5. Dayal. P, 1996: A Textbook of Geomorphology, Shukla Book Depot, Patna.
6. Fairbridge, R.W. 1968 (Ed): Encyclopaedia of Geomorphology Reinhold, New York.
7. Garrison, T. 1994, Essentials of Oceanography, New York, Wadsworth Pub. Co. London.
8. Hamblin, W.K. 1995 Earth's Dynamic Systems 7th ed. Preshre Hall, New York.
9. Oqum 1985 Ecology, London.
10. S.Singh 1999 Physical Geography, Prayag Pustak Bhavan ,Allahabad.
11. Strahler A. (1996) physical Geography; science and system of the Human Environment, New York, Jahu Wiley
12. Strahler, A and A Strahler 1992 physical Geography. John Wiley & sons, New York.
13. Thornbury, W.D. 1998 Principles of Geom. 2nd New Delhi. New Age International press.
14. Thurman, H.V. 1994 Introductory Oceanography 7th Ed. MaC millan Pub. Co. New York.
15. Whitton, J. 1984 Dictionary of physical Geography, Penguin Books.
16. Spark B. W.: Geomorphology, Longman, London.
17. Savinder Singh (1998) Geomorphology, Prayag Pustak Bhavan, Allahabad.

SEMESTER –II
PAPER-VI: CLIMATOLOGY – II

Unit 1.

Basis of Climatic Classification, Classification of Climate according to Koppen & Thornthwaite. Concept of Potential Evapotranspiration. (10)

Unit 2.

Agroclimatology – Droughts, irrigation scheduling Agroclimatic regions of India. (10)

Unit 3.

Climate & Clothing – Role of Clothing in providing insulation to human body. Physiological climatology – I) Climate & Human Comfort, ii) Climate & health iii) Acclimatization, iv) Urban climate & heat island, v) Air Pollution, vi) Global warming vii) Ozone layer depletion. (20)

Unit 4.

Paleoclimatology –I) Climatic changes of the geological past - causes & effects ii) Recent climatic Changes- causes & consequences. (20)

REFERENCE:

1. Critchfield: "General Climatology" Prentice Hall London.
2. Mather, J.R. (1974): "Climatology – Fundamentals & Application" McGraw Hill Book Co., New York.
3. Oliver J.E. (1973): "Climate & Man's Environment-An Introduction to Applied Climatology", John Wiley & Sons., New York.
4. Lutgens, F.K & Tarbuck, E.J (5th Ed): The Atmosphere – an introduction to meteorology. Prentice Hall, New Jersey.
5. Miller, G.T (Jr.)(9th Ed): "Living In the Environment "Wadsworth Publishing Co. New York.
6. Savinder Singh (1999) Physical Geography, Prayag Pustak Bhavan, Allahabad.
7. Mamoria C.B. Agricultural Geography of India.
8. Hobbs J.E. (1980) : Applied Climatology, Butterworth, London
- 10 Lal D. S.: Climatology. Prayag pustak Bhavan, Allahabad.

Semester –II
Paper VII : Social And Cultural Geography

Unit 1.

Culture and Society as essential elements of geographical studies, evolution, definition, scope and significance of social and Cultural Geography. (10)

Unit 2.

Caste, Tribe, Language and Religion as expression of social diversity and region formation in India, Concept of social areas, North-South-Socio-Cultural diversity of India. (15)

Unit 3.

Concept of culture, culture areas and culture regions, Cultural hearths and cultural diffusion, World Culture Realms. Concept of race, Griffith Taylor and C.S.Coon's Theories of distribution of races of mankind in the world and their physical characteristics. Races of India. (20)

Unit 4.

Concept of social Justice and fair society, social development and well being Indicators for measurement, Levels of well-being in India, Spatial patterns of status of women in India. (15)

REFERENCES:

1. Ahmad, Aijazuddin (1999): Social Geography, Rawat Publications, Jaipur.
2. Blij, H.J. (1995): The earth-An introduction to its Physical and Human Geography, John Wiley & Sons,inc; New York.
3. Broad, Jan O.M.& webb,John W(1973): A Geography of mankind, McGraw Hill Book Co. New York.
4. Cater, Hohn & Jones, Trevor (1989): Social Geography-An Introduction to Contemporary Issues, Arnold Publishers, New Delhi.
5. Jackson, Peter (1989): Maps of meaning- An Introduction to cultural Geography, Unwin Hyman, and London.
6. Jackson, Richard H. & Loyd E.Hudman (1990): Cultural Geography-People, Places and Environment West publishing co., New York.
7. Jones, Emrys & Eyles, John (1977): An Introduction to social Geography, Oxford University Press, Oxford.
8. Jordan, Terry G. & Rowntree, Lester (1976): The Human Mosaic-A Thematic Introduction to Cultural Geography, Canfield press, sen Francis Co., Harper & Row Publisher, New York.
9. Tripathi, R.S. & Parmar, S.B.Singh: Social and Economic Development in India, Ashish Publishing House New Delhi, PP 451-454.
10. Smith, David M.(1977): Human Geography- A Welfare approach, Arnold-Hinmann, London.
11. Majid Hussain (1994) : Human Geography., Rawat Publications, Jaipur.

SEMESTER –II
PAPER-VIII: GEOHYDROLOGY & OCEANOGRAPHY
(For Credit By Choice)

Unit 1.

Water as a focus of geographical interest: Hydrological cycle – surface & subsurface water resources. i) Occurrence of groundwater. ii) Movement of Groundwater. iii) Principles of management of groundwater resources, Concept of safe yield, Conjunctive use of surface & groundwater. (15)

Unit 2.

Problems related to water use, Salinity, Alkalinity, Water logging, Water Pollution. Conservation & planning for the development of water resources. (15)

Unit 3.

Ocean Basin topography: continental shelf, continental slop, abyssal plain & Ocean deep- Submarine Hills, ridges & Trenches, Coral reefs and Island Arcs, Ocean deposit, Bottom Relief of Indian, Atlantic & pacific oceans. Heat Budget of ocean, Distribution of temperature & Salinity. (15)

Unit 4.

Ocean circulation: Factors affecting ocean currents, currents of Atlantic, Pacific & Indian Ocean, EL. Nino. La Nino. Man and Oceans: Oceans as a storehouse of mineral & food resources. (15)

REFERENCES:

1. Chorley R.J.(1967): Introduction to Geographical Hydrology, Methuen, London.
2. Dakshinamarthy C. etal (1973): Water resource of India and their utilization in Agriculture, Indian Agricultural Res. Inst. New Delhi.
3. Eskstein O (1965): Water Resource Development, Harvard University press, Cambridge, Mass.
4. Fucon.R (1963): The Problem of water – A world survey. Faber and Faber.
5. International water Resource Association and central Board of Irrigation & Power.(1975): A Report
6. Water for Human needs vol., II, III, IV and V, proceedings of the second world congress on waters resource 12-6- Dec.new Delhi.
7. Singh R.A. & Singh S.R. (1979): Water management, Principles & Practices. Tara Publication, Varanasi.
8. Todd D.K.(1959): Ground water Hydrology; John Wiley; New York.
9. Negi, S.S. (1994) : Geographical Science and water resource management; Printwell Jaipur (India)
10. Joseph, w. & Howard, P: Introductory oceanography, McGraw Hill. Kogakusha, Ltd., New Delhi. (International Student Education)
11. Peter K.W. (1970): Oceanography: An Introduction to the marine Environment, John Wiley & Sons Inc, New York.
12. Sharma R.C. (1970): Oceanography for Geographers, Chaitanya publishing house, Allahabad.
13. Negi B.S (1994-95): Climatology and oceanography Kedarnath, Ramanath Meerat, New Delhi.
14. Michael A.M.(1978): Irrigation; theory and practices, Vikas Pub.House, New Delhi.
15. Savinder Singh (1999) Physical Geography, Prayag Pustak Bhavan, Allahabad.
16. Strahler A. (1996) physical Geography; science and system of the Human Environment, New York, Jahu Wiley
17. Siddhartha K. (1999): Oceanography A Brief Introduction. Kaisalya Pub Pvt. Ltd. New Delhi.

SEMESTER-II
**PRACTICAL-III: STATISTICAL TECHNIQUES IN
GEOGRAPHY**

Unit 1.

Definition of Statistics, Importance & use of statistical techniques in geography. Frequency Distribution- Histogram, Polygon, O give curve, Cumulative percentage curve. (10)

Unit 2.

Measures of central Tendency: Calculation of mean, median, mode, quartile from grouped and ungrouped data. Measure of dispersion- Absolute measurements- Mean deviation, Quartile deviation, and Standard deviation. (20)

Unit 3.

Relative measurements-Coefficient of mean Deviation, coefficient of quartile deviation, Coefficient of variations, Index variability and relative variability. Skews: Karl Person's and Bowley's methods. (10)

Unit 4.

Correlation Analysis: Karl Pearson's Product moment correlation coefficient- Spearman's rank order. Significance of 't' Test on correlation- coefficients. Time series: Moving average, Least square method and drawing of line of best fit. (20)

REFERENCE:

1. Cole, J.P. & King, C.A.M. (1968): Quantitative Techniques in Geography. John Wiley & sons
2. Inc. New York.
3. Elhance, D.N. (1972): Fundamentals of statistics, Kitab Mahal, Allahabad.
4. Gregory, S. (1968): Statistical methods and the geographer. Longman, London.
5. Gupta, C.B. (1978); An introduction to statistical Methods, Vikas Pub. House, New Delhi.
6. Hoel P.G.: Elementary Statistics, Wiley, New York.
7. King, L.J. (1991): statistical Analysis in geography. Prentice Hall, Englewood Cliff N.J.
8. Hemawati: Statistical Methods for Geographers.
9. Singh R. L.: Elements of Practical Geography.

SEMESTER-II

PRACTICAL –IV : ANALYSIS OF SOCIO-ECONOMIC DATA.

Unit 1

1. Choropleth maps: Mapping of Socio-Economic Phenomena.(4)
2. Dot method & its relevance to distribution maps. (4)
3. Flow line charts & maps of transport flows. (3)

Unit 2.

1. Maps with proportional circles. (3)
2. Maps with divided proportional circles. (3)
3. Maps with proportional spheres. (3)

Unit 3.

1. Compound pyramid. (3)
2. Superimposed Pyramid. (3)
3. Triangular graph- trilinear relationship between three variables. (4)

Unit 4.

1. Cumulative graph. (4)
2. Deviational graph. (4)
3. Scatter diagram(4)
4. Logarithmic & Semi-logarithmic graphs. (5)

REFERENCES :

1. Lawrence, G.R.P. (1973): Cartographic methods, Methuen & Co. London.
2. Mishra, R.P. (1982): Fundamentals of cartography, Prasaranga, University of Mysore.
3. Monkhouse, F.J.R & Wilkinson, H.R: Maps & diagrams, Methuen & company, London.
4. Raisz, Erwin: Principles of cartography, McGraw – hill Book Co., New York.
5. Robinson A.H.& Sale R.D. Element of Cartography, John House & Sons Ltd., London.
6. Singh R. L. : Elements of Practical Geography.

SEMESTER-III
PAPER-IX: AGRICULTURAL GEOGRAPHY

Unit 1.

Definition, Nature & scope of Agricultural Geography. Origin of Agriculture, Approaches to the study of Agricultural Geography: Systematic & Regional. Cultural impact on agriculture : human factor in agriculture; systems of ownership, Immigrant Farmers, religious influences, Labour force, rural land / peasant relationship (15)

Unit 2.

Concept & Techniques of delimitation of Agricultural Regions-Crop Combination Diversification. Measurement of Agricultural Productivity and its regional imbalances, Von Thunen's theory of agricultural landuse, Spatial diffusion Process. (15)

Unit 3.

Green Revolution in India-Nature, Socio-economic constraints in the adoption, performance, Problems & prospects. (15)

Unit 4.

Agricultural systems- Location, distribution, types & characteristics of agriculture. Shifting Plantation, Commercial, Mixed agriculture. (15)

REFERENCES:

1. Clout H.D. (1972): Rural Geography, Pergoman press, Oxford.
2. Gilg Andveu (1984): Rural Geography; Edward Arnold, London.
3. Gregor H.F.(1970): Geography of Agriculture; Themes in Research. Prentice – Hall Englewood Cliff. London.
4. Ilbury B.W.(1983) : Agricultural Geography. Oxford University Press, London.
5. Mohammed A.(1978): Studies in agricultural Geography, Rajesh Pub. New Delhi.
6. Morgan W.B. (1978): Agriculture in the third world Methuen, London.
7. Morgan W.B. & Mutton R.C.(1971): Agricultural Geography, Mathuen,London.
8. Pacione M.(1984): Rural Geography. Harper & row, London.
9. Singh Jasbir & Dhillon S.S.: Agricultural Geography, New Delhi.
10. Tarrant J.R.(1974): Agricultural Geography, Newton,Abbot.
11. Bhatia B.M.(1977) : Poverty Agriculture &Economic Growth, Vikas New Delhi.
12. Chorley & Haggett P.(1971):Socio-Economics Models in Geography, London.Methuen.
13. Former B.H.(1977): Green Revolution. London, Macmillan.
14. Grigg,D.B.(1973): The Agricultural systems of The World, Cambridge University Press.
15. Hagerstrand, T.(1968): Innovation Diffusion as a spatial process, University of Chicago Press.
16. Hussain Majid (1999):Systematic Agricultural Geography, Rawat publications, Jaipur.(India)
17. Shfi M. (1983): Agricultural Productivity and regional Imbalances a Study of Uttar Pradesh, Concept, New Delhi.
18. Symon, L. (1968): Agricultural Geography, London.
19. Mohammad Noor: Perspective in Agricultural Geography, Six Volume.
20. Shfi M. (1978): Agricultural Productivity and regional Imbalances, concepts. Delhi.
21. Singh Jasbir (1973): Green Revolution, How is it? Vishal Pub. Kurukshetra.

SEMESTER -III
PAPER-X: SETTLEMENT GEOGRAPHY.

Unit 1.

Settlement Geography - Definition & Significance. Origin & Growth of settlements
Difference between Rural & Urban settlements. Rural Settlements-Types & Pattern,
Site and Situation. (15)

Unit 2.

Concepts of Urbanization, Urbanism, Urban growth, City Region, Rural-Urban
Fringe, Urban Sprawl, Ribbon corridor. (15)

Unit 3.

Megalopolis, Rank size rule, Primate, City, Central Business District (CBD) and its
Characteristics. (10)

Unit 4.

Theories in Urban Geography

- i) Concentric Zone Model by E.W. Burgess,
- ii) Sector Model by Homer Hoyt.
- iii) Multiple Nuclei Model by Harris and Ullman.
- iv) Central Place Theory by W.Christaller.

Functional Classification of Towns and Problems of Indian cities. (20)

REFERENCES:

1. Alexander J.W.(1991): Economic Geography. Prentice Hall of India. New Delhi.
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7. King L.J.& Golledge R.G.(1978): Cities, space & Behavior, Prentice Hall, engle wood cliff, New Jersey.
8. Mandal R.B.(2000): Urban Geography, Concept Publishing Co., New Delhi.
9. Mayer H.M. & Cohen (1967): Readings in Urban Geography, Central Book Depot. Allahabad.
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11. Ramachandran R.(1991): Urbanization and Urban Systems in India, Oxford Uty. Press. Delhi.
12. Robinson, Brian T.(1973): Urban growth, Mathuen & Company, London.
13. Sidhartha K. and Mukherjee. S.(2000): cities-Urbanizations & Urban Systems. Kisalaya pub. Pvt.Ltd.,New Delhi.
14. Yeates & Garner (1971): Readings in Urban Geography. The North American City. Harper & Row. New York.

SEMESTER-III
**PAPER -XI: REGIONAL DEVELOPMENT AND PLANNING IN
INDIA.**

Unit1.

Concept of Region- types and hierarchy of regions - concept of planning- types of planning - approaches to Regional planning. Geographical Indication. Concept of growth and development. Indicators of development. Measures of regional development. (15)

Unit 2.

Models of economic growth:

- a) Rastows stages of economic growth
- b) Gunnar Myrdal's concept of internal growth. (6)

Theoretical frame work for regional planning- Central Place Theory Growth pole, Growth foci approach. (8)

Unit 3.

Regional imbalances in India

- a) Industrial,
- b) Agricultural.
- c) Rural Urban ratio. (5)

Unit 4.

Regional planning in India. (through five years plans)

- a) Metropolitan planning.
- b) Rural development planning.
- c) Tribal area development planning. (7)

REFERENCES :

1. Dickinson R.E.(1964): City and Region ; A Geographical Interpretation. Routledge and Keagan Paul.
2. Friedman J.& Alonson W.(1964): Regional Development and Planning. MIT Press.Cambridge mass.
3. Galasson John (1974): An Introduction to Regional Planning Hutchinson. Educational London.
4. Hilborot j.G.M (1971): Regional planning. Rotterdam university Press, Rotterdam.
5. Misra R.P.Sundaram K.V. &V.L.S. Prakasa Rao (1974): Regional Development Planning In India.
6. Misra R.P. (1992): Regional planning . Concept Publishing company. New Delhi.
7. Mahesh Chand & Vinaykumar Puri(1983): Regional Planning in India, Allied publishers Ltd., New Delhi.
8. Reddi K. V. (1988): Rural Development in India, Himalaya Pub,. Co.
9. Whyntes Charles & Hammand (1979): Element of Human Geography, George Aflen & Unwin, London.
10. Bhat L. S. Aspects of Regional Planning in India.

SEMESTER –III
PAPER-XII: BIOGEOGRAPHY
(For Credit By Choice)

Unit1.

Biogeography: Nature, Scope & Significance, Elements of Biogeography with special reference to India. Plant & Animal Classification, Basis of Classification taxonomic & Ecological, Geographical basis of plant classification. (15)

Unit 2.

Plant Geography – elements, Influence of physical environment on plants, water need to plants, Bioclimatic frontiers. Agents of dispersal & barriers. Soil- Colour, texture, Structure, Soil horizons. Soil classification. Plant Communities – distribution of forests, Deforestation, Forestation & Social forestry in India, National forest policies of India (20)

Unit 3.

Zoogeography- Distribution of major animal groupings in the world, Zoogeography of India, Environmental Control on selection of animals, Animal dispersal & migration J. Schmidt and D. W. Tueker theories. (15)

Unit 4.

Ecosystems – forms & functions, - Marine, freshwater, Salt marsh & mountain ecosystems, Ecosystem- Conservation & management, Ecological balance (10)

REFERENCES :

1. Barry C. (1977) : Biogeography – An ecological & evolutionary Approach, Oxford,
2. Cole M.M.(1975): Recent developments in Biogeography, Longman,London.
3. Danserau P.(1957): Biogeography- An Ecological perspective, Renold Press, New York.
4. Darlington P.J. (1957): Zoogeography – Methew, New York.
5. Furley P.A, & Newly W.N.(1983): Geography of the Biosphere : Butter Worth, London.
6. Joy T.V. (1997); Biogeography – study of plants in the ecosphere.
7. Mathur H.S. (1986): Elements of Biogeography, Pointer Jaipur.
8. Martin C. (1975): Plant Geography. Methuen, London.
9. Muller P. (1986): Biogeography; Harper & Row, New York.
10. New big in M.I.(1986): Plant & Animal Geography : Methuen, London.
11. Pears N. (1985): Basic Biogeography, Longman, London.
12. Watts, d. (1971): Principles of Biogeography, McMillan, London.
13. Simmms T. G.: Biogeography, Natural & Cultural, Arnold & Heinemann, London.

SEMESTER –III
**PRACTICAL –V : QUANTITATIVE TECHNIQUES IN
GEOGRAPHY**

Unit 1.

Significance of quantitative methods in Geography.

- i) Population projection – semi average method.
- ii) Least square method.
- iii) Exponential population growth.
- iv) Lorenz curve.
- v) Gini's co-efficient. (15)

Unit 2.

- i) Rank size rule.
- ii) Nearest Neighbour Technique.
- iii) Nelson's method of town classification.
- iv) Centrophobic Analysis. (15)

Unit 3.

- i) Agricultural productivity – Kendal's method.
- ii) Index of concentration.
- iii) Gibb's method of Index of diversification.
- iv) Crop combination (Weaver & Doi).
- v) Chi-square method (for relief & landuse analysis.) (15)

Unit 4.

- i) Accessibility of transport network.
- ii) Breaking point theory.
- iii) Law of retail gravitation. (15)

REFERENCES:

1. Aslam Mahmood (1977): Statistical methods in geographical studies Rajesh Pub.New Delhi.
2. Gregory s. (1963): statistical methods and the Geographer, Longman's London.
3. Hammond R.& Mc Cullagh P.(1974): Quantitative Techniques in Geography Clarendon Press, Oxford.
4. Haring, Lloyed(1975): Scientific Geographic Research . W.C.Brow Company, U.S.A.
5. Hagget peter (1990): Geography a modern synthesis. Harper International, New York.
6. Kothari, C.R.(1996): Research methodology . Vishwas Prakashan, New Delhi.
7. Mishra, R.P.(1991) : Research methodology in Geography. Concept Publising, New Delhi.

SEMESTER –III

PRACTICAL –VI: COMPUTER APPLICATION IN GEOGRAPHY

Unit 1.

Computers: definition, characteristic, Hardware & software, Number system, Operating Systems, Introduction to DOS, WINDOWS, WORD, and EXCEL
Computer and Geographic data: Scale of measurement, Location data, and Data structure.(15)

Unit 2.

Computers in Cartography: Hardware and Software for Computer Mapping.
Application of computer Cartography : Simple Exercises for Representation of Geographic data – Histogram, Bar Graphs, Line Graph, Multiple Line Graph, Scatter Diagram, and Pie Diagram.(15)

Unit 3.

Computation of Central Tendency Value, Quartile, Standard deviation, 'r'Value and Trend line, With the help of computers.(15)

Unit 4.

Importance of information technology in Geographical Studies, Advantages of internet, Browsing & Surfing the geographical sites, web Pages, Portals & Down Loading files.(15)

REFERENCES:

1. D.J.Unnwin & J.A. Dawson(1987): Computer Programming for Geographers, Longman,London.
2. Monmonier, M.S.(1982) : Computer Assisted cartography, Prentice Hall.
3. David J. Maguire (1989) : Computers in Geography, Longman scientific & Technical,London.
4. Paul M.mather (1993): Computer application in geography John Wiley & Sons, New York U.S.A.
5. Cole & King (1968): Quantitative Geography.
6. Hagget Peter (1990): Geography a modern synthesis Harper international, New York.
7. Hammond B.(1974) : Quantitative techniques in Geography, McCullagh P.Clarendon Press, Oxford.

SEMESTER-IV

PAPER-XIII: DEVELOPMENT OF MODERN GEOGRAPHY

Unit1.

General nature of geographic knowledge during the ancient and medieval period. Founders of Modern Geography – i.) Alexander Von Humbolt, ii) Carl Ritter, iii) Friedrich Ratzel iv) Vidal de la Blache, v) William Morris Davis vi) Ellen Churchill Sample vii) Halford J Mackinder viii) Richard Hartshorne. (15)

Unit 2.

Development of Geography as a study of:

- a) Scientific discipline
- b) Man-environment relationship with reference to Determinism & Possibilism.
- c) Areal differentiation.
- d) Spatial Organization - Structure, Pattern & Process.(20)

Unit 3.

Measurements and explanation in Geography - laws, theories and models. Quantitative revolution.(10)

Unit 4.

Approaches in Geography- Positivism, humanism, radicalism and Behaviouralism and Post modernism. Paradigms and philosophy in Geography.(15)

REFERENCES :

1. Abler, Adams J.& Gould P.(1971): Spatial organization. The Geographer's view of the world. Prentice Hall, Engle wood cliff, New Jersey.
2. Adhikari Sudeepta(1972): Fundamentals of Geographic Thought. Chaitanya Publishing House, Allahabad.
3. Dickinson R.E.(1969) : The makers of modern Geography. Rout/edge & kegan Paul, London.
4. Dixit R.D. (1999): Development of Geographic Thought Longmans India Limited.
5. Free Man T.w.(1965): Geography As social science. Harper International Edition Harper & Row, Publishers, New York.
6. Harvey D. (1969): Explanation in Geography. London, Edward Arnold.
7. Hartshorne R.(1959): Perspective on the Nature of Geography. Rand McNally, Chicago.
8. Majid Hussain (1999): Geographic Thought. Rawat Publishing House, Jaipur.
9. Richard Peet (1977): Radical Geography - Alternative view points on contemporary social issue. Methuen & Co. Ltd. London.
10. Holt Jensen, Arid: (1998) Geography: History and Concepts, Sage publication, New Delhi.

SEMESTER –IV
**PAPER –XIV: REMOTE SENSING APPLICATION IN
GEOGRAPHY.**
(For Credit By Choice)

Unit 1.

Meaning & Application of remote sensing. Fundamentals of Remote sensing: EMR & its interaction with matter & atmosphere, Sensors & platforms- Landsat, SPOT, IRS & Radarsat, Introduction to Thermal & Microwave remote sensing, Use of meteorological satellites. (15)

Unit 2.

Aerial photography : Introduction to Aerial Cameras & image quality, Types of aerial photographs; Impact of season & time of flight planning. Elements of photo image recognition. Stereoscopes & stereopairs. Photogrammetry : Introduction, relief displacement & scale. (15)

Unit 3.

Mapping of Landuse / Landforms; interpretation of rock types & soil, cultural features natural hazards & water resources. (20)

Unit 4.

Basic concept of Geographical Information System (GIS). (10)

REFERENCES:

1. Americans Society of photogrametry (ASP)(1983): Manual of Remote Sensing. 2nd Ed.ASP Fall;s Church, V.A.
2. Avery T.E. & G.L. Berlin (1992): Fundamentals of Remote sensing & Air photo- Interpretation,. 514 Ed. Macmillan, New York, USA.
3. Campbell, J.B. (1987): Introduction to Remote sensing Guilfor, New York, USA.
4. Lillesand Thomas M & Ralph Kiffer (1994): Remote Sensing & Image Interpretation third edition , John Wiley & Sons, Inc New York, USA.
5. Sabins F.(1982): Remote sensing principles & application freemass & compare, New York, USA.
6. Verstappen H.Th (1977): Remote Sensing in Geomorphology; b Elsevier scientific publications compuring, Amsterdam, The Netherland.
7. Warrin R. Philipson (1997): Manual of Photographic interpretation, Second edition, American Society for Photogrammetry & Remote Sensing, manyland, USA.

SEMESTER-IV
PAPER-XV : POLITICAL GEOGRAPHY

Unit 1.

Definition, Nature, Scope and Significance. (10)

Unit2.

Elements of Political Geography – Location, size and shape, Natural resources, Population –Race, religion and language. (10)

Unit 3.

Concept of State, Nation and Nation-State. Federalism, Frontiers and boundaries, classification of boundaries, core and periphery relations. (15)

Unit. 4.

Concepts of Ecopolitics, Geopolitics- Geo-strategic Views: Heartland and Rimaland. The Political regions of the world. Political patterns of Europe, America, Asia and Africa. Geopolitical Conflicts – Indo- Pakistan and Indo – China. (25)

REFERENCES:

1. Adhikari Sudeepta (1997): Political Geography, Rawat Pub. Jaipur.
2. Blij De H.J.(1972): Systematic Political Geography . Wiley, New York.
3. Cohen S.B. (1973): Geography and Politics in a divided world. Oxford, New York.
4. Dixit R..D. (1982): Political Geography. Tata McGraw Hill New Delhi.
5. Dwivedi R.L (1996): Political Geography. Chaitanya Prakashan Allahabad.
6. Moor R. (1981): Modern Political Geography. McMillan, London.
7. Pounds NJG (1972): Political Geography. McGraw Hill, London.
8. Valkenberg S.U. & Stoz C. (1963): Elements of Political Geography. Prentice Hall of India, New Delhi.

SEMESTER - IV
PAPER-XVI (I): GEOGRAPHY OF TOURISM

Unit 1.

Concept of leisure and tourism. Nature, scope, Significance and types of tourism. Geography of tourism, Geographical basis of Tourism, Resources for Tourism Infrastructure for Tourism – Transportation, Accommodation, and basic Infrastructure. (20)

Unit 2.

Impact of tourism - Physical, Economical and Social cultural impacts. Concept of Ecotourism, New trends in Tourism .(15)

Unit 3.

Globalization and tourism, Tourism in India. Resource & Growth, National Tourism policy in India, Tourism in Maharashtra. Tourism Organizations.

Unit 4.

Tourism marketing - Marketing concepts.- Marketing in Tourism - The Tourist product- Segmentation- A priori Segmentation. Tourism circuits, Tour agencies.

REFERENCES :

- 1 Bhatia A.K.(1978): Tourism in India. Sterling pub. New Delhi.
- 2 Burkarl, A.J.(1974): Tourism, Past, present and future Heineman London.
- 3 Gearing Charles, E (1976): planning for Tourism development Praeger Pub, New York
- 4 Lawbon, F & Bauet B.(1977): Tourism and recreation Development mass, CBI pub.
- 5 Lundberg, D.E.)1996): The Tourist Business cehners Books. Internationa, Boston.
- 6 Robinson H.(1976): A geography of Tourism. Mac Donald and Evans Ltd; London.
- 7 Douglas Pearce (1981): Topics in Applied Geography, Tourist Development. Longman london New York.
- 8 Stephen L.J. smoth(1989): tourism Analysis : A Handbook- Longman Scientific of Telchnical.
- 9 Ministry of Tourism Govt. of India (1992): Report on National Action Plan on Tourism, New Delhi.
- 10 Minstry of tourism Govt.of India (1996): Report on National strategy for development of tourism New Delhi.
- 11 Minstry of Tourism Govt. of India (1999): Report on National Tourism . Policy in India. New Delhi.

SEMESTER -IV
PAPER-XVI (2) : POPULATION GEOGRAPHY

Unit 1.

Population Geography- definition, scope and Significance, Sources of Population Data. Factors Affecting Population distribution and density, population distribution patterns- World and India, Population Composition – Sex Ratio, Age, Occupation .(20)

Unit 2.

Population Change, fertility and Mortality and factors affecting them, Population Growth and Changes in India. Demographic Transition Theory. Migration – Types of Migration, Causes and Consequences, Theories of Migration- Ravenstein and Lee. .(20)

Unit 3.

Population and resources – Optimum population, Over Population and Under Population, Population resource Regions, Malthus Theory of Population. .(10)

Unit 4.

Population problems and Policies in India. .(10)

REFERENCES:

1. Barrett H.R.(1992): Population Geography, Oliver and Boyd Longman House, Harlow.
2. Bhende Asha & Kanitkar Tara(1975): principles of population Studies,Himalaya Publishing House, Bombay.
3. Chandna,R.C. & Manjit s. Sidhu(1980): Introduction to Population Geography, Kalyani Publishers, New Delhi.
4. Chandana, R.C. (1984): Geography of Population, Kalyani publisher, Ludhiana.
5. Garnier, J.B. (1976): Geography of Population, Longman Group Ltd., London.
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8. Hussein, Majid (1999): Human Geography (2Ed.), Rawat Publications, Jaipur.
9. John,I.Clarke (1972): Population Geography inded, Pergamon Press, Oxford.
10. Kingsley davis (1951): Population of India and Pakistan, princeton University Press,Princeton.
11. Ravenstein,E(1889):The Laws of Migration,journal,Royal Statistical Society,49,pp241-305.
12. Sinha V.C(1979):Dynamics of India's Population Growth,National Publishing House,New Delhi.
13. Smith,T.L)1960): Fundamental of Population Studies, Lipineott, London.
14. Trewartha,G.T.(1959): A Geography of Population; World patterns, John Wiley & Sons Inc.New York.
15. Trewartha,G.T.(1953): A Case for Population Geography, Annals of the Association of Geographers, June, pp 71-97.
16. Zelinsky, M. et. al. (1970) : Geography and Crowding World, Oxford University Press New York.
17. Zelinsky, W (1966): A Prologue of Population Geography, Prentice Hall Inc, M.J.
18. Sawant & Athawale A. S. : Population Geography, Mehta Kolhapur.

SEMESTER-IV
PAPER-XVI (3) : MEDICAL GEOGRAPHY.

Unit 1.

Medical Geography : Nature, Scope and Significance. Environmental influence on health, relationship between Socio – Cultural Factors & health. (15)

Unit 2.

Human health in India - Indicators of health, changes in Birth, death rates & infant mortality rates, life Expectancy, changes in sex ratio, literacy and population growth, Population Control, Nutrition - mal & under nutrition - causes & consequences. (15)

Unit 3.

Disease classification & distribution- T.B.-Cancer, Leprosy, Pneumonia, Aids, Cholera, Cholera Disease diffusion model. (10)

Unit 4.

Development of health care system in India - with special reference to Maharashtra, study of present health care systems - deficiencies & problems of efficiency enhancement. Health care problems in India - Urban & rural differences. With special reference to Maharashtra. (20)

REFERENCES :

1. Woods E.J. (1983): Social Geography of Medicine & health, CroonHelm London.
2. Learmonth ATA (1978): Patterns of Disease & Hunger, V Parid Chorles, London.
3. Hussain Majid (1994): Medical Geography, Anmol pub. New Delhi.
4. McGlashan N.D.(1972)Medical Geography, Methen, London.
5. McGlashan N.D. & B'unden Y.R. (1983): Geographical Aspects of health Academic press, London.
6. Philips D.R.(1981): Contemporary issues in Geography of health Case - GeoBooks, Norwick.
7. Pyle G.F. (1979): Applied Medical Geography John wifey washington.
8. Shannon G.W. & Dever G.E.A.(1974): Health care Delivery McGraw Hill New York.

SEMESTER -IV
PAPER -XVI (4): GEOGRAPHY OF MARKETING

Unit 1.

Nature, Scope and significance of Geography of Marketing Concepts of – Market place; market centre, marketing, market area, market cycle. Classification of markets-based on periodicity, census status; hierarchy; location. (20)

Unit 2.

Locational analysis - Location in relation to transportation; Agricultural landuse; surrounding villages. Market morphology - concepts; components, Types of shopping centers. (20)

Unit 3.

Marketing channels - retailing; whole selling & services. Role of market centers in regional development. (10)

Unit 4.

Theoretical frame work - central place theory of Christaller and August Lohse , General interaction theory and Reilly's; Break point theory. (15)

REFERENCES:

1. Berry B.J.L.(1964): Geography of Market Centres & Retail distribution Prentice Hall, Englewood Cliffs, N.J.
2. Bronmtey, R.J.(1975): Periodic Markets Daily Markets & fairs, A bibliographic centre for development studies Swan Sec.
3. Christaller, W.(1966): Central places in Sough Germany, Translated by C.Baskin, prentice Hall Englewood cliffs, N.J.
4. Daview, R.L. (1976): Marketing Geography, Matheue &Co. London.
5. Dixit R.S. (1988) : Spatial organisation of market centres ponteer Publishers, Jaipur.
6. Garnier B.J.& Delober A. (1977) : Geography of marketing, Longman, London.
7. Losch. A (1955) : Economics of Location. Translated by W.H. Wolon, Yale University press ,New Heaven.
8. N.C.A.E.R. (1983): Market Towns and spatial Development in India N.C.A.E.R. New Delhi.
9. Saxena H.M..(1990) : Marketing Geography. Rawat Publication, Jaipur.
10. Scott,. P.(1970) : Geography & Retailing, Hutchinson, London.
11. Vance, J.E. (1970) : Marchants world : The Geography of Whole-selling, Prentice Hall, Englwood cliffs,N.J.

SEMESTER - IV

PAPER -XVI (5) : GEOGRAPHICAL INFORMATION SYSTEM.

Unit 1.

A brief history of Geographical Information System. GIS & other information systems. The components of GIS-Computer Hardware-GIS Software. Importance of GIS, GIS Compared to Maps. (15)

Unit 2.

Data Models & Axioms; conceptual models of space - Geographical data models- Vector data models - Tessellation's of continuous fields. Pixels & Voxels. Display of geographical primitive using vector & Raster approaches - data types – Axioms & procedures for handling data in information systems. (15)

Unit 3.

Geographical data in the computer-coding the basic data models for inputs to the computer-data base structure- File & data access - Data structure for representing the geometry of spatial phenomena - methods for storing raster data. (15)

Unit 4.

Data input, verification storage & output, Sources of geographical data. Geographical data collectors & providers- Digitizer-Acquiring digital data sets from a data supplier. Creating digital data sets by manual input- data presentation.(15)

REFERENCES :

1. Aronoff s.(1989): Geographic Information System: A Management Perspective, WDK Pub. Oltawa, Cannde.
2. Burrough P.A. & Rachael A.M.(1998): Principles of Geographic Information System for land Resources Assessment. Oxford University press.
3. Calkins H.W. & Tomilson R.F.(1977): Geographic Information system; Methods & requirements for landuse planning , IGU Commission on Geographic Data Sensing & Processing Resources & land Investigator (RALI) programme. USGS, Reston, Virginia.
4. Dale P.F.& Mc Canghin J.D.(1988): Land Information management, Clarendon. Oxford.
5. Magnire D.J. & good Child M.F. & Rhind d.w. (Eds)(1991): Geographic Information System : Principles & Applications, Vol. II Longman London , I.
6. Tor Bernuandsen (1992): Geographic Information System VIAKIT & Norwegian Mapping Authorities, Arendal, Norway.
7. Star J. C. & J. E. : Geographical Inforamation Systems – an introduction.

SEMESTER-IV
PRACTICAL -VII : REMOTE SENSING

Unit 1.

Concept of Remote sensing advantages & disadvantages. Application in geography. Types of aerial photographs; scale & resolution.

Unit 2.

Electromagnetic radiation & its interaction with matter. Elements of aerial photo interpretation.

Unit 3.

Sensors, platforms & Data products. Introduction to Image processing.

Unit 4.

Introduction to Geographic Information system. Definition, Purpose, Advantages, Disadvantages, Data Structure- Raster & Vector, Components – Data input, output, Data Management.

EXERCISES

1. Introduction to vertical aerial photographs. Tracing of details with naked eye.
2. Indexing of aerial photographs.
3. Introduction to stereoscopes, stereoscopic test, orientation & construction of 3-D model under stereoscope.
4. Photogrammetry :
 - a) Determination of scale by various methods.
 - b) Determination of height of the object.
 - c) Relief displacement & Parallax bar.
 - d) Introduction to Parallax bar & Parallax measurements.
 - e) Determination of photo coverage area
5. Interpretation & Mapping of aerial photographs for :-
 - a) Landuse & Land cover.
 - b) Cultural landscape mapping. c) Rock types & structure.
6. Visual interpretation of satellite images, a) Landuse b) Landforms

REFERENCES:

1. Americans society of Photogrammetry (ASP)(1983): Manual of Remote sensing. 2nd Ed. ASP falls church, V.A.
2. Barrett E.C. & Curitis L.F.(1976) : Introduction to environmental Remote sensing. Chapman Hall London.
3. Dickinson g.c. (1979): Maps & air photographs, Arnold heinman pub, New Delhi.
4. Lo, C.P. (1981): Geographical application of aerial photography, Crane Russak & Co. Inc, New york.
5. Reeber, Robert G.(Ed) (1975): Manual of Remote sensing (2Vols). The American society of Photogrammetry, Falls church Virginia, USA.

SEMESTER-IV
PRACTRICAL-VIII: DISSERTATION BASED ON FIELD WORK

DISSERTATION (100marks)

Students are required to select an exploratory topic of geographical importance based on empirical evidences of literature search. They are expected to carryout fieldwork (if possible) & generate primary data, analyze it & prepare a Dissertation to submit at the time of examination.

SCHEME OF EVALUATION: (out of 100)

- a) Written test: 40- Marks
- b) Viva-Voce: 20 Marks
- c) Evaluation Dissertation: 20 Marks.
- d) Seminar : 20 Marks

REFERENCES:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London. Haring, Lloyed (1975): Scientific Geographic Research WC.Brow Company USA.
2. Johnes, P.A.(2968): Field Work in Geography, Longman.
3. Kothari C.R.(1996): Research Methodology, Vishwas Prakashan, New Delhi
4. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.
