

# **Post Graduate Programme in Geography**

**COURSE OF STUDY, SCHEME OF EXAMINATIONS AND SYLLABI**

**GENERAL PATTERN FOR POST GRADUATE- SCIENCE  
2018-2019**

**Applicable to candidate admitted from the academic year 2018-2019 onwards**



**P G Department of Geography  
Periyar E.V.R. College (Autonomous)  
Tiruchirappalli – 620 023.**

## M.Sc., Degree Board of Study Minutes (2018-2019)

**The board resolved that the following titles of the papers are changed as follows:**

### OLD TITLE

Advanced Atmosphere science

Regional Geography of India

Remote Sensing applications in Geography

Remote sensing and GIS Techniques

### NEW TITLE

Advance Climatology

Geography of India

Applications of Remote Sensing in Geography

Geo-Spatial Data Analysis.

- Resolved that the paper advanced Climatology , the content of paper is slightly modified.
- Resolved that the content of the paper Geography of India paper partially modified.
- Resolved that the content of the Oceanography paper has been modified in first and fifth units
- Resolved that the content of the practical paper Mapping of Population and Economic Data slightly modified.
- Resolved that the content of Applications Remote Sensing in Geography, the content partially modified.
- Resolved that content of the Papers GIS and GPS Techniques in Geography, Regional Planning and Development, Urban Geography , Practical paper Quantitative Techniques in Geography , Political Geography and Social and Cultural Geography are slightly modified.

### P.G Practical Question Paper Pattern

- SEM.: 75 marks + CIA: 25 marks = Total: 100 marks
  - SEM. : Record: 15 Marks + Question: (5 x 12 =) 60 Marks = 75Marks
  - CIA : = 25 Marks
  - Total : =100 Marks
- Five questions without choice is the common pattern.

### P.G Theory Question paper pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit- either or type)	05 x 5 = 25 marks
Section – C	Three questions (3 out of 5 questions - one question is compulsory from each unit)	3 x 10 = 30 marks

# Index

Sl. No.	Course	Courses	Hours	Credits	Int.	Ext.	Total
<b>I SEMESTER</b>							
1	Core - I	Advanced Climatology	6	5	25	75	100
2	Core - II	Geography of India	6	5	25	75	100
3	Core - III	Geography of Population	6	4	25	75	100
4	Core - IV	Oceanography	6	4	25	75	100
5	Core - P - V	Practical-I Terrain mapping and Climatic Data analysis.	6	4	25	75	100
Total			30	22	125	375	500
<b>II SEMESTER</b>							
6	Core - VI	Advanced Geomorphology	6	5	25	75	100
7	Core - VII	Agricultural Geography	6	5	25	75	100
8	Core - VIII	Geographical Thought	6	5	25	75	100
9	Core - IX	Thematic Cartography	6	4	25	75	100
10	Core -P-X	Practical-II Mapping of Population and Economic Data	6	4	25	75	100
Total			30	23	125	375	500
<b>III SEMESTER</b>							
11	Core - XI	Applications of Remote sensing in Geography	6	3	25	75	100
12	Core - XII	GIS and GPS Techniques in Geography	6	3	25	75	100
13	Core - P-X III	Practical – III Geo- Spatial Data Analysis	6	6	25	75	100
14	CBE - I	Research Methodology in Geography	6	4	25	75	100
15	CBE - II	Regional Planning and Development	6	4	25	75	100
Total			30	20	125	375	500
<b>IV SEMESTER</b>							
16	Core - XIV	Urban Geography	6	5	25	75	100
17	Core - P-XV	Practical-IV Quantitative Techniques in Geography	6	5	25	75	100
18	CBE - III	Political Geography	6	4	25	75	100
19	CBE - IV	Social and Cultural Geography	6	4	25	75	100
20	PROJECT	Project	6	4	25	75	100
Total			30	22	125	375	500
<b>GRAND TOTAL</b>			<b>120</b>	<b>87</b>	<b>500</b>	<b>1500</b>	<b>2000</b>

## SEMESTER-I

<b>Core - I</b>	<b>Advanced Climatology</b>	<b>Hours: 6</b>	<b>Credits 5</b>
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**Objectives:** At the end of the course students able to

1. Explain the basic concepts of Climatology
2. Apply the climatic concepts on micro & macro level

### UNIT – I

Nature and scope of climatology and its relationship with meteorology. The atmosphere: Structure and composition, insolation, heat-balance of the earth. Distribution of temperature: Temporal, vertical and horizontal, Green House effect.

### UNIT – II

Atmospheric pressure: Distribution, Major pressure belts, General circulation of the atmosphere – Planetary winds – Secondary or seasonal winds, local Winds Jet Streams – Atmospheric humidity – Evaporation – Condensation and precipitation.

### UNIT – III

Atmospheric disturbances: Cyclone and anti cyclone – Tropical and temperate cyclones Ocean and atmospheric interaction: El Nino, Southern oscillation (ENSO) and La Nina impacts.

### UNIT – IV

Indian Monsoon Mechanism, Significance and Impact – recent phenomena – Methods of climatic classification – Koppen and Thornthwaite. A critical appraisal of each classification, Interpretation and generation of climatic information, soils, agricultural activities.

### UNIT – V

Applied climatic concepts: Urban climate – micro climate – Human Comfort Zone – Importance of weather stations and Indian Meteorological department – METEOSAT.

### References:

1. Trewartha. G.T. (1968) – Introduction to Climate McGraw Hill New York.
2. Critch field H.J. (1975) – General Climatology, Prentice Hall New Delhi
3. Lal D.S. (1986) – Climatology, Chaitanya Publishing House, Allahabad.
4. Smith – Applied Climatology.

P.G Question Paper Pattern(SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-I

Core - II	<b>Geography of India</b>	Hours:6	Credits 5
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**Objectives:** At the end of the course students able to

1. Explain the distribution of various resources of India
2. Explain the problems and prospects of resource based activities in India.

### UNIT – I

India: Location - Administrative Divisions- Major Physiographic regions: Mountains, Plateau, Plain, Marginal Seas and Islands – Climate - Drainage System: Perennial and Non- Perennial Rivers – Multi River Projects.

### UNIT – II

Land resources – Distribution of land, Land use pattern. Water resources – rainfall distribution, major river systems, Canal and Lakes, Multipurpose project, irrigation types and distribution. Soil resources – Soil types and distribution, fertility. Forest resources – distribution of forest, wild life sanctuaries and national parks. Land use changes in Agriculture and Natural vegetation.

### UNIT – III

Agriculture resources – Agriculture land use, Intensity of Cropping. Wet and Dry Farming, Cropping pattern, Distribution of major crops: – food crops, plantation crops, horticulture, fiber crops, Green revolution. Animal resources – Distribution of cattle & sheep rearing, white revolution Fisheries: – fresh and marine water fishing, blue revolution.

### UNIT – IV

Mineral resources – Distribution of minerals, fuel minerals. Petroleum – distribution of oil fields, production of petroleum, petroleum refineries, natural gas. Metallic minerals and non metallic mineral distribution. Power resources – Hydroelectric, Thermal, and nuclear power generation. Non conventional source of energy – biogas, solar, wind and tidal – Industrial resources – distribution of major industries, knowledge based Industries, industrial clustering. Industrial policy and its impact – Transport – Roadways, Railways, Airways. Communication network.

### UNIT – V

Human resources – Growth, distribution and density. Indicators of human development: – Health Indicator, Social Indicator, and Economic Indicator – Population problems, foreign trade and brain drain.

### References:

1. Gopal Singh – Geography of India, Atma ram & sons, New Delhi.
2. Sharma T C and Countiho O – Economic and commercial geography of India, Vikas publishing home, New Delhi.
3. Thirtha R – Geography of India.
4. Rudder Datt & K P M Sundaram – Indian economy, S. Chand & Company, New Delhi.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-I

Core - III	Geography of Population	Hours:6	Credits 4
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**Objectives:** At the end of the course students able to

1. Explain the concepts and attributes of population
2. Explain various theories of population and concept of socio -economic development

### UNIT – I

Population Geography: Definition, Nature and Scope, Population Data – Sources – Reliability and problems of population data, Census of India.

### UNIT – II

Population distribution and Density, Population Growth, Pattern of World population. Population distribution and Density, Population Growth and Pattern of Indian Population. Factors affecting distribution, Growth and density of population.

### UNIT – III

Population Composition – (Age, Sex, Race, literacy, religion and rural urban population), Components of population growth – Fertility, Mortality and Migration – Types of migration, Determinants and Consequences of Migration, Population Projection methods and population Pyramid.

### UNIT – IV

Theories of Population – Malthusian Theory, Theory of Optimum, Over and Under Population by Dalton and Robbins, Demographic Transition Theory by W.S Thompson.

### UNIT – V

Population and development: Population resource regions and levels of population and social economic development: Human Development Index (HDI) and its components: India's population policies: Population and Environment; Implication for the Future.

### References:

1. Ghosh. B.N. (1987) – Fundamentals of Population Geography, Sterling Publishers Ltd., New Delhi.
2. Clarke John. I. (1981) – Introduction to Demography, Surjeet Publication, New Delhi.
3. Hornby William (1986) – An Introduction to Population, Cambridge University Press, London.
4. Glenn. T. Trewartha – Geography of Population-World pattern, John Willey and Sons Publications.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-I

<b>Core - IV</b>	<b>Oceanography</b>	<b>Hours:6</b>	<b>Credits 4</b>
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**Objectives:** At the end of the course students able to

1. State the importance of ocean.
2. Describe the physical and chemical properties of the Ocean.
3. Explain the movements and circulation of the ocean water.

### UNIT – I

Oceanography: Nature, scope and Content - Distribution of Land and Water – Distribution of major Oceans and Seas – Distribution of Major Oceanic Islands.

### UNIT – II

Surface configuration of the Ocean floor: Continental shelf, Continental Slope, Abyssal plain, Oceanic ridge and trench – Relief of Atlantic, Pacific and Indian Ocean.

### UNIT – III

Distribution of Temperature and Salinity in Ocean and Sea. Movements of Oceanic Water: - Waves – types – Tides – type and theories. Ocean currents of the Atlantic, Pacific and Indian Ocean – Marine Deposits – types and distribution

### UNIT – IV

Coral reefs – types, distribution and theories of origin, Ocean resource – fish, Minerals (manganese, oil natural gas).

### UNIT – V

Sea Level changes: Introduction, Evidence for sea level changes- Mechanisms of sea level changes, Impact of sea level changes, Impact of projects sea level rise.

### **References:**

1. Davis. Richard J.A. – Oceanography-An Introduction to the Marine Environment. Wm. C.Brown Iowa. 1986.
2. Garrison, T. – Oceanography-An Introduction to Marine Science, Books/Cole, Pacific Grove, USA, 2001.
3. King, C.A.M. – Oceanography for Geographers, 1962.
4. Sharma, R.C. – The Oceans, Rajesh, New Delhi. 1985.
5. D.S. Lal, – Oceanography, 2010.
6. Vattal and Sharma, – Oceanography, 2009.

**P.G Question Paper Pattern**(SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-I

Core - P - V	Practical-I Terrain mapping and Climatic Data analysis.	Hours:6	Credits 4
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### Terrain Mapping and Climatic data Analysis

**Objectives:** At the end of the course students able to

1. Draw various types of profile to given contour maps.
2. Draw climatic, morphometric and slope analysis.

#### UNIT – I

Drawing Profiles: Serial, Superimposed, Projected and Composite Profiles.

#### UNIT – II

Slope Analysis: Wentworth, Smith and Robinson Methods.

#### UNIT – III

Morphometric Analysis: Identification of stream Orders – Bifurcation Ratio – Drainage Density-Stream Length ratio.

#### UNIT – IV

Shape measurement: Miller's Circularity Ratio, Boyce Clarke method and length Breadth Ratio Method.

#### UNIT – V

Climatic Data Analysis: Foster's Climograph, Climatograph, Rainfall Dispersion diagram

– Octagonal Wind Rose..

#### References:

1. Gopal Singh – Map Work and practical Geography, Vikas publishing House Pvt. Ltd.,
2. Misra, R.P. and Ramesh, A (1989) – Fundamentals of Cartography, Concept Publishing Co., New Delhi.
3. Rampal, K.K. – Mapping and Compilation-Methods and Techniques, concept publishing.
4. Singh R.L. – Elements of Practical Geography, Kalyani Publishers, New Delhi.

For PG Practicals, Five questions without choice is the common pattern.

(Record: 15 Marks + Question: 5 x 12= 60 Marks = Total: 75 Marks)



## SEMESTER-II

Core - VI	Advanced Geomorphology	Hours:6	Credits 5
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**Objectives:** At the end of the course students able to

- 1 Explain the basic concepts and contents of Geomorphology
- 2 Explain geomorphic and gradation process and its associated land forms.

**Unit –I:** Geomorphology - Definition - Fundamental Concepts – Scope - Origin and evolution of the earth: view of Gaseous Hypothesis at Kant, Nebular Hypothesis at Laplace - Interior of the Earth Structure - Theory of Isostasy: Views of Pratt and Aries - Geological-time-scale.

**Unit – II:** Theory of Plate Tectonics and Sea Floor Spreading, Geosynclines - Wegener's Theory of Continental drift - Earth Movements: Endogenetic Force, Sudden Force - Volcanoes: Components, Types of Eruptions, Volcanic Materials, Geographical Distribution and Major Volcanic Eruptions Occurred.

**Unit – III:** Earthquakes: Causes, Measuring Earthquake, Classification, Geographical Distribution and key earthquakes. – **Rocks:** Classification and Characteristics. – Relief Features: Mountain Building, Plateau and Plain.

**Unit – IV: Diastrophic Movement:** Epirogenetic Movement, Type – Orogenetic Movement: Folds: Types, Nappes – Crystal Fracture: Fault, Type of Faults and Rift Valley – Exogenetic force – Process of Weathering and Mass Movement.

**Unit – IV:** Critical Study of the Concept of Cycle of Erosion–W.M.Davis and W. Penk - Drainage system and drainage patterns. - Denudation Process – Erosional, Transportational and Depositional Land forms of Fluvial, Karst, Aeolian,.

**Unit – V:** Denudation Process in Glacial and Coastal process- Application of geomorphology: Natural Hazards and Environment Management - Climate Geomorphology - Morphogenetic Regions - Applied Geomorphology with reference to Engineering, Minerals Exploration and Hydrological studies.

### References:

1. Dayal P. (1995) A Text Book of Geomorphology 2nd Edition. Sukla Book, Patna.
2. Kale. S Vishwas and Avijit Gupta, (2015), Introduction to geomorphology, Universities Press (I.) Pvt. Ltd.
3. Strahler ., A.N.&Strahler A. H. (1984) Elements of physical Geography. John Wiley
4. Savindra Singh (2007), Physical Geography, PrayagPustakBhawan, Allahabad.
5. Savindra Singh (2007), Geomorphology , PrayagPustakBhawan, Allahabad.
6. Richard H. Bryant (1976), 2015. Physical Geography Made Simple, Rupa Publication (I.) Pvt. Ltd., N. Delhi.
7. William D. Thorn bury.(2004) Principles of Geomorphology. CBS Publishers & Distributers Pvt. Ltd.
8. Woodridge S.W and R.S. Morgan (1991) An Outline of Geomorphology, The Physical Basis of Geography, Orient Longman, Kolkata.

### P.G question paper pattern

Part : A	Ten questions (two questions from each unit)	10x2 =20 marks
Part : B	Five questions (two questions from each unit- either or type)	5 x 5 = 25 marks
Part : C	Three questions	3 x 10 =30 mark

(3 out of 5 questions - one question is compulsory from each unit)

SEM – 75 marks  
CIA – 25 marks  
**Total – 100 Marks**

## SEMESTER-II

Core - VII	Agricultural Geography	Hours:6	Credits 5
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**Objectives:** At the end of the course students able to

- 1 Explain the features of agriculture and their concentration.
- 2 Explain problem and prospectus of agriculture geography

### UNIT – I

Nature – Scope and significance of Agricultural Geography – Approaches to the study of Agricultural Geography – Origin of Agriculture : Genecenters.

### UNIT – II

Determinants of Agriculture – Factors: Physical and Non-physical, Institutional and technological - Agricultural data source –Land classification in India – Soil types- Irrigation types and distribution in India.

### UNIT – III

Models in Agricultural Geography: Von Thunan model of Agricultural location and modification O.L. Jonsasson’s model- Agricultural systems of the World – A review of Whittlesey’s Agricultural classification.

### UNIT – IV

Agricultural Rationalization – Cropping Pattern, Crop concentration and measurement of Agricultural productivity, Crop diversification regions – Bhatia .Crop combination regions: Weavers, Doi’s, Raffiuallah and Coppock’s.

### UNIT – V

Agricultural regions of India- Recent development of Agriculture – Agro-Climatic Region in India – Green revolution in India New Trends in Agriculture: Modernization, Eco-farming.

### References:

1. Jabir Saingh K. Dhillon S, S. 1984 – Agricultural Geography, Tata McGraw Hill, New Delhi.
2. Hussian. M 1979 – Systematic Agricultural Geography Rawat Publication Jaipur, New Delhi.
3. Mohamed N 1981 – Perspective Agricultural Geography, vol. I, Concepts publishing.
4. Tiwari R.C., Geography of India, prayag Pustak Bhawan, Allahabad.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-II

<b>Core - VIII</b>	<b>Geographical Thought</b>	<b>Hours:6</b>	<b>Credits 5</b>
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**Objectives:** *At the end of the course students able to*

- 1 Identify the importance of tourism and its principles
- 2 Identify the potentiality of tourism centers and their problems.

### UNIT –I

The Field of Geography: Nature – Branches - Approaches - Development of Geographical Thought: Classical period – Medieval Period– Greeks, Romans, Arabs – German – French – British –America – Australia – Chinese and Indian Geographical Thought.

### UNIT –II

Founders of Modern Geographical Thought – Traditions in Geography – Man – Land, Area Studies, Spatial and Earth Science Traditions – Dualism and Dichotomy – Systematic and Regional, Deterministic and Possibilistic, Physical and Human, Ideographic and Nomothetic, Qualitative and Quantitative.

### UNIT –III

Paradigms in Geography - Major Geographical Thoughts - America: Davis, Bowman, Hortsone, British: Mackinder, Huntington, Roxby, German: Humbolt, Ritter, Penk, France: Vidal de la Blache, Jean Brunhes, Albert Demangeon, Darwinism- Impact on Geographical Thought.

### UNIT- IV

Quantitative Revolution – Concept – Hypothesis – Laws – Description and Explanation - Systems Approach and Analysis – Inductive and Deductive.

### UNIT –V

Recent trends in Geographic Studies – Resource Management – Environmental Impact Assessment – Risk Analysis – Human Rights and Conflict Resolution - New Techniques in Geography – Spatial Technology – Remote Sensing – GIS – GPS.

### References:

1. Adhikari .S (1992), Geographical Thought, Chiatanya Publishing House, Allahabad.
2. Aeils Holt Jensen (2009), Geography, History and Concepts: A student's guide, Sage.
3. Peet, R. (1998). Modern Geographical Thought. Wiley-Blackwell Publishers, New Jersey.
4. Harvey, M.E. and Pily, B.P. (2002). Themes in Geographic Thought. Rawat Publications, Jaipur.
5. Husian, M. (2011). Human Geography. Rawat Publication, New Delhi.
6. Haggett, P. (1979). Geography: A Modern Synthesis (3rd Edition). Harper and Row Publishers, New York.
7. Rana .L (2008), Geographical Thought: A systematic record of Evolution, Concept Publication, New Delhi.
8. Dikshit .R .D (2006), Geographical Thought – A contextual Hisotry of Ideas, Prentice Hall of India.
9. Dickinson .R .E (1969), The Makers of Modern Geogaphy, Routeldge and Kegal Paul,London.
10. Richard Peet (2003), Radical Geography, Rawat Publications, Jaipur.

Part : A Ten questions (two questions from each unit)

10x2 =20 marks

Part : B Five questions (two questions from each unit- either or type)

5 x 5 = 25 marks

Part : C Three questions

3 x 10 =30 mark

(3 out of 5 questions - one question is compulsory from each unit)

SEM – 75 marks

CIA – 25 marks

Total – 100 Marks

## SEMESTER-II

<b>Core - IX</b>	<b>Thematic Cartography</b>	<b>Hours:6</b>	<b>Credits 4</b>
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**Objectives:** At the end of the course students able to

1. Know the history, development and scope of thematic cartography
2. Explain the basic concepts of thematic cartography.

### UNIT – I

Cartography as an Integrated Discipline: Nature and Scope of Cartography – Meaning of Maps – Photographs, and Satellite Images – Types and Uses of Maps – Artistic Learning and Scientific Bases of Cartography – Cartography as a Human Communication – Branches of Cartography.

### UNIT – II

History and development of Cartography: Ancient Period – Late Medieval Period – Early Modern Period – Recent Period – Cartography as a Profession – Divisions – Commercial Cartography – Development of Cartography in India.

### UNIT – III

Map Making Process: Procedure of Map Data – Compilation – Pull – Ups – Compiling Physical and Cultural Details – Selection of Details – Elements of Generalization: Simplification, Classification – Generalization – Controls – Symbolization – Thematic and Complex Mapping: Types and Problems.

### UNIT – IV

Map Design and Layout: Principles – Theory of Visual Perception – Making Symbols Visually Significant Constraint in Map Design – Map Format – Maps for children, Neo – Literates and Blind.

### UNIT – V

Toponymy and Map Reproduction: Lettering and Toponymy, Drawing Materials and Equipment – Map Reproduction: Planning Processes Related to Duplicating, Printing and Latest Methods – Automated Cartography.

### References:

1. Misra R.P. and Ramesh. (1989) – Fundamentals of Cartography, Concept publishing Co., New Delhi.
2. Neg. P. Ed., (1992) – Cartography and Remote Sensing, Concept Publishing Company, New Delhi.
3. Robinson, A.H. Sale Morrision J.L. and Muehrake (1985) – Elements of Cartography, John Wiley Sons, New York.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-II

<b>Core -P-X Practical</b>	<b>Practical-II Mapping of Population and Economic Data</b>	<b>Hours:6</b>	<b>Credits 4</b>
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**Objectives:** At the end of the course students able to

1. Draw the various types proper graphs based on available data
2. Draw the various population and economic data and interpreted.

UNIT – I

Graphs: Simple graphs, semi – Logarithmic, Log – Log (Double Log) Graphs, Triangular graphs and Lorenz curve.

UNIT – II

Population distribution maps: Isopleths, Choropleth and The zipf Rank – Size Rule of City Populations – Population potential map – Complex Mapping.

UNIT – III

Mapping of Agricultural data: Cropped Area, Crop Ranking, Cropping intensity, Concentration, Diversification.

UNIT – IV

Crop Combination: Weaver, Doi's Raffiullah and Coppock's Methods.

UNIT – V

Mapping of flow data – Accessibility, Traffic flow Pattern , Ray diagram and Buffering.

References:

1. Hammond. R. Macullagh. P.S. – Quantitative techniques in Geography.
2. Peter Toyne and Newboy P.T. – Techniques in Human Geography.
3. Monkhouse, F.J. and Wilkinson H.R. – Maps and Diagrams, London, Methuen & Co., Ltd UK.
4. King L.J. – Statistical analysis in Geography
5. Epton, – Statistics for Geography.
6. Misra R.P and Ramesh A (1989) – Fundamentals of Cartography, Concept Publishing Co., New Delhi.
7. Singh. J and Dhillon – Agricultural Geography.

For P G Practicals, Five questions without choice is the common pattern.

(Record: 15 Marks + Question: 5 x 12= 60 Marks = Total: 75 Marks

## SEMESTER-III

<b>Core - XI</b>	<b>Applications of Remote sensing in Geography</b>	<b>Hours:6</b>	<b>Credits 3</b>
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**Objectives:** At the end of the course students able to

1. Explain the concepts of remote sensing.
2. Explain the application of remote sensing in geography.

### UNIT – I

Remote sensing – Definition, Historical development – EMR and its characteristics – Interaction of EMR with atmosphere and earth features – atmospheric windows – types of remote sensing – platforms – sensors - Ground truth verification

### UNIT – II

Aerial Remote Sensing; Types of Aerial cameras – films – photographs - Elements of photographs: marginal information and scale – measurement of scale Stereo model – relief displacement – measurement of height - Elements of photo Interpretation.

### UNIT – III

Satellite Remote Sensing – LANDSAT, SPOT, ERS, IRS, IKONOS and QUICK BIRD. Scanning and orbiting mechanism – resolution and sensor characteristics.

### UNIT – IV

Fundamentals of Image Interpretation – Visual Image Interpretation, Image Rectification, Image enhancement – Classification – Supervised and Unsupervised.

### UNIT – V

Applications: Air photo comparison and adjustments of information with toposheets. Landuse and landcover – Water resources management, Natural disaster management – Public Health and Control programmes. Indian Remote Sensing centres and their activities.

### References:

1. Thomas, M.Lillesand (1986) – Fundamentals of Remote Sensing, Willy Sons, New York.
2. John R.Jensen (2003) – Remote Sensing of the Environment, Person Education, New Delhi.
3. Curran (1985) – Principles of Remote Sensing, Longman, London.
4. Lo.C.P. (1986) – Applied of Remote Sensing, Longman, London.
5. Chouhan U.R. (1998) – Remote Sensing and Photogrammetry Principles and applications, Vigyan Prakashan, Jodhpur.

P.G. Theory Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit- either or type)	5 x 5 = 25 marks
Section – C	Three questions (3 out of 5 questions - one question is compulsory from each unit)	3 x 10 = 30 marks

## SEMESTER-III

Core - XII	GIS and GPS Techniques in Geography	Hours:6	Credits 3
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**Objectives:** At the end of the course students able to

1. Explain the concepts of GIS and its various components.
2. Explain the principles of GPS and its applications.

### UNIT – I

Maps and GIS: Map elements: Point, Line and Area – Mapping techniques – Scales - Coordinate system – Projection; GIS - Definition – Development - Components - Capabilities and Contribution disciplines of GIS.

### UNIT – II

Data Structure: Types of data: Spatial and Attribute – Representation of data: Raster and Vector - Methods of data storage: Raster and Vector data storage method – Conversion of data: Rasterization, Vectorization and Integration – Comparison of raster and vector data.

### UNIT – III

Data input and editing: Scanning, Digitizing, Topological , Georeferencing , Rubber sheeting and Edge matching – Database Management System: linking spatial and attribute data

### UNIT – IV

Data Analysis and Models: Vector and Raster data analysis: Queries, Buffering, Map overlay, Boolean, Map manipulation; Cell by cell, Neighborhood, Zonal and Distance measures; Terrain Analysis, Spatial Interpolation, Region based analysis and Network analysis – Models – Binary, Index, Regression and Process models – GIS packages: Raster and Vector based GIS packages

### UNIT – V

Global Positioning System (GPS) – Development of GPS - Segments: Space, Control and User – Different names of GPS - GPS Receivers types based on Channels, Applications, Frequencies and Ranges - GPS Software – Applications of GPS: Location, Navigation, Tracking, Mapping, Surveying and Timing.

### References:

1. Kang – Sung Chang (2002) – Introduction to Geographic Information System. Tata McGraw Hill Publishing Company lit. New Delhi.
2. Peter A. Burrough and Rachael A. Medonnell (1998) – Principals of Geographic Information System, Oxford University Press, New York.
3. Anji Reddy M. (2014) –Textbook of Remote Sensing and Geographical Information Systems, BS Publications.
4. Anand P.H. (2003) – Principles of Remote Sensing and GIS, Srivenkateswara Publishers, Kumbakonam.

P.G. Theory Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit- either or type)	5 x 5 = 25 marks
Section – C	Three questions (3 out of 5 questions - one question is compulsory from each unit)	3 x 10 = 30 marks

## SEMESTER-III

Core - P-X III	Practical – III Geo_Spatial Data Analysis	Hours:6	Credits 6
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**Objectives:** At the end of the course students able to

1. Explain the concepts and types of aerial photographs.
2. Do stereovision test, visual interpretation and digital image processing.

### UNIT – I

Aerial Remote Sensing: – Marginal Information – Determination of Scales and Height – Interpretation of Aerial Photographs – Stereo pairs and Stereograms – Mapping from Aerial Photographs.

### UNIT – II

Satellite Imagery: – Marginal Information – Image interpretation – Visual interpretation techniques – Digital Image Processing : – Digital numbers – Colour composites – Image Classification – Supervised and Un Supervised – Preparation of Thematic layers.(General Land use).

### UNIT – III

Geo referencing of spatial data – Vector and Raster data – Margins – Scans – Digitization – Editing and creation of attribute tables – Preparation of Thematic Maps.

### UNIT – IV

Integration of attribute data – Query – Overlay analysis – Map Algebra Reclassification – Creation of DEM and TIN.

### UNIT – V

GPS – GPS survey – Preparation of Maps using GIS software.

### References:

1. Lillesand, T.M., and Keifer, R.W., (1994) – Remote Sensing and Image Interpretation, John Wiley & Sons, New York.
2. Rampall, K.K., (1999) – Hand book of Aerial Photography and Interpretation, Concept Publishing Co., New Delhi.
3. Sabins, F.F.Jr., (1987) – Remote Sensing: Principles and Interpretation, W.H. Freeman & Co., New York.
4. Strandberg, C.H, (1967) – Aerial Discovery Manual, John Wiley & Sons, New York.

### P G Question Paper Pattern for Practical and EDC

(SEM.: (5 x15 =) 75 marks + CIA: 25 marks = Total: 100 marks)

Five questions, minimum one question from each unit is compulsory.



## SEMESTER-III

CBE - I	Research Methodology in Geography	Hours:6	Credits 4
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**Objectives:** At the end of the course students able to

1. Explain the concepts and process of research methodology in geography.
2. Explain the concepts of analysis of data and method of report writing.

### UNIT – I

Research Trends in Geography, Meaning – Need for Scientific Research – Types of Research – Approaches to Geographical Research: Identification of Fields,

### UNIT – II

Logic in Research: Hypotheses, Concepts and Facts, Principles, Laws and Theory and Their Implications in Geographical Research – Role of Models.

### UNIT – III

Data Acquisition and Analysis: Collection of Data – Source of Data: Primary and Secondary, Sampling Techniques, Structuring Database – Data Transformation – Simple Quantitative Techniques in Analysis of Data: Correlation, Simple Regression, Chi – Square.

### UNIT – IV

Research Design: Literature Survey, Selection of the Topic – Statement of the problem – Formulation of Hypotheses, Testing of Hypotheses – Time Schedule, Bibliography – Role of Internet,

### UNIT – V

Thesis Writing: Organization of the Thesis, Thesis Writing Styles, Formats, Literature Review and Appraisal, Reference Materials. Selection of Writing and Reference Citing Styles, Drafting of Thesis, Thesis Editing – Writing of Abstracts, Reports,

### References:

1. Anderson J, Durston, B.H. and Poole, M. (1970) – Thesis and Assignment Writing. Wiley Eastern Ltd., New Delhi.
2. Demoko et al. – Scientific Reasoning in Geographical Research.
3. Cooray P.G. (1992) – Guide to Scientific and Technical Writing, Hindagala, Sri Lanka.
4. Davis J.C. (1986) – Statistics and Data Analysis in Geology, John Wiley and Sons, New York.
5. Davis W.K.D. (1972) – Conceptual Revolution in Geography, University of London Press Ltd., London.
6. Fitzgearld B.P. et al., (1974) – Science in Geography 1, 2, 3, 4, 5 and 6, Oxford University Press, London.
7. Hammond. R and Megullagh, P., (1978) – Quantitative Techniques in Geography: An Introduction, Clarendon Press, Oxford
8. Hanag. L.L., and Lounsbury, J.F. (1971) – Research Methods in Geography, Brown Company Publishers, Iowa.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-III

CBE - II	Regional Planning and Development	Hours:6	Credits 4
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### Regional Planning and Development

**Objectives:** At the end of the course students able to

- 1 Explain the basic concepts and approaches of regional planning.
- 2 Explain the regional planning of India and Tamil Nadu.

**UNIT- I: Regional Planning:** Concept of a region; Types of regions Formal, Functional and Nodal - methods of regionalisation Delineation methods of regions - Regional Imbalances - Regional development strategies - Regional disparities: causes and consequences.

**UNIT- II: Geography and Regional Planning:** Concept, Principles and Objectives of Regional Planning - Regional Approaches -Processing Techniques of regional planning -Types: Sectoral, Spatial, Decentralized planning - Difficulties for planning - Regional Hierarchy: Macro, Meso and Micro levels - Current Status of Regional Planning.

**UNIT-III: Theories of Regional Development:** Industrial Location Theory view of Webber and A.Losch, Rank Size Rule, Hoover Theory, Central Place Theory, Concentric Zone Theory, Attraction Theory, Growth Pole Theory – Role of the information through GIS, Remote Sensing, GPS and GNSS. for regional planning and development.

**UNIT-IV: Regional Development and Planning:** Planning Regions of India - Experience of Regional Planning in India; Five Year Plans - Integrated Rural Development Programmes; Panchayat Raj and decentralised planning - Command area development Programme - Watershed management -Planning for Backward Area, Desert, Drought prone, Hill, Tribal area development - Multilevel planning - Town planning - Urban planning.

**UNIT-V: Environmental Impact Assessment - Environmental issues in regional planning- Disaster management and Planning- Integrated Area Development Planning (IADP) - Health Information and Planning -Development planning for Agriculture, Industry and Infrastructures – Industrial Town- Special Economic Zone - Decision support system (DSS) for land use planning and land management- Approaches to problem solving.**

### References:

1. Chandna. R.C (2004), Regional planning and development , Kalyani Publishers, Ludhiana
2. Kullar, D.R (2012), India, A Comprehensive Geography, Kalyani Publishers, Ludhiana.
3. Laxmidevi (1997) Planning Development and Regional Disparities, Anmol Publication Pvt. Ltd., New Delhi.
4. Mahesh Chand and Viney K. Puri (1985) Regional Planning in India, Allied Publishers Pvt. Ltd., Bombay
5. Mishra R.P. (1979) Regional Planning and National Development, Vikas Publishing House Pvt. Ltd., New Delhi.
6. Mishra RP (1969) Regional Planning Concepts Techniques Policies and case studies, Prasaranga, The Mysore University, Mysore.
7. Singh Jagadish (2003) India – A Comprehensive Systematic Geography, GyanodayaPrakashan, Gorakhpur, U.P.
8. Tiwari R. C. (2005) Geography of India, PrayougPustakBhavan, Allahabad
9. V.K.R.V. Rao (1978). Planning in Perspective, Allied Publishers Private Limited, Bombay.

P.G question paper pattern

Part : A Ten questions (two questions from each unit) 10x2 =20 marks  
Part : B Five questions (two questions from each unit- either or type) 5 x 5 = 25 marks  
Part : C Three questions 3 x 10 =30 mark

(3 out of 5 questions - one question is compulsory from each unit)

SEM – 75 marks  
CIA – 25 marks  
Total – 100 Marks

## SEMESTER-IV

<b>Core - XIV</b>	<b>Urban Geography</b>	<b>Hours:6</b>	<b>Credits 5</b>
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**Objectives:** At the end of the course students able to

1. Explain the nature and growth of urbanization in India.
2. Explain the concepts of classification of urban and urban problems.

### **UNIT – I**

Nature and Scope of urban Geography – Factors and Causes of Urban and Sub – Urbanization Growth, World Urbanization: Modern Periods – Urbanization in India: Pre and Post

### **UNIT – II**

Urban Demographic Structure – Age and Sex Ratio, Literacy, Population density and Distribution – Occupational Structure – Distance Decay – theory of Alfred Edgar M.Weber, Hoover and August Losch.

### **UNIT – III**

Economic Base: Basic and Non – Basis concepts – Urban Classification: Morphological – Functional Classification of cities: Auroseau, Harrision and Nelson only – Urban Land Use and Ecology – Urban land use models: Primary of cities, Zipf Rank Size Rule , Urban Hierarchy and Christaller’s central Place Model, Concentric zone, Sector and Multiple Nuclear Models.

### **UNIT – IV**

Urban Expansions: Horizontal and Vertical – Urban Sprawl – Rural and Fringe – Suburbs – Urban Concepts of Satellite Towns and New Towns – City Region Hierarchy- – Social area analysis – Residential land use – CBD Region Hierarchy - Smart City- Rurban.

### **UNIT – V**

Urban problems: Slums, Solid Waste, Sewage, Water Supply and Transport – Green Belt - Classification of Cities and Smart Cities in India.

### References:

1. Jones. E (1970) – Towns and cities, Oxford University Press.
2. Yeates and Corner – The North American City Harper and Row.
3. Carter, H. – The Study of Urban Geography, Edward Arnold, London.
4. Major and Kohn – Readings in Urban Geography, Central book Dept., Allahabad.
5. Northam, U.K. (1975) – Urban Geography, John Wiley and Sons.
6. Johnson J.H. – Urban Geography, Pergaon.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-IV

<b>Core - P-XV</b>	<b>Practical-IV Quantitative Techniques in Geography</b>	<b>Hours:6</b>	<b>Credits 5</b>
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**Objectives:** At the end of the course students able to

1. Do spatial and transport network analysis.
2. Find measures of central tendencies and related findings
3. Do testing of hypothesis From Mapping

### UNIT – I

Spatial Analysis – Centro graphic analysis: Mean center – weighted mean Median center – Standard Distance – Nearest neighbour analysis.

### UNIT – II

Transport network analysis – Topology – Connectivity – alpha – beta – gamma indices

### UNIT- III

Sampling: Types ( Random, stratified and Cluster Sampling) – Scatter Diagram - Accessibility measures – shortest path and binary index and detour index.

### UNIT – IV

Measures of Central Tendency, Deviation, Standard Deviation, Dispersion - Correlation, Simple and Rank – Linear Regression.

### UNIT – V

Testing of Hypothesis T – Test, F – Test, Chi – Square Test (From Mapping).

### References:

1. Monhkose & Wilknsn (1976) – Maps and diagrams Mathew London.
2. Peter Toyne – Techniques in Human Geography.
3. Hammond R. – An Introduction Quantitative techniques in Geography, McGraw Hill, Company, London.
4. Lillesand T.M. & R.W. Kifer (1986) – Remote Sensing and Image Interpretation, John Wiley Sons, New York.
5. Sabins F.F. Jr. (1986) – Principle of Remote Sensing, English Books Society, Long Man.

### P G Question Paper Pattern for Practical and EDC

(SEM.: (5 x12 =60 marks+ Record: 15marks + CIA: 25 marks = Total: 100 marks)

Five questions without choice is the common pattern.

## SEMESTER-IV

<b>CBE - III</b>	<b>Political Geography</b>	<b>Hours:6</b>	<b>Credits 4</b>
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**Objectives:** At the end of the course students able to

1. Explain the concept of nation, state, frontier and boundaries.
2. Explain the National and international political issues based on geopolitics.

### UNIT – I

Meaning and Nature of Political geography, scope, origin Geopolitics: Development of concept - Approaches: whittlesey's Law- land scapes, Hartshornes Functional

### UNIT – II

Nation and State- concept- The Nation Nationalism- the state: Nation building- Spatial Factors of State: Location, size and shape. Geographical factors in federalism – Geographical basis of Indian federalism – Rationalization in India – Causes and consequences of Regionalism – Tackling regionalism in India.

### UNIT – III

Territory: Frontiers definition and concept, classification of frontiers; Boundaries definition and concept, classification of boundaries (Generic and functional); difference between frontiers and boundaries; Buffer zone – Nature and character.

### UNIT – IV

Geopolitics Theories:- Mackinder's Heartland Thesis (1904, 1919 & 1943), Spykman's Rimland Theory, Mahan's Sea Power - Contemporary Geopolitics: Geopolitics of peace, post cold war geopolitics, future geopolitics of multipolarity and polycentrism, Geopolitics of Indian Ocean.

### UNIT – V

India's Border issues: Background – Land boundaries (Indo-china, Indo-Pakistan, India-Bangladesh) Maritime boundary demarcation (South Asian case, Bangladesh, Pakistan, Sri Lanka, Thailand, Burma, Maldives)- International organization UN, EUROPEAN Community, SAARC ASEAN.

### References:

1. Adhikari, Political Geography, Rawat Publication, Jaipur (1997).
2. K. B Bisariya, Political Geography, Signature Books International, Delhi.
3. Sushila Ramaswamy, Political Theory, PHI Learning P. Ltd., Delhi.

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-IV

CBE - IV	Social and Cultural Geography	Hours:6	Credits 4
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### Social and Cultural Geography

**Objectives:** *At the end of the course students able to*

- 3 Identify the importance of tourism and its principles
- 4 Identify the potentiality of tourism centers and their problems.

#### UNIT –I

Definition, Nature and scope of Social and culture geography- Social structure and social process; Elements of social and cultural geography-ethnicity, tribe, dialect, language, caste and religion, concept of social well-being.

#### UNIT –II

Elements of Social Geography: Race, Tribe, Dialect, Languages, Caste, Religion- Classification of Languages: Austric, Dravidian, Sino-Tibetan, Indo European (India)- Distribution of Races and Physical Characteristics (Caucasoids, Mongoloids and Negroids)

#### UNIT –III

Tribes of the World: Food, Dress and Living ways as cultural expression (The Pygmies, The Bedouins, The Eskimos, The Khirghiz, The Bushmen, The Aborigines and The Masai)- Concept of culture: culture complex, Areas, Regions, Heritage, Interactions, Hearths, Diffusion and Ecology - World Cultural Realms (Blache and Spencers).

#### UNIT- IV

Indian Tribes and Their Distribution (States wise details)-Characteristics of Some of Indian Tribes (Santhals, Oraon, Gonds, Bhils, Minas) and social Pathology- Health:Health factors, Diseases –Etiological condition, Health Nutritional Status, Health care planning and policies in India.

#### UNIT –V

Cultural Diversity of India – Social Differentiation and cultural formation – Role of ethnicity, caste, food, religion in India- Concept of social Well-Being- Social Structure and Social Process - wellbeing indicators for measurement, levels of development and wellbeing in India.

#### References:

1. Majid Husain – Human Geography-Rawat Publications 1994
2. Gillian C. Morgan – Human and Economic Geography, Oxford University Publications 1999
3. Aime Vincent Perpillou – Human Geography, Longman Group limited London 1977
4. Crang, Milke: Cultural Geography, Roultdge Publications, London 1998
5. Ahmand, Aijiazuddin, Social Geography, Rawat Publications, New Delhi, 1999

P.G Question Paper Pattern (SEM.: 75 marks + CIA: 25 marks = Total: 100 marks)

Section – A	Ten questions (two questions for each unit)	10 x 2 = 20 marks
Section – B	Five questions (two questions for each unit – either or type)	5 x 5 = 25 marks
Section – C	Three questions (out of five one question from each unit)	3 x 10 = 30 marks

## SEMESTER-IV

PROJECT	Project	Hours:6	Credits 4
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