The Academic Council has approved vide Resolution No. 41 in its 9th Meeting held on 5 July, 2018 and as per resolution the Vice - Chancellor has approved on the same on dated 26/11/18

DEPARTMENT OF GEOGRAPHY

Chaudhary Ranbir Singh University

Scheme of Examinations for M. Sc. Geography (CBCS) w.e.f. 2018-19

Semester-I

Course Code	Title of Course	Contact Hrs./ Week/L+T+P	Marks			Exam duration	Credit
			Maximum	External	Internal		
18GEOG21HC1	Climatology	4+1+0	100	80	20	3 Hours	4.5
18GEOG21HC2	Geography of India	4+1+0	100	80	20	3 Hours	4.5
18GEOG21HC3	Economic Geography	4+1+0	100	80	20	3 Hours	4.5
18GEOG21HC4	Statistical Methods in Geography	4+1+0	100	80	20	3 Hours	4.5
18GEOG21HC5	Cartographic Methods in Geography (Theory)	2+0+0	50	40	10	3 Hours	2
18GEOG21HC6	Cartographic Methods in Geography (Practical)	0+0+6 (2*3)	50	40	10	6 Hours (Two sessions of three hours each)	3
18GEOG21HC7	Introduction to Computer System and Preparation of Diagrams & Graphs (Practical)	0+0+6 (2*3)	50	40	10	Viva-Voce	3
Total		**34**	**550**	**440**	**110**		**26**

Siddhmalik

DEPARTMENT OF GEOGRAPHY

Chaudhary Ranbir Singh University

Scheme of Examinations for M. Sc. Geography (CBCS) w.e.f. 2018-19

Semester-II

Course Code	Title of Course	Contact Hrs./ Week/L+T+P	Marks			Exam duration	Credit
			Maximum	External	Internal		
18GEOG22HC1	Geomorphology	4+1+0	100	80	20	3 Hours	4.5
18GEOG22HC2	Population Geography	4+1+0	100	80	20	3 Hours	4.5
18GEOG22HC3	Regional Development and Planning with special reference to India	4+1+0	100	80	20	3 Hours	4.5
18GEOG22HC4	Agricultural Geography with special reference to India	4+1+0	100	80	20	3 Hours	4.5
18GEOG22HC5	Representation of Climatic Data (Practical)	0+0+6 (2*3)	50	40	10	6 Hours (Two sessions of three hours each)	3
18GEOG22HC6	Morphometric Analysis (Practical)	0+0+6 (2*3)	50	40	10	6 Hours (Two sessions of three hours each)	3
18GEOG22OE7	General Geography of India	4+0+0	100	80	20	3 Hours	4
Total		**36**	**600**	**480**	**120**		**28**

Sitmal Malik

DEPARTMENT OF GEOGRAPHY

Chaudhary Ranbir Singh University

Scheme of Examinations for M. Sc. Geography (CBCS) w.e.f. 2018-19

Semester III

Course Code	Title of Course	Contact Hrs./ Week/L+T+P	Marks			Exam duration	Credit
			Maximum	External	Internal		
18GEOG23HC1	Geography and Ecosystems	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23HC2	Field Methods in Geography (Socio-economic) (Theory)	2+0+0	50	40	10	3 Hrs.	2
18GEOG23SC3a	Urban Geography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC3b	Geography of Wellbeing with special reference to India	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC3c	Fluvial Geomorphology	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC3d	Historical Geography with special reference to India	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC3e	Geography of Transport	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC4a	Political Geography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC4b	Geography of Rural Settlements	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC4c	Soil Geography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC4d	Geography and Disaster Management	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23SC4e	Biogeography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG23HC5	Introduction to Remote Sensing (Theory)	2+0+0	50	40	10	3 Hrs.	2
18GEOG23HC6	Visual Interpretation of Remote Sensing Data (Practical)	0+0+6 (2*3)	50	40	10	6 Hours (Two sessions of three hours each)	3
18GEOG23HC7	Project Report Based on Field Survey (Practical)	0+0+6 (2*3)	50	40	10	Viva-Voce	3
18GEOG23OE8	General Geography of World	4+0+0	100	80	20	3 Hrs.	4
Total		**35**	**600**	**480**	**120**		**27.5**

Sitmal malik

DEPARTMENT OF GEOGRAPHY

Chaudhary Ranbir Singh University

Scheme of Examinations for M. Sc. Geography (CBCS) w.e.f. 2018-19

Semester IV

Course Code	Title of Course	Contact Hrs./ Week/L+T+P	Marks			Time	Credit
			Maximum	External	Internal		
18GEOG24HC1	Geographical Thought	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24HC2	Hydrology and Oceanography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC3a	Regional Geography of India with special reference to Haryana	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC3b	Resource Geography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC3c	Social Geography with special reference to India	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC3d	Coastal Geomorphology	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC3e	Tropical Climatology	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC4a	Gender Geography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC4b	Geography of Tourism with special reference to India	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC4c	Cultural Geography	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC4d	Geography of Water Resources	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24SC4e	Urbanization in India	4+1+0	100	80	20	3 Hrs.	4.5
18GEOG24HC5	Introduction to Geographical Information Systems (Theory)	2+0+0	50	40	10	3 Hrs.	2
18GEOG24HC6	Digital Processing of Remote Sensing Data (Practical)	0+0+6(2*3)	50	40	10	6 Hours (Two sessions of three hours each)	3
18GEOG24HC7	Fundamental of Geographical Information System (Practical)	0+0+6(2*3)	50	40	10	6 Hours (Two sessions of three hours each)	3
Total		34	550	440	110		26

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HC-101
Climatology

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: It is an introductory course of climatology which is aimed at providing knowledge about the elements and processes of climates, different climatic types and climate change. Climate is one of the basic elements of physical environment which is a core area of interest for the students of geography.

Outcome: This course on climatology shall sharpen the understanding of students about different climatic systems found in the world. It shall develop scientific understanding about climates and their characteristics.

UNIT-I

1. Definition of weather and climate; Climatology and Meteorology.
2. Origin, composition and structure of atmosphere.
3. Solar radiation, greenhouse effect, heat budget and temperature distribution.

UNIT-II

4. Atmospheric pressure and its distribution pattern.
5. Theories of general circulation and planetary winds.
6. Walker circulation- ENSO and La Nina, origin of monsoons and jet streams.

UNIT-III

7. Atmospheric Moisture: humidity, evaporation, condensation; precipitation formation theories and types of precipitation, acid rain.
8. Stability and instability of atmosphere, air masses and fronts.
9. Weather systems: Origin and characteristics of extra tropical and tropical cyclones.

UNIT-IV

10. Climatic classification: Bases of climatic classification by Koeppen, Trewartha and Thornthwaite.
11. Climatic change: pattern, evidences and theories of climate change.
12. Global warming and its impacts on earth systems.

Suggested Readings:

1. Trewartha G. T. 1980. An Introduction to Climate, McGraw Hill Company, New York.
2. Chritehfield, H J. 1987. General Climatology, Printice Hall of India, New Delhi.
3. Barry R. G. and Chorley, R. J , 2010. Atmosphere, Weather and Climate, Marthren.
4. Lal, DS, 2011. Climatology, Chetanya Publishing House, Allahabad.
5. Das, PK, 1995. The Monsoons, National Book Trust, New Delhi.

HC - 102
Geography of India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: India is a country with diversity in landscape, vegetation, soils, drainage network, economy, population characteristics and culture. It is rich in resources and has got many minerals and power resources, which are the main assets of the country and are also exported. Therefore it becomes immense important to make the students know about their country.

Outcome: After studying Geography of India, students will become aware about the country's beautiful and diverse landscapes. They will acquire knowledge about the economy and valuable resources. This would also sharpen their understanding about the unity in diversity in India.

UNIT-I

1. Physiography: Relief characteristics and physiographical divisions
2. Drainage systems and their functional significance.
3. Climate: characteristics, seasons and climatic regions of India as given by Trewartha and R.L.Singh.
4. Soil and vegetation types - their distribution, characteristics and conservation.

UNIT-II

5. Agriculture: Characteristics of Indian agriculture, agricultural development in India and problems of Indian agriculture
6. Irrigation: Types of irrigation, Major irrigation projects: BhakraNangal and Damodar Valley Projects

UNIT-III

7. Production, distribution, status of use and conservation of following minerals: Iron ore, Mica, Manganese and Bauxite
8. Production, distribution, status of use and conservation of following power resources: Coal, Petroleum, Hydropower

UNIT-IV

7. Production and distribution of (a) iron and steel (b) Cotton textile and (c) Automobile industry
8. Major industrial regions and their characteristics.
9. International trade: Major exports and imports.

Suggested Readings:

1. Tiwari, R. C. 2016. Geography of India, Prayag Pustak Bhawan, Allahabad.
2. Bharucha, J.P. 1982 . Vegetation of India, Oxford India, Bombay.
3. Dubey, R. N. 1974. Economic Geography of India, Kitab Mahal, Allahabad

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4.Hussain Majid, 2015. Geography of India, Mc Graw Hill Education.
5. Joshi, H. L.1990. Industrial Geography of India, Rawat Publications, Jaipur
6. Nag, P. and Sengupta, S. 1992. Geography of India, Concept publications. Co., New Delhi.
7. Rautray, J.K.1993. Geography of regional disparity, Asian Institute of Technology, Bankok.
8. Singh, R. L.1971. India: A Regional Geography, N.G.S.I., Varanasi.
9. Sharma, T. C. and Coutinho, O. 1988. Economic and Commercial Geography of India, Vikas Publishing House Pvt. Ltd, New Delhi.
10. Tirtna, R. and Krishan G. 1996. Geography of India, Rawat Publications, Jaipur & New Delhi.

HC-103
Economic Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The economy of the world has been changing fast in recent times. This has also led to drastic change in the spatial structure of economies world over. Therefore the objective of this course is to integrate the various factors of economic development to acquaint the students about dynamic aspects of economic geography.

Outcome: After completion of the course the students will be able to understand the spatial organization of economies in the world in relation to human activities, location theories of various activities, transport functions, trends of trade and processes of globalization.

UNIT-I

1. Definition, nature, scope, importance, recent trends and approaches in economic geography.
2. Relationship of economic geography with other social sciences.
3. Economic activities and their classification.

UNIT-II

4. Network structure and economic activities, impact of transport on economic activities, spatial variation in production and transport cost, Edward Ullman's spatial interaction model.
5. Location theories of Weber, Losch, Christaller and Krugman.

UNIT-III

6. World Economies: bases of classification, patterns and characteristics of developed and developing economies of the world.
7. Economic development: meaning, evolution, goals, measures, patterns, problems and theories.

UNIT-IV

8. Globalization and recent trends in pattern of international trade.
9. Emergence of a new global economy-transnational integration and its spatial outcomes.
10. Major regional trade blocks of the world, free trade initiatives (GATT, UNCTAD, WTO).

Suggested Readings:

1. Gautam, A. 2015. Advanced Economic Geography. Sharda Pustak Bhawan, Allhabad.
2. Hartshorne, T. A. and Alexander, J. W. 2011. Economic Geography. Prentice Hall of India. New Delhi.

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3. Hudson, R. 2005. Economic Geography. Sage Publication, New Delhi.
4. Jones, C. F. and Darkenwarld, G.G. 1968. Economic Geography. The Macmillan and Company. New York.
5. Knowles, R. and Wareing, J. 1992. Economic and Social Geography. Rupa and Company, Calcutta.
6. Knox, P. 2003. The Geography of World Economy. Arnold, London.
7. Saxena, H.M. 2013. Economic Geography. Rawat Publications, Jaipur.
8. Wheeler, J.O. and Muller, P.O. 1998. Economic Geography. John Wiley and Sons. New York.

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HC-104
Statistical Methods in Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the course is to introduce the students to statistical tools for summarizing and analyzing quantitative information and data. The course includes various tools and techniques used in the analysis of geographical data.

Outcome: The course shall equip the students with statistical tools for summering, analyzing and finding spatial pattern from the geographical and other time series data.

UNIT-I

1. Descriptive Statistics : Histogram and Frequency Curve, Measures of Central Tendency: Mean, median, mode, Partitioned values: Quartiles and deciles, Comparing the mean, median and mode
2. Measures of Dispersion: Absolute measures: Range, Quartile Deviation, Mean deviation, Standard deviation, Relative measure of dispersion: Coefficient of variation

UNIT-II

3. Normal curve as a probability distribution: Its characteristics and area under curve
4. Measure of inequality: (i) Location quotient (ii) Lorenz curve.
5. Sampling: Theory of sampling, Methods of sampling, Sampling distribution and chance errors in sampling

UNIT-III

6. Bivariate Analysis: Scatter diagram, correlation analysis, Spearman's rank correlation and Karl Pearson's correlation coefficient, Test of significance.
7. Simple Linear Regression Model: properties of least square estimate, Coefficient of Determination

UNIT-IV

8. Residuals and their mapping
9. Basics of multivariate analysis: Correlation matrix, partial and multiple correlation

Suggested Readings:

1. S. Gregory, 2006. Statistical Methods and the Geographers, Longman, London.
2. C. B. Gupta, 2004. An Introduction to Statistical Methods, Vikas Publishing House, Delhi.
3. R. J. Johnston,1989. Multivariate Statistical Analysis in Geography, Longman Scientific and Technical, John Wiley & Sons (4th edition).
4. Aslam Mahmood, 1999. Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
5. Saroj K. Paul, 1998. Statistics for Geoscientists : Techniques and Applications, Concept Publishing Company, New Delhi.

6. A. Reza Hoshmand, 1998. Statistical Methods for Environmental and Agricultural Sciences, CRC Press, New York (second edition).
7. Jack Levin and J.A. Fox, 2006. Elementary Statistics in Social Research, 10th edition, Peason Education, New Delhi.
8. Rogerson. P.A. 2010. Statistical Methods for Geography, (A Student's Guide), 3rd Edition, Sage Publication, New Delhi
9. Ashis Sarkar, 2013. Quantitative Geography: Techniques and Presentations, Orient Blackswan Private Limited - New Delhi.

HC-105
Cartographic Methods in Geography (Theory)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Note: **There will be seven questions in all. Question No. 1 is compulsory and consists of 5 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions, selecting at least one from each unit. All questions carry 10 marks each.**

Objectives: It is aimed to provide training to students in latest techniques in the field of cartography. It introduces the students to the tools used in thematic mapping and representation of quantitative data to facilitate spatial analysis and synthesis.

Outcome: After completion of the course the students will have a better acquaintance about the representation of statistical data in the form of diagrams and maps. They will develop the skill of map making and interpretation of geographical reality.

UNIT-I

1. Nature and scope of Cartography.
2. Recent advancements in cartography.
3. Types and characteristics of distribution maps: (i) Chorochromatic (ii) Choroschematic (iii) Isopleths (iv) Choropleth (v) Dot and (vi) Diagrammatic.

UNIT-II

4. Types and characteristics of statistical diagrams: (i) One dimensional (bar, line), (ii) Two dimensional (circular, rectangular, square). (iii) Three dimensional (block, sphere, cube) and (iv) Other diagrams (Snail, pyramid, flow diagram/cartogram).
5. Characteristics of graph/diagrams/maps representing climatic data: (i) Rainfall deviation, (ii) Climograph (Taylor and Foster), (iii) Hythergraph, (iv) Star/Wind rose diagram (v) Isopleths (vi) Line and bar (vii) polygraph.

Suggested Readings:

1. Misra, R.P. and Ramesh, A. 1999. Fundamentals of Cartography, Concept Publishing Company, New Delhi
2. Monkhouse, F.J. and Wilkinson, H.R. 1980. Maps and Diagrams. B. I. Publications, New Delhi.
3. Singh, R. L. 2005. Elements of Practical Geography. Kalyani Publishers, New Delhi.
4. Sarkar A, 2015. Textbook of Practical Geography. Orient Blackswan Pvt. Ltd-New Delhi.

HC-106
Cartographic Methods in Geography (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs

Distribution of Marks

Lab. Exercises:	24 marks (8x3)
Practical Record book:	6 marks
Viva-Voce:	10 marks

Note: **The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question/exercise from each unit. All questions carry 10 marks each.**

Objective: The objective of this course is to give the students assignments for making maps, graphs and diagrams to represent climatic and socio-economic data.

Outcome: The students will learn the art of cartography and methods of interpretation of maps and diagrams.

UNIT-I

1. Diagrams: Types and properties of diagrams representing socio-economic data:
   - One dimensional diagrams-Bar diagram: Simple bar(1), multiple bar(1), comparative bar (1)
   - Two dimensional diagrams- pie diagram/proportional circle (1).
   - Three dimensional diagrams- Sphere (1)

UNIT-II

2. Distribution maps
   - Dot method (1)
   - Choropleth – monovariate (2) and bivariate (2)
3. Miscellaneous diagrams and graphs
   - Trend graph (1)
   - Age and Sex pyramid (1), Snail Diagram (1).
   - Flow diagram, cartogram and accessibility maps (2).

Figures in parenthesis represent number of practical exercises.

HC-107
Introduction to Computer System and Preparation of Diagrams & Graphs (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Distribution of Marks

Practical Record book:	15 marks
Viva-Voce:	25 marks

Note: **The students shall prepare a practical record book comprised of the exercises given in two following units. The examiner shall test their computer proficiency through viva-voce (orally).**

Objective: The objective of this course is to make the students familiar with the basics of computer and provide them hands on training on MS Office.

Outcome: The course shall provide the students an opportunity to practice, learn and enhance their skill on computer systems.

UNIT-I

1. Introduction to Computer: Components of computer-Hardware and software (2)
2. Introduction to MS Office and their uses in Geographical studies (3)
3. Entering and Managing data using Spreadsheets (1)
4. Application of some basic statistical functions in spreadsheets (2)

UNIT-II

5. Representation of Geospatial data entered in spreadsheets
    a. Line graph (Simple & Polygraph) (2)
    b. Bar Diagram (Simple, Compound & Multiple) (3)
    c. Pie Charts (2)
    d. X, Y Scatter Plot (1)
    e. Trend Lines (1)
6. Preparation of a Power point Presentation (1)
7. Preparation of report of exercise in MS Word

Figures in parenthesis represent number of practical exercises

HC-201
Geomorphology

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: Geomorphological knowledge helps in identifying the problems faced by human society, arising due to the interaction of human being with landscape and natural environment. The present course is aimed at providing the knowledge to students about the processes and patterns involved in shaping the features on land surface.

Outcome: Through the study of geomorphology, students shall get to know about formation of the earth's surface features, the role played by the humans in changing the landscape and the significance of landforms in shaping the physical environment in an area

UNIT-I

1. Introduction to geomorphology as a science: definition, nature, scope and recent developments.
2. Fundamental concepts:
   - (i) Geological structure and landforms
   - (ii) Uniformitarianism
   - (iii) Multi-cycle and polygenetic evolution of landscape
   - (iv) Frequency concept of geomorphic processes
   - (v) Climatogenetic geomorphology
   - (vi) Peneplain and Pediplain

UNIT-II

3. Continental drift theory and its basic considerations; Plate tectonics-meaning and concept, margins and boundaries, plate motion and cycle; Tectonic activities along boundaries and distribution of plates.
4. Hill slope-definition and forms of slope, geomorphic processes and slope forms, slope evolution: down wearing, parallel retreat and slope replacement models.

UNIT-III

5. Weathering: Causes; types of weathering: physical, chemical and biological.
6. Mass movement, causes, classifications and types of mass movements- slow and rapid mass movements.

UNIT-IV

7. Geomorphic processes and resulting land forms: Fluvial, Glacial, Periglacial, Aeolian and Karst
8. Applied geomorphology: Meaning and concept, role of geomorphology in environmental management of the following: (i) Accelerated erosion and sedimentation, (ii) Construction of large dams (iii) Urban floods and Geomorphology

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HC-202
Population Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note:- **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the course is to acquaint the students with the sources of population data, dynamics of population and their determinants and assessment of the impact of policy interventions

Outcome: The students shall learn about the population data sources and various theories models and measures of population dynamics and international community' efforts to improve quality of human resource.

UNIT-I

1. Nature and scope of population geography.
2. Methodological problems in population geography.
3. Sources of population data, quality and reliability of data, problems of mapping population data.

UNIT-II

4. Concepts, determinants and world patterns of the following attributes of population:
   (i) Distribution and density
   (ii) Vital rates: birth and death rates
   (iii) Migration (including laws of migration)
   (iv) Growth
   (v) Age and Sex Composition
   (vi) Occupation
   (vii) Literacy
5. Quality of human resource: human development index and its components.

UNIT-II

6. Limits to growth: Concepts of over population, under population and optimum population
7. Demographic Transition Model
8. Population Resource Regions
9. Theories of population: Malthus, Ricardo and Marx

UNIT-IV

10. Demographic dividend and population policy of India
11. Comparative study of population problems and policies of developed and less developed countries. Case study of U.S.A., Japan, China and Brazil
12. Population problems and Environmental implications.

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Suggested Readings:

1. Cassen, Robert & Bates, Lisa M. 1994. Population Policy : A New Consensus Overseas Development Council, Washington, D.C.
2. Chandna, R. C. 2015. Jansankhya Bhugol, Kalyani Publishers, New Delhi.
3. Chandna, R. C. 2015. Population, Kalyani Publishers, New Delhi.
4. Chandna, R. C. 1998. Environmental awareness, Publishers, New Delhi.
5. Chandna, R. C. 1998. A Geography of Population : Concepts, Determinants and Patterns, Publishers, New Delhi.
6. Clarks, John, I. 1971. Population Geography and the Developing Countries, Pergamon Press, New York.
7. Demko, G. J. and others (Eds.) 1971. Population Geography, Reader, McGraw-Hill Books Co., New York
8. Hassan, I. 2010. Population Geography, Rawat Publications, Jaipur.
9. Mahajan,N. 2014. Population Geography, R.K. publishers, Delhi
10. Newbold, K Bruce. 2016. Population geography: Tools and Isuues, Rowman & Littlefield Publishers.
11. Petrov, V. 1985. India: Spotlight of Population, Progress Publishers, Moscow.
12. Qazi, S.A. 2010. Population Geography, APH publishers.
13. Trewartha, G. T. 1972. The Less Developed Realm-A Geography of its Population, John Wiley & Sons, Inc., New York.
14. Trewartha, G. T. 1978. The More Developed Realm-A Geography of its Population Pergamon Press, New York.
15. Woods, R. 1979. Population Analysis in Geography, Longman, London.

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HC-203
Regional Development and Planning with special reference to India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the course is to develop an understanding of the processes, pattern and practice of regional development in India. This will expose students to development theories and strategies and planning concepts and broaden their perspective regarding regional disparities in India and the need of regional planning to overcome it.

Outcome: Students shall develop understanding about regional development processes, models adopted for development, regional disparities, challenges and strategies to overcome the disparities.

UNIT-I

1. Concept of Regional Development: Regional disparities, Balanced Regional development
2. Region and its typology.
3. Basis of regionalization in India and their characteristics.

UNIT-II

4. Theories of Regional Development:
   (i) Trickle Down Theory
   (ii) Growth Pole Theory
   (iii) Cumulative causation Model
   (iv) Core-Periphery Theory
5. Concept of Kuznet 's Curve, Sustainable Development, Inclusive Growth, Pro-regionalism and Eco-Feminism

UNIT-III

6. Development and Regional Disparities in India since Independence
   (i) Disparities in Agricultural Development
   (ii) Disparities in Industrial Development.
7. Disparities in Human Resource Development in terms of poverty, education and health

UNIT-IV

8. India through Planned Era with special reference to
   (i) Tribal area development plan
   (ii) Hill Area development plan
   (iii) Desert, drought prone and backward area development plan
9. Niti Ayog : Aims and objectives
10. Urban Planning in India with special reference to National Capital Region

Suggested Readings:

1. Chandna, R.C. (2016): Regional Planning and Development. Kalyani Publishers., New Delhi.
2. Chaudhuri, J.R. (2001) : An Introduction to Development and Regional Planning with special reference to India. Orient Longman, Hyderabad.
3. Friedmann, J. and Alonso, W. (ed.) (1973) : Regional Development and Planning. The MIT Press, Mass.
4. Kuklinski, A.R. (1972): Growth Poles and Growth Centres in Regional Planning. Mouton and Co., Paris.
5. Leys, C. (1996): The Rise and Fall of Development Theory. Indian University Press, Bloomington, and James Curry, Oxford.
6. Mahapatra, A.C. and Pathak, C.R. (eds.) (2003): Economic liberalization and Regional Disparities in india. Special Focus on the North Eastern Region. Star Publishing House, Shillong.
7. Mahesh Chand and V. K. Puri (2000); Regional Planning in India, Allied Publishers, New Delhi.
8. Misra, R.P. (ed.) (1992) : Regional Planning: Concepts, Techniques, Policies and Case Studies. 2nd edition. Concept Publishing Company., New Delhi.
9. Misra, R.P. and Natraj, V.K. (1978): Regional Planning and National Development. Vikas, New Delhi.
10. Planning Commission of India: Eighth Five Year Plan (1992-97) Vol. I, Govt. of India, New Delhi.
11. Raza Moonis (ed) (1988) Regional Development Vol. 10, Contribution to Indian Geography Heritage Publishers, New Delhi.
12. Kundu and Moonis Raza (1988) : Indian Economy: The Regional Dimension, CSRD/SSS, JNU. New Delhi.
13. Patnaik, C S (1981), Economics of Regional Development and Planning in Third World Countries, Associate Publishing House, New Delhi.

HC- 204
Agricultural Geography with special reference to India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of this course is to acquaint the students with the spatial organization of agriculture and processes determining the agricultural pattern and processes. The students will develop an in-depth knowledge about the dynamics of land use, cropping pattern and the factors involved in change of agricultural landscape.

Outcome: The students shall get to know about the spatial organization of agricultural activities in world and India. Their knowledge about the origin, location, distribution of the agricultural activities shall be enriched. They would also get the knowledge about the modern agriculture, its dynamics and impact of climate change and economic liberalization on agricultural pattern and processes.

UNIT-I

1. Nature, scope and significance of agricultural geography.
2. Origin and dispersal of agriculture in the World.
3. Determinants of agricultural patterns: physical, technological and cultural factors

UNIT-II

4. Concepts of land capability survey, land use and cropping pattern.
5. Agricultural Concepts: (i) Intensity of Cropping (ii) Degree of Commercialization (iii) Cropping diversification and concentration (iv) Crop combination (v) Contract framing (vi) Agri-business.
6. Approaches in agricultural regionalization: Von Thunen Model of agricultural land use, Agro-climatic Zonation: Concept and Indian experience.

UNIT-III

7. Bases of identification of agricultural systems by Whitllesey and agricultural typology by Kostrowiki.
8. Measurements of agricultural efficiency and productivity.
9. Green revolution: Its impacts and consequences in India.

UNIT-IV

10. Food production and security in India.
11. Neo-liberalization and Indian agriculture.
12. Agriculture and climate change: Impacts and adaptation.

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Suggested Readings:

1. Symons, Leslie (1967): Agricultural Geography, G. Bell and Sons, London.
2. Geoffrey, H.F.: (1970) Geography of Agriculture: Themes in Research, Practice Hall, N.J.
3. Morgon, W.B. and Munton, R.J.C.: (1971) Agricultural Geography Methuen, London.
4. Singh Jasbir and Dhillon S.S. (1994) Agricultural Geography, Tata Mc Graw Hill, New Delhi.
5. Husain, Majid (2004), Systemic Agricultural Geography Rawat Publications, Jaipur.
6. Tarrant, J.R. (1974) Agricultural Geography, Willey, New York.
7. Safi, Mohammad (2007) Agricultural Geography, Pearson Education.
8. Bowler TR (1992) The Geography of Agriculture in Developed Market Economics, Longman.
9. Grigg D (1995) Introduction to Agricultural Geography, Routledge, London.

HC-205
Representation of Climatic Data (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs

Distribution of Marks

Lab. Exercises:	24 marks (8x3)
Practical Record book:	6 marks
Viva-Voce:	10 marks

Note: **The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question/exercise from each unit. All questions carry 10 marks each.**

Objective: The objective of this course is to give the students assignments for making maps, graphs and diagrams to represent climatic and socio-economic data.

Outcome: The students will learn the art of cartography and methods of interpretation of maps and diagrams.

UNIT-I

1. Climatic data representation by diagrams and maps:
   - Line and bar graph (1)
   - Poly graph (1)
   - Rainfall deviation diagram (1)
   - Climograph (Taylor and Foster's) (2)
   - Hythergraph (1)
   - Wind rose diagram (1)

UNIT-II

2. Isopleths maps
   - Isohyets Map (1), Isobars (1), Isotherms (1)
3. Interpretation of Indian Weather Maps (1)

Figures in parenthesis represent number of practical exercises.

HC-206
Morphometric Analysis (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Distribution of Marks

Lab. Exercises:	24 marks (8x3)
Practical Record book:	6 marks
Viva-Voce:	10 marks

Note: **The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question/exercise from each unit. All questions carry 10 marks each.**

Objective: The objective of this course is to make the students learn the morphometric tools by applying them in the analysis of relief, drainage pattern and slope.

Outcome: The course shall provide the students an opportunity to practice the use of tools and methods applied in morphometric analysis.

UNIT-I

1. Interpretation of toposheets : (a) Physical features and (b) Cultural features (2)
2. Delineation of Watershed (All the exercises of morphometry shall be based on delineated watershed) (1)
3. Profile Analysis: Transverse and Longitudinal
   a) Serial Profiles (1)
   b) Superimposed Profiles (1)
   c) Composite Profiles (1)
   d) Projected Profiles (1)
   e) Longitudinal or valley Thalweg Profile (1)

UNIT-II

4. Linear Aspects of streams :
   a) Relationship between stream order and stream Number (1)
   b) Relationship between stream order and Average stream length (1)
   c) Bifurcation ration (1)
5. Areal Aspects of streams:
   a) Drainage Frequency (1)
   b) Drainage Density (1)
6. Relief Aspect of Streams
   a) Area Height Curve (1)
   b) Altimetric frequency curve (1)
   c) Hypsographic Curve (1)
   d) Hypsometric Integral Curve (1)
   e) Clinographic or clinometric curve (1)

Figures in parenthesis represent number of practical exercises

OE-207
General Geography of India

End Sem. Max. Marks: 80
Time: 3Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the course is to appraise the students about India as a geographical entity. It is aimed at making the students to understand geographical diversities of India.

Outcome: The course shall educate the students about the concept of unity in diversity in India. It shall make him/her to appreciate the regional, cultural and social diversities found in the country.

UNIT-I

1. India: Locational Setting and Geographical Expansion
2. Relief and Drainage Systems.

UNIT-II

3. Climate, Soil and Natural Vegetation.
4. Regions of India

UNIT-III

5. The Peopling of India
6. Population: Distribution, Density and Growth

UNIT-IV

7. Population Composition: Ethnic and Socio-cultural Attributes (caste and tribes)
8. Unity in Diversity in India

Suggested Readings:

1. Ahmed, A, India: A General Geography, NCERT, New Delhi.
2. Qaureshi, M. H. India: People and Economy, NCERT, New Delhi.
3. Qaureshi, M.H. India: Physical Environment, NCERT, New Delhi.
4. Hussain, Majid Geography of India, McGraw Hill Education Series
5. Tiwari, RC, Geography of India, Prayag Pustak Bhawan, Allahabad.

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HC-301
Geography and Ecosystems

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The purpose of the course is to explain the students various dimensions of the ecosystems, their spatial connotation, anthropogenic interventions and resultant impacts, international environmental summits and legal provisions for environment protection.

Outcome: The students will get exposed to the concept of ecosystem, its various processes, biomes, anthropogenic interventions and consequential impacts and world community's efforts to address such problems

UNIT-I

1. Concept of Ecosystem; Types, components and function of ecosystem.
2. Energy flow in ecosystem: food chain, food web, trophic levels, ecological production and ecological pyramids.
3. Biogeochemical cycles: Hydrological, carbon, oxygen and nitrogen cycles

UNIT-II

4. Biome: Scheme of Classification: factors affecting the distribution of biomes;
    a. Tropical evergreen rain forest biome
    b. Savanna biome
    c. Monsoon biome
    d. Temperate biome
    e. Marine biome
    f. Desert biome
5. Ecosystem approach and its relevance in geography

UNIT-III

6. Man-environment relationship: Classification of resources; use and ecological imbalance with reference to soils, forests and energy resources
7. Biodiversity and conservation: preservation and conservation of ecosystem through resource management.

UNIT-IV

8. Problems of pollution: concept of air, water, and noise pollution.
9. Environment legislation: The Stockholm Conference, the Earth Summit, Kyoto Protocol and Paris declaration.
10. Environmental laws in India: Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act.

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HC-302
Field Methods in Geography (Socio-economic) (Theory)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Note: **There will be seven questions in all. Question No. 1 is compulsory and consists of 5 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions, at least one from each unit. All questions carry 10 marks each.**

Objective: The basic objective of the course is to introduce the students to ways and methods of collection of socio-economic data from the field.

Outcome: The students shall learn the techniques of collection of socio-economic data, processing and interpretation of acquired information and preparation of project report.

UNIT-I

1. Significance of Field work in Geography
2. Identification of Research Problem and Formulation of Research Design in geography
3. Types and Sources of Data : Characteristics of primary and secondary data
4. Types of Questionnaires and their formulation

UNIT-II

5. Sample Design for collection of socio-economic data
6. Collection of demographic and socio-economic data from the field.
7. Retrieval and Analysis of Data collected from field
8. Format of Field Project Report Writing.

Suggested Readings:

1. Har Prasad. R 2008. Research Methods and Techniques in Geography, Rawat Publishers, Jaipur.
2. Mishra, H.N. and Singh V.P. (ed.) 1998. Research Methodology: Social, Spatial and Policy Dimensions, Rawat Publishers, Jaipur.
3. Goode and Hat. 1952. Research Methodology in Social Sciences, Oxford University Press, New Delhi.
4. Black James A and D.J. champion 1976. Methods and Issues in social Research, New York, Jolm Wiley and Sons, Inc.
5. Young, PV. 1961. An introduction to research methodology.
6. Kundu A. 1982. Measurement of Urban Processes: A Study of Regionalization, Popular Prakashan, Mumbai.

SC- 303 (a)
Urban Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note:- **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective is to enlighten the students about the basics of urban geography, world urbanization pattern, morphology and land use of cities, social- economic, functional and spatial dimensions of urban centers and their various theoretical conjectures.

Outcome: The students shall be acquainted with various urban concepts, urban economic base, urban functions, urban core- periphery interaction and various theories and models.

UNIT-I

1. Urban Geography: nature, scope, approaches and concepts.
2. Origin and evolution of towns and factors of urban growth.
3. The global context of urbanization and cycle of urbanization.

UNIT-II

4. Economic base of cities: concept and employment ratio.
5. Functional classification of cities: concepts and scheme of classification.
6. Rural Urban Fringe: structural characteristics and its development.
7. City and region: concepts of influence and dominance, methods of delimitation of area of influence and area of dominance.

UNIT-III

8. Urban morphology and land use structure: city core, commercial, industrial and residential areas.
9. Models of city structure: concentric zone model by E.W. Burgess, sector model by Homer Hoyt, multiple nuclei model by Harris and Ullman and models of south Asian cities.

UNIT-IV

10. Central place theory of Christaller and Losch.
11. Rank size rule and Law of primate city.
12. Social area analysis.

Suggested Readings:

1. Mayer H.M. and Kohn, C.F. 2006. Readings in Urt. The University of Chicago Press, Chicago.
2. Cater, Herald. 1972. The study of Urban Geography, Edward Arnold, London.
3. Kaplan, Wheeler and Holloway. 2007. Urban geography, John Wiley, USA

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SC-303 (b)
Geography of Wellbeing with special reference to India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective of the course to make students develop an understanding of the concept of social wellbeing in the context of space. The students shall study the human development index and parameters of wellbeing.

Outcome: The course shall equip the students with the understanding of socio-economic inequalities prevailing in the society and their spatial dimensions. The students will learn about the significance of wellbeing in the society.

UNIT-I

1. Welfare Geography: Concept of social well-being, development and approaches to study human welfare.
2. Human beings: needs and wants, quality of life, level of living and state of well-being in India, identification of social indicators, their data sources and problem.

UNIT-II

3. Human Development Index, poverty and its measures, poverty and inequality in India
4. Gender issues in the process of development and gender development index.

UNIT-III

5. Structure of education in Independent India, Regional patterns of educational development; enrolment and dropouts with reference to school education.
6. Financing education and education policy in India.

UNIT-IV

7. Geography of Health Nature, Scope. Concept of Disease Ecology, Epidemiology
8. Health programmes and National Health Policy in independent India.
9. Nutritional Security in India

Suggested Readings:

1. Ahmad, Aijazuddin. 1999. Social Geography, Rawat Publication, New Delhi.
2. Dreze Jean, Amartya Sen. 1996. Economic Development and Social opportunity, Oxford University Press, New Delhi.
3. Sen, Amartya & Drze Jean. 1966. Indian Development: Selected Regional Perspectives, Oxford University Press.
4. David M. Smith. 1977. Human Geography: A Welfare Approach, Arnold Heinemann.
5. D.M. Smith. 1973. The Geography of Social Well-being in the United States. M.cGraw-Hill, New York.

6. D.M. Smith. 1977. Where the Grass is Greener: Geographical perspectives on inequality, Penguin, Haemonds worth.
7. Coates, B.E., R.J. Johnston and P.L. knox. 1977. Geography and Inequality, Oxford University Press, London.
8. National Nutrition Monitoring Bureau. 2000. Dynamic Database on Diet and Nutrition, National Institute & Nutrition, Hyderabad
9. Draze, Jean and Amartaya Sen. 2002. India: Development and Participation, OUP, New Delhi,
10. Uma Kapila (ed). 2007. India's Economic Development Since 1947. Academic Foundation.

SC-303 (c)
Fluvial Geomorphology

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective of the course is to provide to students a systematic overview of the forms and processes associated with the rivers and drainage basins.

Outcome: The students will develop understanding about the fluvial processes which shape the landscapes. They will also be familiar with the applied aspects of the subject.

UNIT-I

1. Fluvial System: types, variables, feedbacks, thresholds, responses and scales in fluvial geomorphology.
2. Water erosion: types of water erosion and erosive processes, monitoring of water erosion (field measurements and models) management problems associated with erosion.

UNIT-II

3. Sediment transfer: sources, modes, storage, movement and measurement of sediment load and yield, controls as sediment yield, human activity and sediment yield.
4. Channel forms and processes: channel types, geometry, size, shape, channel pattern, bedrock channels and associated land forms.

UNIT-III

5. Floods: Flood frequency, magnitude, forecasting and structural and non-structural adjustment to floods, catastrophic and paleo floods.
6. Impact of construction activities on fluvial systems.
7. Human adjustment in floodplains.

UNIT-IV

8. Managing river channels: channelization and flow regulation; impacts of water management on the physical, chemical and ecological condition of channels and floodplains, river restoration.
9. Remote sensing and GIS applications in mapping, monitoring and management of fluvial environments.

Suggested Readings:

1. Charlton, R. 2008. Fundamentals of Fluvial Geomorphology, Routledge, London
2. Chorley R.J. 1973. Introduction of Fluvial Processes. Methuen and Company, London.
3. Coates D.R. and Vitek J.I. 1980. Thresholds in Geomorphology. George Allen Unwin, London.

4. Fryirs, K.A. and Brierley G.J. 2013. Geomorphologic Analysis of River Systems, Wiley Blackwell, Chichester.
5. Gregory K.J. and Walling, D.E. 1985. Drainage Basin: Forms and Process-A Geomorphological Approach. John Wiley and Sons, New York.
6. Kingston D. 1984. Fluvial Forms and Processes. Edward Arnold, London.
7. Kondelf, G.M. and Piegay, H. 2003. Tools in Fluvial Geomorphology. Wiley, Chichester.
8. Morisawa. 1981. Fluvial Geomorphology. George Allen and Unwin, London.
9. Rawat, M.S. 2011. Environmental Geomorphology and Watershed Management, Concept Publishing Company, New Delhi.
10. Robert, A. 2003. River Processes-An Introduction to Fluvial Dynamics, Hodder Education

SC- 303 (d)
Historical Geography with special reference to India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The purpose of this course is to give an understanding to the students about the historical processes operating during ancient, medieval and modern times that shaped the past and present geography.

Outcome: The students shall develop the historical perspective in understanding the present geographical pattern, cultural landscapes and geographies of different periods.

UNIT-I

1. Nature and scope of Historical Geography; relationship between history and geography.
2. Source materials for studies in historical geography-religious texts, epics and literary sources; travel accounts, archival sources, chronicles, old maps, revenue records; limitations of sources.

UNIT-II

3. Ancient India: sources of information; process of peopling in different parts of the country;
4. Patterns of urbanization, Janapadas; administrative organization of space.

UNIT-III

5. Medieval India: Sources of information; economic basis of cities, trade routes, patterns of urbanization, territorial arrangements of administration.
6. Colonial India: Sources of information; territorial arrangement for administration; comparative study of British Provinces and Princely States; colonial urban development, spatial manifestations of colonial economic policies with reference to agriculture and industry; environmentalism and other issues during 20th century.

UNIT-IV

7. Regional Imbalances in Development during colonial period.
8. Regional Development in Post-independent India.

Suggested Readings:

1. Ali, S.M. 1966. The Geography of the Puranas, Peoples Publishing House, Delhi.
2. Baden-Powel. 1960. Land Systems of British India. Publication Division, Govt. of India, New Delhi.
3. Carter, H. 1983. An Introduction to Urban Historical Geography. Edward Arnold, Baltimore,.
4. Cunningham, A. 1975. The Ancient Geography of India, Bharatiya Publishing House, Varanasi.
5. Habeeb, I. 1963. The Agrarian System of Mughal India, Oxford University Press, London.

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6. Habeeb, I. 1982. An Atlas of the Mughal Empire, Oxford University Press, Delhi.
7. Schwartzberg, J. 1980. Historical Atlas of South Asia, Chicago University Press, Chicago.
8. Sircar, D.C. 1960. Studies in the Geography of Ancient and Medieval India. Motilal Banarasi Das Publishers, Delhi.

SC- 303 (e)
Geography of Transport

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective of the course is to appraise the students about the significance of transport, accessibility and connectivity pattern, their theoretical interpretation, consequential impacts and policy issues

Outcome: Students shall learn about the significance of transport in multifaceted development, various models and theories related to transport network, connectivity and accessibility and policy interventions.

UNIT-I

1. Nature, scope, significance and development of transport geography.
2. Factors associated with the development of transport system; economic, social, cultural and institutional.
3. Impact of transport infrastructure on economic and regional development.

UNIT-II

4. Characteristics and relative significance of different modes of transport: railways, roads, airways, and waterways, pipelines, etc.
5. Structure- accessibility and flow models; network structure, graph theoretic measures, measurement of accessibility, models of network change, linear programming and gravity models.

UNIT-III

6. Theories related to freight route structure.
7. Bases of spatial interaction, complementarities, intervening opportunities and transferability.
8. Patterns of movement: the type, patterns of movement and transport modes. Transport network; the function, pattern of movement, geometry and transport development.

UNIT-IV

9. Transport policy and planning in India.
10. Urban transport: growth and problem of urban transportation. Environmental degradation: vehicular pollution and congestion alternatives to the transport system in mega cities in India
11. National highway development and planning in India.

Suggest Readings:

1. Bhaduri, S. 1992. Transport and Regional development, Concept, New Delhi.
2. Chorley R.J. & Hagett P. 1967. Models in Geography Methuen & Co. London.
3. Hurst, M.E.(ed.) 1974. Transportation Geography, McGraw-Hill.

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4. Hagget, F and Chorlley, R.J. 1968. Network Analysis', Edward Arnold, London.
5. Hay, A. 1973. Transport Economy, MacMillan, London.
6. Hoyle, B.S.(ed). 1973. Transport and Development, MacMillan, London.
7. Mukerji, A.B. 1974. 'Road Transportation Network Structure and Levels of Urbanization in Rajasthan, *The National Geographical Journals of India*, Vol. XX, Part I.
8. Oni, A. O. 2007. A Study of Accessibility and Connectivity of Lkeja Arterial Roads. *Journal of Land Use and Development Studies*, Vol. 3, 1.
9. Raza, M. and Agrawal Y.P. 1985. Transport Geography of India, Concept, New Delhi.
10. Robison H & Bamford C.G. 1978. Geography of Transport Machdonals & Evans. London.
11. Saxena, H.M. 2005. 'Transport Geography', *Rawat Publications*, Jaipur.
12. Taffe, E.J. & Gauthier (Jr.) H.L. 1973. Geography of Transportation, Prentice-Hall, Englewood Cliffs, N.J.

SC- 304 (a)
Political Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective is to acquaint the students with conceptual framework of geo-political issues and assessment of Indian position in the emerging geo-political situation.

Outcome: The students shall be groomed to grasp the conceptual framework of geo-political issues and role and status India in contemporary geo-political situation.

UNIT-I

1. Nature and scope of political geography, its approaches and recent trends.
2. School of thoughts: political economy, world system, globalization.

UNIT-II

3. Concept of nation, state and nation-state, nationalism and nation building, emergence and growth of territorial state, globalization and the crisis of the territorial state forms of governance: unitary and federal.
4. Distinction between frontiers and boundaries, demarcation of boundaries, classification and functions of boundaries.
5. Landlocked state: advantages and disadvantages.

UNIT-III

6. Global strategic views: Mahan and Sea power; Mackinder and Heartland; Spykman and Rimland Servasky and Air power.
7. Geo-politics in the post cold war world- S.B. Cohen's model of geo-politics.

UNIT-IV

8. Emergence of India as regional power: Geo-political significance of Indian and Pacific Ocean.
9. Geo-political issues in India with special reference to water disputes and riparian claims.
10. Gerrymandering and electoral abuse in India.
11. Kashmir problem and Indo-Pak relations.

Suggested Readings:

1. Alexander, L.M. 1963. World Political Patterns Ran Mc Nally, Chicago.
2. De Blij, H.J. and Glassner, Martin. 1968. Systematic Political Geography, John Wiley, New York.
3. Dikshit, R.D. 1996. Political Geography: A Contemporary perspective, Tata McGraw Hill, New Delhi.
4. Dikshit, R.D. 1999. Political geography: A Century of Progress, Sage, New Delhi.

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5. Sukhwal, B.L. 1968. Modern Political Geography of India Sterling publishers, New Delhi.
6. Taylor, Peter. 1985. political Geography Longman, London.
7. Fisher Charles A. 1968. Essays in Political Geography, Methuen, London.
8. Pounds N.J.G. 1972. Political Geography. McGraw Hill, New York
9. John R. Short. 1982. An introduction to Political Geography Routledge, London.
10. Deshpande C.D. 1992. India-A Regional Interpretation Northern Book Centre, New Delhi.

SC-304 (b)
Geography of Rural Settlements

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the paper is to give to the students the basic ideas about the rural settlements, environment, social issues and development plans in the rural areas. It also throws light on the social and economic deprivation and inequalities in the rural areas.

Outcome: The present paper shall enhance the knowledge of students about the pattern, type and functional systems of rural settlements.

UNIT-I

1. Nature, scope, significance and development of settlement geography. Approaches in rural settlement geography.
2. Histogenesis of rural settlements: historical development, definition and characteristics of rural settlement, distribution of rural settlements, size and spacing of rural settlements in India.

UNIT-II

3. Rural Settlement: types, forms and patterns.
4. Rural settlement as service centers: Concept, identification with reference to Central Place Theory.

UNIT-III

5. Regionalization of rural settlements with special reference to India.
6. Social issues in rural settlements: Poverty, housing, health care and inequality in India.

UNIT-IV

7. Environmental issues in rural settlements.
8. Cultural landscape elements in rural settlements: House type and field pattern.
9. Rural development planning in India.

Suggested Readings:

1. Alam, S.M. et. Al. 1982. Settlement System of India, Oxford and IBH Publication Co, New Delhi.
2. Brock, J.O.M and Welb, J.W. 1978. Geography of Mankind. McGraw Hill, London.
3. Chisholm, M. 1967. Rural settlements and Land Use, John Wiley, New York.
4. Daniel, P. and Hopkinson, M. 1986. The Geography of Settlement. Oliver & Byod, Edinburgh,.
5. Grover, N. 1985. Rural Settlements – A Cultural Geographical analysis, Inter-India Publication, Delhi.
6. Hudson, R.S. 1976. A Geography of Settlements, MacDonald & Evans., New York.

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7. Ramchandran, H. 1985. Village Clusters and Rural Development, Concept Publication, New Delhi.
8. Rao, E.N. 1986. Strategy for Integrated Rural Development, B.R. Publication Cor., Delhi.
9. Rappoport, A. 1969. House form and Culture, Prentice Hall, New Jersey.
10. Srinivas, M.N. 1968. Village India, Asia Publication House, Bomday.
11. Wanmali, S. 1983. Service Centres in Rural India, B.R. Publication Cor., New Delhi.
12. Mayrr, I and R.J. Haqqet. 1979. Settlements: Theory and Practice. Harper & Row, London.
13. Singh, R.L. (ed) 1978. Transformation of Rural Habitat in Indian Perspectives: A Geographic Dimension, NGSI Research Publication, No. 19, Varanasi.

SC- 304 (c)
Soil Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The main aim of this course is to appraise the students about soil formation processes and geographical distribution of soils in the world. The course shall cover the fundamental processes, development, classification and mapping of this resource.

Outcome: Study of Soil Geography shall make the students understand the significance of soil resources in the development of the society. It should also make the students to internalize the relationship between soils and other natural resources.

UNIT-I

1. Nature and scope of Soil Geography.
2. Soil formation factors (Parent material, flora and fauna, climatic and topographic) and Processes of soil formation and soil development (physical, biotic and chemical).
3. Soil profile and its characteristics (zonal, azonal and intra zonal soils).

UNIT-II

4. Physical properties of soils: morphology, (texture, structure, colour, porosity and permeability), water, air and temperature.
5. Chemical properties of soils: soils reaction and controlling factors, soil clays, organic matter and humus.
6. Biological properties of soils (Soil organisms).

UNIT-III

7. Soil classification: genetic, taxonomic and 7th Approximation, their characteristics and world patterns.
8. Soil erosion and Degradation Processes

UNIT-IV

9. Conservation methods to improve the physical qualities of soils.
10. Methods and mechanism of soil survey.
11. Soil reclamation and management, integrated soil and management.

Suggested Readings:

1. Birkland P.W. 1999. Soil and Geomorphology, oxford university press, Inc., New York.
2. Brady Nyle C. Weil Raymond C. 2012. The nature and Properties of soils, Pearson publishing, Prentice hall of India, Pvt. Ltd. New Delhi.
3. Brickland, PW. 1984. Soils and Geomorphology. Oxford University Press, London.
4. Bunting, B.T. 1973. The Geography of Soils, Hutchinson, London.
5. Clark, GR. 1957. Study of Soil in the Field, Oxford University Press, Oxford.

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6. Daji, JA.1980. A Text Book of Soil Science. Asia Publishing House, New Delhi.
7. Fenwick I.M and knapp B.J 1982. Soils – Processes and Response, Unurin Brothers Ltd.; The Greshman press, survey.
8. Foth H.D. and Turk LM. 1972. Fundamentals of Soil Science. John Wiley, New York.
9. Govinda Rajan, S.V. and Gopala Rao, H.G. 1978. Studies on Soils of India. Vikas Publications, New Delhi.
10. Mc. Bride, M.B. 1999. Environmental Chemistry of Soils, Oxford University Press, New York.
11. Pitty, A.F. 1978. Geography and Soil Properties. University Press, London.
12. Sehgal, J. 2000. Pedology-concepts and Applications. Kalyani Publications, New Delhi.

SC- 304 (d)
Geography and Disaster Management

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of this course to develop among the students an understanding about the geographical dimensions of different types of disasters. It also introduces the students to concepts and practices of disaster mitigation and recovery, impacts of disasters and role of RS and GIS in disaster prevention.

Outcome: The course shall make the students aware about the risk of occurrence of different types of disasters in various parts of world. It will also appraise them about the mitigation and recovery mechanisms of disasters.

UNIT-I

1. Disasters and Hazards: Definition, nature and classification.
2. Geography and disasters: major disasters of world, disaster profile of India
3. Tectonic Disasters: Volcanoes, Earthquakes, Tsunamis, Landslides.

UNIT-II

4. Hydrological Disasters: Floods and Droughts
5. Climatic Disasters: Cyclones and Heavy Precipitation events
6. Human Induced Disasters: Epidemics, Industrial and Transport Disasters; Wars and Terrorism induced Disasters

UNIT-III

7. Disaster Management in India: Policy and Organizational Structure setup.
8. Disaster Vulnerability and Affecting Factors.
9. Planning for Disaster Mitigation Measures and Preparedness.

UNIT-IV

10. Post Disaster Recovery and Rehabilitation
11. Impacts of Disaster on Society and Economy
12. Remote Sensing and GIS Applications in Disaster Prevention and Monitoring.

Suggested Readings:

1. Nlaikie, P et. Al. 1994. At Risk: Natural Hazards, People;s Vulnerability and Disasters, Routledge, London.
2. Carter, NW. 1991. Disaster Management: A Disaster Manager's Handbook, ADB, Manila.
3. Cuny, FC. 1983. Disasters and Development; Oxford University Press.
4. Hewitt, K. 1977. Regions of Risk: A Geographical Introduction to Disasters, Longman, Harlow.
5. Kates RW and I Burton. 1986. Geography, Resources and Environment, Vol. I & II, Themes from the work of Gilbert F White, The University of Chicago Press, Chicago

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6. Smith K. 1996. Environmental Hazards: Assessing Risks and Reducing Disasters, Routledge, London.
7. Varley, A. 1995. Disaster, Development and Environment, John Wiley and Sons, Chichester.
8. National Policy on Disaster Management. 2009. Ministry of Home Affairs, Govt. of India, New Delhi.

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SC- 304 (e)
Biogeography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note:- **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective is to introduce the concept of biogeography, evolution and dispersal of flora and fauna, interaction between living and non living organisms with physical environment, conservation of resources and human adaptation and adjustment to diverse environment.

Outcome: Students shall learn the significance of bio-geography, origin and evolution of flora and fauna, their dispersal over space and environmental hazard and laws to protect biodiversity and clean and safe environment.

UNIT-I

1. Nature, scope and significance of biogeography.
2. Basic ecological principles: Bio-energy cycle in territorial ecosystem; energy budget of the earth; trophic levels and food web.
3. Origin of fauna and flora: Major gene centers; domestication of plants and animals and their disposal agents and roots.

UNIT-II

4. Distribution of plant life on the earth and its relation to soil, climate and human activities.
5. Geographical distribution of animal life on the earth and its relation to vegetation types, climate and human activities.

UNIT-III

6. Communities-Nature of communities and ecosystems: bio-diversities; human induced communities change; habitat decay and conservation of biotic resources.
7. Industrial effluent and its effect on fresh water and marine biology.

UNIT-IV

8. Environmental hazards: Ecological consequences, human perception and adjustment with respect to flood, drought and earthquake.
9. Bio-Reserves in India.
10. National forest and wild life policy of India.

Suggested Readings:

1. Agarwal, D.P. 1992. Man and Environment in India Through Ages, Book & Books.
2. Bradshaw, M.J. 1979. Earth and Living Plant, ELBS, London.
3. Cox, C.D. and Moore, P.D. 1993. Biogeography: An Ecological and Evolutionary Approach 5th edn. Blackwell.
4. Gaur, R. 1987. Environment and Ecology of Early Man in Northern India R.B. Publication Corporation.
5. Hoyt, J.B. 1992. Man and the Earth, Prentice Hall, U.S.A.

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6. Huggett, R.J. 1998. Fundamentals of Biogeography. Routeldge, U.S.A.
7. Lllies, J. 1974. Introduction of Zoogeography, McMillan. London.
8. Khushoo, T.N. and Sharma, M.(eds.) 1991. Indian Geosphere-Biosphere Har-Anand Publication, Delhi.
9. Mathur, H.S. 1998. Essentials of Biogeography, Anuj Printers, Jaipur.
10. Pears, N. 1985. Basic Biogeography 2nd edn. Longman, London.
11. Simmon, I.G. 1974: Biogeography, Natural and Cultural, Longman, London.
12. Tivy, J. 1992. Biogeography: A study of Plants in Ecosphere 3rd edn. Oliver and Boyd, U.S.A.

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HC- 305
Introduction to Remote Sensing (Theory)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Note: **There will be seven questions in all. Question No. 1 is compulsory and consists of 5 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions, at least one from each unit. All questions carry 10 marks each.**

Objective: The objective is to provide exposure to students regarding use of new techniques in obtaining geographical data. It shall introduce the students to the processes of satellite remote sensing data acquisition and the application of digital information in real time mapping.

Outcome: The course will equip the students with state of art concepts and methodologies of remote sensing technology.

UNIT-I

1. Aerial Photographs: History, definition and advantages and limitations. Types of aerial photographs and resolution. Mirror Stereoscope, stereoscopic parallax, relief displacement. Elements of aerial photo interpretation.
2. Remote Sensing, definition and scope, EMR and spectrum. Blackbody Radiation and Kirchhoff's Law. Interaction of EMR with atmosphere and earth surface features. Atmospheric window. Remote Sensing Platforms and Sensors. Orbits, Resolution and types of remote sensing.

UNIT-II

3. Concept of Multispectral, Thermal and Hyper spectral remote sensing. Major earth resource Satellites: LANDSAT, SPOT and IKONOS. Indian Space Program and characteristics of Indian remote sensing satellite and data.
4. Digital Image processing and application: image restoration and correction. Image classification: supervised and unsupervised. Applications in resource mapping and monitoring.

Suggested Readings:

1. Avery T.E., and G.L. Berlin. 1992. Fundamentals of Remote Sensing and Air Photo Interpretation, 514 Ed. Macmillan, New York, USA.
2. Aggarwal C.S. and P.K. Garg. 2000. Remote Sensing, A.H. Wheeler & Co. Ltd, New Delhi.
3. Campbell, J.B. 2002. Introduction to Remote Sensing, 3rd ed., Taylor & Francis, New York, USA.
4. Jensen, J.R. 2000. Remote Sensing of the Environment: An earth Resource Perspectives, Pearson Education Inc. India.
5. Lillesand, Thomas M. and R. Kiffer 1994, Remote Sensing and Image Interpretation, 3rd edition, John Willy & sons, Inc New York, USA.
6. Nag and Kudrat. 2002. Remote Sensing and Image Interpretation, Concept Publishers, Delhi.
7. Meenakhi Kumar 2000. Text book on Remote Sensing; NCERT, New Delhi.

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8. Reddy, Anji 2000. Remote Sensing and Geographical Information System (An Introduction), Hyderabad.
9. Sabins, F. 1982. Remote Sensing Principles and Application, Freemass and Compare, New York, USA.

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HC-306
Visual Interpretation of Remote Sensing Data (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Distribution of Marks

Lab. Exercises:	24 marks (8x3)
Practical Record book:	6 marks
Viva-Voce:	10 marks

Note: **The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question/exercise from each unit**

Objectives: The objective is to enable the students to understand and analyze aerial photographs and different satellite imageries.

Outcome: It shall equip students with handing instruments, tools and techniques of aerial photo interpretation and satellite imageries.

UNIT I

1. Basic information on Aerial photographs (Annotation and Marking) (1)
2. Identification of Principal Point and Conjugate Principal Point (1)
3. Determination of flight line and flight direction (1)
4. Determination of scale of Aerial Photograph (2)
5. Determination of height of objects from single aerial photograph (1)
6. Test of 3D Vision using stereoscope (1)
7. Measurement of height of objects using stereo-pair (1)
8. Preparation of land use land cover map from Aerial Photographs (1)

UNIT II

9. Identification and mapping of cultural features from satellite image (1)
10. Identification and mapping of natural features from satellite image (1)
11. Comparison of features on Panchromatic and Multi-spectral Images (2)
12. Preparation of interpretation keys for feature identification-any five features (1)
13. Preparation of land use land cover map from satellite image (1)

Figures in parenthesis represent number of practical exercises

HC-307
Project Report based on Field Survey (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Note: **The students will have to write a project report based on field survey which shall be duly supervised by the teachers.**

Objective: The objective of the course is to teach the techniques and tools used in the analysis of socio-economic data by applying them on the data collected through field survey and drawing inferences and interpretations.

Outcome: The writing of the project report shall train the students in analysis and interpretation of socio-economic data obtained from the field.

Scheme of Practical Examination:

1. Report: 15 marks
   (The students under the supervision of department teachers shall conduct a socio-economic survey of any settlement upto 7 days and write report on different topics, accordingly)
2. Viva voce: 25 marks

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OE- 308
General Geography of World

End Sem. Max Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, at least one from each unit. All questions carry 16 marks each.**

Objective: The objective of the course is to provide understanding about World Geography. It aims at developing understanding about physiographic structure, continents, location of countries and demographic-ethnic characteristics of people and world economy.

Outcome: The course shall make the student to understand the distribution and characteristics of continent, oceans and physiographic landscape of the world. It will also introduce the students to the ethnic-cultural diversity and economies of the world.

UNIT-I

1. Continents and Oceans: Their location, expansion and geographical characteristics.
2. World Major Physiographic Units: Mountain, Plains and Plateaus.

UNIT-II

3. World Climates and Major Climatic Regions
4. Major Soil Types and Natural Regions.

UNIT-III

5. Human Biological Diversity, Ethnicity and Distribution of Races
6. Major Religions of World and their Distribution.

UNIT-IV

7. Population: Distribution, Density and Growth
8. World Economy: Characteristics of Developed and developing Economics

Suggested Readings:

1. Hussain, Majid. 2014. World Geography, Rawat Publishers, New Delhi.
2. Pounds and Taylor. 1974. World Geography, South Western Publishing Co., Ohio.
3. Brown, 1. (ed) 1994. State of the World, WW Norton and Co. New Delhi.
4. Mcdougal, Holt. 2010. World Geography, HMH Publishing Co.

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HC- 401
Geographical Thought

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of this course is to introduce the students to the history, philosophy and methodology of geography. The postgraduate students of geography must have an idea about the course of development of the discipline in terms of changes in its philosophy and methodological innovations.

Outcome: The course would appraise the students about the development of geography as a scientific discipline. It would help them in assessing the positive aspects and shortcomings of the discipline.

UNIT-I

1. Classification of knowledge, Nature of Geography and its place among sciences
2. Nature of Geographic knowledge during ancient (Greek and Roman) and medieval (Arab) periods
3. Foundation of Modern Geography-contributions of Varenius, Kant, Humboldt and Ritter.

UNIT-II

4. Emergence of Geography as a study of (i) physical features (ii) chorology (iii) landscapes.
5. Concepts in Geography: Environmental Determinism and Possibilism, Areal Differentiation;
6. Dichotomy and Dualism in Geography: Physical vs Human Geography, and Systematic vs Regional Geography

UNIT-III

7. Quantitative Revolution-Emergence of geography as spatial science
8. Positivist Explanations in Geography- Laws, theories, models
9. Inductive & deductive logic in geographic explanations

UNIT-IV

10. Behavioral and Humanistic Perspectives in Geography
11. Social Relevance in Geography- Welfare, Radical and Feminist Perspectives
12. Postmodernism and Geography.

Suggested Readings:

1. Dickinson, R E 1969. The Makers of Modern Geography, London.
2. Dikshit, RD 1997. Geographical Thought- A Contextual History of Ideas, Prentice Hall of India, New Delhi.
3. Harvey David 1989. Explanation in Geography, Edward Arnold, London.

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4. Hartshorne, R 1959. Perspectives on the Nature of Geography, Rand MacNelly, Chicago.
5. James PE and Martin J Geoffrey 1972. All possible Worlds, John Wiley and Sons, New York.
6. Johnston, RJ 1983. Geography and Geographers, Edward Heinemann, London
7. Peet, Richard 1998. Modern Geographical Thought, Oxford, Blackwell Publishers.
8. Gaile GL and Willmott CJ 2003. Geography in America at the Dawn of 21st Century, Oxford,.
9. Holt-Jonson, Arild 2011. Geography, History and Concepts: A Study's Guide, Sage,.
10. Cresswel Tim 2013. Geographic Thought: A critical introduction, Wiley-Blackwell.

HC-402
Hydrology and Oceanography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective is to introduce the students the basic concepts of hydrology and oceanography such as hydrologic cycle, water balance and movement of oceanic water, salinity distribution etc.

Outcome: It will acquaint the students with the basic concepts of hydrology and oceanography.

UNIT-I

1. Definition, nature, scope and historical development of hydrology. Relationship of hydrology with other physical sciences.
2. Hydrological cycle, estimation of global water budget, human impact on hydrological cycle.

UNIT-II

3. Rainfall: frequency, intensity and measurement, accuracy of rainfall measurement, determination of average rainfall (Arithmetic mean, Theiesson polygon, isohytel methods), variations in rainfall and world distribution.
4. Sources and measurement of stream flow, hydrograph and its components, analysis of hydrograph, factors affecting the hydrograph shape, methods of hydrograph separation, variations in runoff, rainfall-runoff relationship.

UNIT-III

5. Major topographic features of ocean basins, bottom relief of Atlantic, Pacific and Indian oceans.
6. Sources, classification and distribution of ocean deposits, corals-origin, types and conditions for development. Theories of the origin of coral reefs (Subsidence and standstill).

UNIT-IV

7. Origin, causes, types and effects of the ocean currents, currents of the Atlantic, Pacific and Indian oceans.
8. Oceanic temperature: distribution and causes of variation.
9. Composition of oceanic water and distribution of salinity.

Suggested Readings:

1. Digman, L.S. 2002. Physical Hydrology. Prentice Hall, New Jersy.
2. Lal, DS. 2007. Oceanography. Sharda Pustak Bhawan, Allahabad.
3. Patra K.C. 2010. Hydrology and Water Resource Engineering, Norsa Publishing House, New Delhi.

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4. Reddy, P.J. 1992. A Text Book of Hydrology, Laxmi Publications, New Delhi.
5. Siddhartha, K.1999. Oceanography-A Brief Introduction, Kisalaya Publications, New Delhi.
6. Singh. S. 2008. Oceanography. Prayag Pustak Bhawan, Allahabad
7. Sharma RC and Vatal M. 1993. Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
8. Subramanya, K. 1994. Engineering Hydrology, Tata McGraw-Hill Publishing Company Limited, New Delhi.
9. Ward, W.C. 1967. Principles of Hydrology, McGraw Hill, New York.

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SC- 403 (a)
Regional Geography of India with special reference to Haryana

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the paper is to give an understanding about the regional structure of India with a focus on Haryana. This paper also deals with physical, economic and socio-cultural diversities in the country and Haryana.

Outcome: The paper shall enhance the knowledge of the students regarding the regional diversities of India and they also get to know about the physical, economic and socio-cultural diversities in the state of Haryana.

UNIT-I

1. Concept and types of regions and regionalization.
2. Regional Diversities in India.
3. Critical Review of schemes of regionalization of India: Baker and Stamp, Pithawala, Spate and R.L.Singh.

UNIT-II

4. Macro Regions of India: Himalayas, Indo-Ganga Plains, Indian Peninsula (physical and socio-economic characteristics).
5. Bases and demarcation of meso regions of India.
6. Schemes of socio-economic regionalization: Asok Mitra, P. Sengupta and Galina Sadasyuk.

UNIT-III

7. Physical and economic diversities in Haryana
   - i. Relief, Climate, Drainage, Soils and Natural Vegetation
   - ii. Agriculture and its spatial organization
   - iii. Industry, Transport and Communication
8. Regionalisation of Haryana (R.L Singh).

UNIT-IV

9. Demographic characteristics and diversities in Haryana.
10. Social diversity in terms of education in Haryana.
11. Socio-economic development in Haryana.

Suggested Readings:

1. Deshpande CD (1992), India: A Regional Interpretation, ICSSR and Northern Book Centre.
2. Singh, RL (ed.) (1971): India-A Regional Geography, National Geographical Society, Varanasi
3. Singh, Jasbir (1976) Agricultural Geography of Haryana, Vishal Publishers, Kurukshetra.

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4. Spate OHK and ATA Learmonth (1971)- India and Pakistan, Methuen, London.
5. Tirtha R and Gopal Krishna (1996), Emerging India, Rawat Publications, Jaipur.
6. Census of India (1981) Regional Division in Haryana.
7. Census of India (2001), Administrative Atlas of Haryana.
8. FICCI (2007), State of Infrastructure in Haryana.
9. www.nic.gov.in (web site related to Haryana).

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SC- 403 (b)
Resource Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective is to create awareness among the students about resource availability, accessibility, distribution and its use or misuse. It also enlightened them to theoretical evaluation and conservation and management of resources for sustainable development.

Outcome: Students will become sensitized to resource their types, availability and use or misuse, its impact on environment and will learn conservation methods and techniques. They shall become aware about the ongoing international efforts to mitigate environment problems and legal provisions.

UNIT-I

Concept and Scope of Resource Geography; Resource and ecosystem services: concept and types in relation to related concepts- environment, ecosystem, nature as nurture; World resources: classification of resources- changing profile and concerns; understanding relationship between natural resources and development process, and livelihoods with special reference to poor in the developing world. Sustainable development and some concerns from the past- from dooms day, zero growth to Rio and subsequent Earth summits.

UNIT-II

Natural resource based development processes in history: the agricultural transition, the era of Malthusian stagnation, Emergence of world economy, rise of the Western Europe with special reference to golden era of resource based development (1880-1913), colonial origins and resource exploitation, centre-periphery trade-resource dependency and unequal development.

UNIT-III

Models of Natural Resources Process: Zimmermann's Primitive and Advance Models of natural resource process- population, resources and carrying capacity, Kirk's Decision Model, Brookfield System Model; The resource curse hypothesis; open access exploitation hypothesis; factor endowment hypothesis; resources and common property/ entitlement-opportunity hypothesis; Resource exploitation and internal colonization, accumulation by dispossession; poverty and resource degradation.

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UNIT-IV

Management of Natural Resources: Meaning and Concept of conservation of Natural Resources, Resources and governance- State, civil society and state- resource tenure and property rights- access and ownership; decentralization, participation and Justice- fundamentals of community based natural resources management (C-BNRM); political economy and C-BNRM; reconciling biodiversity with development. Conservation and Management Methods of Natural resources: Soil Resource, Water Resource, Forest Resource and Mineral Resources, Problems of Natural Resource Management in India. Policies for sustainable resource-based development.

Suggested Readings:

1. Barbier, Edward B (2005) Natural Resources and Economic Development, Cambridge University Press.
2. Borton, I and R W Kates (1984) Readings in Resource Management and Conservation, University of Chicago Press, Chicago.
3. Bruce, Mitchell (1989) Geography and Resource Analysis, John Wiley and Son, New York.
4. Fabricius, C & Eddie Koch Eds. (2004) Rights, Resources and Rural Development: Community based Natural Resource Management in Southern Africa, Earthscan, London Sterling.
5. Das Gupta, Biplab (1979) the Environmental Debate, Economic and Political Weekly, Vol.13, No. 6/7, Annual Number (Feb., 1978), pp. 385-387+389+391+393+395+397-400.
6. Guha, J L and P R Chattroj (1994) Economic Geography- A Study of Resources, The World Press Pvt. Ltd. Calcutta
7. Kates, R.W. & Burton, I (eds): Geography, Resources and Environment,Vol I & II, University of Chicago Press, Chicago, 1986.
8. M Laren, D.J. and Skinnet, B.J.(eds.): Resources and World Development, John Wiley & Sons, New York, 1986.
9. Negi, B S (2000) Geography of Resources, Kedar Nath and Ram Nath, Meerut.
10. Owen, Oliver, S (1971) Natural Resource Conservation: A Ecological Approach, McMillion, New Delhi.
11. Raja, M (1989) Renewable Resources, Development, Concept Pub. New Delhi.
12. Ramesh, A (1984) Resource Geography (Ed.) R P Misra, Contribution to Indian Geography, Heritage Publishers, New Delhi.

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SC- 403 (c)
Social Geography with special reference to India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 sub-parts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the course to make students understand the society and social structure in spatial context. It shall appraise the students about social space and spatial distribution of tribes, caste territories, religions and linguistic regions in India.

Outcome: This course shall equip the students with the understanding of spatial dimensions of the societal characteristics and organizations in India. It will make them understand the processes and patterns of social change and transformation in spatial context.

UNIT-I

1. Nature and scope of Social Geography, its development and place among social sciences.
2. Sources and problems of data for study in Social Geography of India.
3. Social differentiation and region formation, social evolution, social space, social and spatial justice.

UNIT-II

4. Tribes: Social formations, rural-urban and spatial distribution and impacts of development.
5. Castes: Origin, caste and morphology of settlements, caste and clan territories and distribution of scheduled castes.

UNIT-III

6. Languages: Classification, historical processes of diffusion and geographical distribution, Linguistic regions
7. Religions: Origin, historical background and spatial distribution of religious groups, minority and segregation in space, communalism.

UNIT-IV

8. Social change and transformation in India, Modernization and Sanskntization
9. Rural-urban interaction and social change.
10. Social wellbeing: Overview of the concept.

Suggested Readings:

1. Ahmad, Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2. Dreze Jean, Amartya Sen, Economic Development and Social opportunity, Oxford University Press, New Delhi, 1996.
3. Dubey, S.C.: Indian Society, National Book Trust, New Delhi, 1991.

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4. Schwartzberg Joseph; An Historical Atlas of South Asia, University of Chicago Press, Chicago, 1978.
5. Sen, Amartya & Drze Jean, Indian Development: Selected Regional Perspectives, Oxford University Press, 1996.
6. Smith, David: Geography: A Welfare Approach, Edward Arnold, London, 1977.
7. Sopher, David.: An Exploration of India, Cornell University Press, 1980.
8. Subba Roa. Personality of India; Pre and Proto Historic foundation of India and Pakistan. M.S. University Baroda, Vadodara, 1958.

SC- 403 (d)
Coastal Geomorphology

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 sub-parts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of the present paper is to enlighten the students about the mechanism of waves and tides, rate of change of shoreline and also about the landform development, resulting from various coastal processes.

Outcome: After studying this course, the students get to know about the mechanism of waves and tides, the rate of change of shoreline and also about the various processes that shape the landscape along the coastal areas.

UNIT-I

1. Nature and scope of coastal geomorphology and its Significance, Time as a factor in coastal geomorphology
2. Classification of coasts and shore: submerged and emerged coasts, classification of coasts by Johnson and Shepard.

UNIT-II

3. Waves generation and modification, waves in shallow and deep water, wave energy, waves induced currents, Tsunamis and Seiches.
4. Origin and Types of tides. Theories of origin of Tides (Equilibrium theory, Progressive wave theory and Stationary wave theory).

UNIT-III

5. Processes and mechanism of marine erosion and resultant landforms.
6. Depositional landforms: Origin, classification and distribution. (Sandy and muddy shores- beaches and beach ridge, barriers spit and bar; mudflats and marshes (salt and tidal), formation of estuaries and mangrove swamps, coastal sand dunes and deltas.

UNIT-IV

7. Shoreline change: mechanism, rates and causes.
8. Structural control of shore zone morphology.
9. Coastal zone management: mapping and monitoring of coastal changes, legal and institutional coastal regulation, effective coastal zone policies.

Suggested Readings:

1. Ahmad, E.: Coastal Geomorphology of India. Orient Longmans, Bombay, 1973.
2. Bose, A.et. al: Coastal Zone Management of West Bengal, Pub. Sea Explorers Institute, Calcutta, 1985.
3. Bird, E.C.: Coasts- An Introduction to Coastal Geomorphology, Basil- Blackwell, Oxford, 1984.

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4. Davis J.L: Geographical Variation in Coastal Development. Hafner Pub.Co., New York, 1973.
5. French, P.W.: Coastal and Estuarine Management, Routledge, London, 1997.
6. John, P: An Introduction to Coastal Geomorpholocy. Arnold Heinemann, London, 1984.
7. Kind. C.A.M: Beaches & Coasts, Edward Arnold, London, 1972.
8. Scientific American: Readings in Earth Sciences, Vols I-III. Taraporevala Pub., Bombay, 1975.
9. Shepard, F.P. and Wanless, N.R.: Our changing Coastlines. Oxford University Press, 1971.
10. Pethick, J. 1983. An Introduction to coastal Geomorphology. Oxford University Press, New York.

SC- 403(e)
Tropical Climatology

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of this course is to appraise the students about the processes, dynamics and pattern of climate in the tropical area. It would also underline the significance of tropical climates and their impact on earth systems beyond tropics.

Outcome: This course would make the students understand the processes and resultant climatic pattern in tropical areas. It will also help them in establishing the linkages between tropical climates and weather systems in mid and high latitudes.

UNIT-I

1. Nature and scope and significance of Tropical Climatology.
2. Energy balance in tropical areas
3. Temperature distribution in tropical areas.

UNIT-II

4. Atmospheric Pressure and circulation in tropical areas-Hadley Cell
5. Walker Circulation, ENSO.
6. Monsoons-Theories of origin and characteristics and areas of influence

UNIT-III

7. Tropical Cyclones-Origin and characteristics.
8. Tropical Rainfall-Dynamics and distribution.
9. Heavy Precipitation events in tropical areas

UNIT-IV

10. Tropical Climates-Classification and characteristics.
11. Tropical Climates and agriculture: Human Adaptation to Tropical Climates.
12. Impact of Global Warming on Tropical Climates and Biomass.

Suggested Readings:

1. Barry, RF and RJ Chorley (1998) Atmosphere, Weather and Climate, Routledge, London.
2. Chritchfield, HJ, General Climatology.
3. Das PK (1987) The Monsoons, NBT Publications, New Delhi.
4. Fein JS and PM Stephens (1987) Monsoons, Wiley Intersciences.
5. Koenigsberger O H and others, Manual of Tropical Housing and Buildings, Universities Press
6. McGregor, GR and Simon Nierswold (1998) Tropical Climatology: An introduction to the Climates of the Low Latitudes, Wiley Interscience.

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7. Parenti, C (2011) Tropic of Chaos: Climate Change and New Geography of Violence, Nation Books, New York
8. Robinson PJ and S Henderson (1999) Contemporary Climatology, Henow.
9. Thompson, RD and A Perry (Ed.) (1997): Applied Climatology, Principles and Practices, Routledge, London.
10. Trewartha, GT. An Introduction to Climate. McGraw Hill Company, New York, 1980.

SC- 404 (a)
Gender Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: Objective of the course is to introduce the students to the concept of gender perspective in geography. It shall acquaint the students with feminism, gender issues and its applications in geographic studies.

Outcome: After the study of this course students shall become aware about gender perspective in geography.

UNIT-I

1. Growth and evolution of the discipline; its connotation; traditional concept of interdependence between men and women; emergence of patriarchy and capitalism and post-modern feminist movement.
2. Gender based demographic structure; gender gaps in infant mortality rates; maternal mortality rate; female infanticide; gender and longevity gap- their spatial variations.

UNIT-II

3. Male-Female involvement in Economic and Social Activities; multiple roles of women in land, water and forest resource management.
4. Involvement of women in household activities, agriculture, mining, construction, industry, service and informal sectors.

UNIT-III

5. Gender gaps in social and public life: education, wage differentials in economic activities, health care and nutrition.
6. Scope for bridging gender gap: empowerment of women and education, economic opportunities, access to reproductive health services, involvement in decision making processes in development and environmental management.

UNIT-IV

7. Gender and Neo-liberalization Policies in India.
8. Making of Gender geography in India.

Suggested Readings:

1. Boserup, E(1989) Women's Role in Economic Development. Earthscan, London.
2. Dankelman, I & Davidson, J (1989) Women and Environment in the Third World. Earthscan, London.
3. Deblig, H.J (1991) Human Geography-Culture, Society and Space (5th ed.), John Wiley, New York.
4. Haraway, D. (1991) Simians, Cybergs. and Women-The Reinvention of Nature. Rautledge, New York.

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5. Johnston, R.J (ed.) (1996), The Dictionary of Human Geography, Blackwell, Oxford,
6. Koblinsky, M. et.al (eds.): The Health of Women-A Global Respective. Westview Press, Boulder, 1993.
7. Lewis, R. Race, Feminity and Representation. Routledge, New York, 1995.
8. Momsen, JH. & Townsend, J. (eds.): Geography of Gender in the Third World, Albany, New York, 1987.
9. Rhodda, A (1991)Women and Environment. Zed, London,
10. Sivant, R.L (1985) Women.-A World Survey, World Priorities Washington, D.C.
11. Skjelsback, I smith, D Gender, Peace and Conflict. Sage, London, 2001.
12. Sowell, T (1994) Race and culture –A world View. Basic Books, New York.
13. UNICEF: The Lesser Child-the Girl in India. United Nations, Geneva, 1990.
14. United Nations (1991)The World's Women, 1980-1990. United Nations, New York.
15. United Nations (1995)World Resources 1994-95. Chapter 3: Women and Sustainable Development. United Nations, New York.

SC-404(b)
Geography of Tourism with special reference to India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of this course is to appraise the students about the tourist resources in different parts of India. It brings out the eco-tourist potentials in different physiographic regions namely Northern Mountains, Plains, Peninsula, Coastal regions and beautiful Islands.

Outcome: Through this paper the students will internalize the importance of and the role played by the tourism industry in India. They will also get to know about the various important destinations and their ecological settings.

UNIT-I

1. Definition, nature, scope and significance of tourism geography.
2. Factors influencing tourism: historical, physical, socio-cultural and economic.

UNIT-II

3. Motivating factors of tourism: leisure, recreation, spiritual, attraction of site and situation.
4. Infrastructure and support system of tourism accommodation and supplementary accommodation.

UNIT-III

5. Eco-Tourism potentials in India with reference to northern mountains and plains, peninsula, coastal regions and islands.
6. Impact of tourism: physical, economic and social.

UNIT-IV

7. Environmental laws and tourism.
8. Impact of globalization and foreign capital on tourism development.
9. Government policies for tourism development.

Suggested Readings:

1. Bhatia A.K. Tourism Development; Principles and Practices. Sterling Publishers, New Delhi 1996.
2. Bhatia, A.K. International Tourism – Fundamentals and Practices, Sterling, New Delhi (1991).
3. Chandra R.H.: Hill Tourism: Planning and Development, Kanishka Publishers, New Delhi 1998.
4. Hunter C and Green H: Tourism and the Environment: A Sustainable Relationship, Routledge, London, 1995.
5. Inskeep.E: Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Reinhold, New York, 1991.

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6. Kaul R.K. Dynamics of Tourism & Recreation. Inter-India, New Delhi (1985).
7. Kaur J.: Himalayan Pilgrimages & New Tourism Himalayan Books, New Delhi, 1985.
8. Lea J.: Tourism and Development in the Third World, Routledge, London, 1988.
9. Molton D.: Geography of World Tourism Prentice. Hall, New York, 1993.
10. Robinson, H. A Geography of Tourism. Macdonald and Evans, London, 1996.
11. Sharma J.K. (ed).: Tourism Planning and Development – A New Perspective Kanishka Publishers, New Delhi 2000.
12. Shaw G. And Williams A.M. Critical issues in Tourism-A Geographical perspective, Oxford: Blackwell, 1994.
13. Sinha P.C. (ed): Global Tourism: The Next decade, Oxford, Butterworth, Heinemann, Oxford, 1994.
14. Voase R Tourism: The Human Perspective Hodder & Stoughton, London, 1995.
15. Williams A.M. and Shaw G. (eds): Tourism and Economic Development- Western European Experiences, London.

SC- 404 (c)
Cultural Geography

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objective: The objective of this course is to introduce the students to concepts of cultural geography, sites of evolution of human civilizations, cultural diversity, distribution of races and languages and socio-cultural diversity in India.

Outcome: The study of cultural geography shall make the students understand and appreciate the ethnic-cultural diversity in the world and India.

UNIT-I

1. Definition, nature and scope of Cultural Geography; cultural elements and components of culture.
2. The evolution of Human Civilizations with special reference to:
   (i) Mesopotamia
   (ii) The Nile Valley
   (iii) The Indus Valley
   (iv) The Hwang Ho Valley

UNIT-II

3. Bases of cultural diversity and cultural transformation-race, religion and language.
4. Cultural landscape and cultural ecology.
5. The speed and efficiency of operation of cultural processes.

UNIT-III

6. Race, evolution of race, criteria of racial classification, theories of the classification of Races-Zones and Strata or Migration Zone Theory of race evolution.
7. Classification of Races: Major races of the world: Nordics, Mongoloids, Negroids and Caucasoids.
8. Racial Classification in India-Sri Risley, A.C. Haddon, B.S. Guha.

UNIT-IV

9. Tribes of India with main emphasis on Naga, Khasis, Todas, Bhils and Santhals.
10. Patterns of livelihood: Various economic activities, cultural adaptations; agriculture, industrialization and modernization, technological changes and their geographical implications.

Suggested Readings:

1. Wagner, P.L. and Mikesell, M. (1962) Readings in Cultural Geography, the University of Chicago Press, Chicago.
2. Spencer, J.E. and Thomas, W.L. (1973) Introducing Cultural Geography, John Wiley and Sons, New York.

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3. Dickens, S.N. (1970) Introduction to Cultural Geography, Xerox College Publishing House, Waltham, Massachusatts.
4. De Blij, Harm J. (1977) Human Geography, Cultural Society and Space, John Wiley and Sons, New York.
5. Taylor G. (1971), the Geography in the Twentieth Century, Asia Publishing House, New Delhi.
6. Magunder, D.N. (1973), Races and Culture of India, Asia Publishing House, New Delhi.
7. Mukerjee, A.B. and Aijazuddin A. (1985) India: Culture, Society and Economy, Inter-India Publications, New Delhi.
8. Craig, Mike (1998): Cultural Geography, Routledge Publications, London.

SC- 404 (d)
Geography of Water Resources

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 sub-parts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective of the course is to introduce the students to the concepts of development of earth's finite water resources, its dynamic nature, availability, and management and conservation practices.

Outcome: The course shall make the students understand the issues related to spatial and temporal dimensions of availability, utilization, conservation, management and challenges of water resources.

UNIT-I

1. Definition, nature, scope and importance of Water Resources Geography.
2. Distribution and changing trends in use of water in the world.
3. Status of water resources in India.

UNIT-II

4. Factors affecting demand of water, kor water demand, delta and duty of water.
5. Estimation of water demand and use in agricultural sector.
6. Groundwater assessment, development and management.
7. Water pricing and its marketing, virtual and footprints of water.

UNIT-III

8. Irrigation induced waterlogging and salinity with reference to Indira Gandhi Canal project.
9. Sources, monitoring and management of water pollution.
10. Interstate water disputes-history, constitutional provisions, treaties and financial constraints.
11. Water disputes and treaties with reference to India.

UNIT-IV

12. Water harvesting techniques.
13. Watershed management.
14. Issues and challenges of inter basin transfer of water.
15. Environmental flows.
16. Resettlement issues pertaining to water resource projects.

Suggested Readings:

1. Aggarwal, A. and Narain, S. 1997. Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting System. Centre of Science and Environment, New Delhi, 1997.
2. Gurjar R.K. and Jat B.C. 2008. Geography of Water Resources, Rawat Publications, Jaipur.

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3. Jones, J.A. 1997. Global Hydrology-Processes, Resources and Environmental Management. Longman.
4. Michael. A.M. 1978. Irrigation: Theory and Practices. Vikas Publishing House Pvt. Ltd., New Delhi.
5. Mather, J.R. 1984. Water Resources Distribution, Use and Management. John Wiley, Marylane.
6. Newson, M. 1992. Land, Water and Development River Basin Systems and their Sustainable Management. Routledge, London.
7. Rao, K.L. 1979. India's Water Wealth. Orient Longman, New Delhi.
8. Tideman, E.M. 1996. Watershed Management; Guidelines for Indian Conditions, Omega, New Delhi.

SC- 404 (e)
Urbanization in India

End Sem. Max. Marks: 80
Time: 3 Hrs.

Note: **There will be nine questions in all. Question No. 1 is compulsory and consists of 8 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, selecting one from each unit. All questions carry 16 marks each.**

Objectives: The objective of the course is to make the students to understand the evolution of urban settlements in India, their processes, current status and recent trends, contemporary urban issues and policy framework.

Outcome: Students should be acquainted with the evolution, processes and pattern of urbanization in India, its contemporary urban issues and urban policy.

UNIT-I

1. History of urbanization in India: Ancient, Medieval, Colonial and post independence phases of urbanization.
2. Processes of urbanization: Socio-cultural, political, economic and geographical processes.

UNIT-II

3. Patterns of urbanization: settlement structure, level of urbanization, criteria of measurement and spatial patterns of urbanization in India.
4. Recent trends of urbanization in India.
5. Urban regions of India: case studies of metropolitan regions of Delhi, Mumbai, Kolkata and Chennai.

UNIT-III

6. Urban infrastructure and other contemporary urban issues:
   (i) Urban poverty and slums and urban renewal
   (ii) Urban Housing
   (iii) Urban transport
   (iv) Urban sanitation
   (v) Solid waste management
   (vi) Water crisis and water management
   (vii) Urban crime and delinquency
   (viii) Marginalization of poor in urban space
   (ix) Squeezing of urban social space

UNIT-IV

7. Role of urbanization in economic and social change.
8. SEZ: Concept, policies and consequences.
9. National urbanization policy.

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Suggested Readings:

1. Alam, SM and Khan, W: Metropolitan Hyderabad and its Region: A Strategy for Development, Asia Publishing House, Bombay, 1972.
2. Berry, B.J.L. and Horton F.F. Geographic Perspectives on Urban Systems, Prentice Hail, Englewood Cliffs, New Jersey, 1980.
3. Carter: The Study of Urban Geography, Edward Arnold Publishers, London, 1972.
4. Dwyer, D.J. (ed.) The City as a Centre of Change in Asia, University of Hong Kong Press, Hongkong, 1971.
5. Gibbs J.P.: Urban Research Methods D. Van Nostrand Co.Inc. Princeton, New Jersey, 1961.
6. Hall P.: Urban and Regional Planning, Routeldge, London, 1992.
7. Kundu, A.: Urban Development and Urban Research in India, Khanna Publication, 1992.
8. Nangia, Sudesh Delhi Metropolitan Region: A study in settlement geography, Rajesh Publication, 1976.
9. Rao V.L.S.P: Urbanization in India: Spatial Dimensions. Concept Publishing Co. New Delhi.
10. Rao V.L.S.P: The Structure of an Indian Metropolis: A study of Bangalore Allied Publishers Bangalore, 1979.
11. Singh K and Steinberg F.(eds.): Urban India in Crisis, New Age Items, New Delhi, 1998.
12. www.ministry of urban affairs, India.
13. www.NCRPB, New Delhi
14. www.MMR, Mumbai
15. www.KMR, Kolkatta
16. www.CMR,Chennai

HC-405
Fundamentals of Geographical Information Systems (Theory)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Note: **There will be seven questions in all. Question No. 1 is compulsory and consists of 5 subparts (short notes not exceeding 50 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions, at least one from each unit. All questions carry 10 marks each.**

Objectives: The objective of the course is to provide exposure to students to the field of GIS and modern techniques of making maps, handing spatial and non spatial data electronically and the concepts of data acquisition using GPS.

Outcome: The students shall acquire the skills in managing spatial and non spatial data electronically and get acquaintance to concepts related to GPS

UNIT-I

1. GIS: Definition and scope; Components and Elements of GIS, Concept of Geoid and Spheroid. Coordinate projection system: Implications of spherical and planar coordinate systems and their transformations in GIS;
2. Geographic Data: Spatial and Non-Spatial: Data Sources. Spatial Data Structure: Raster and Vector; Data base management system.

UNIT-II

3. Spatial Analysis: Overlay, Neighborhood and Proximity; Integration of raster and vector data; Applications of GIS in resource mapping and management.
4. Fundamentals of Global Positioning System (GPS): Concept and Principles; GPS devices; GPS system: NAVSTAR, GALILIO and GAGAN. Applications of GPS

Suggested Readings:

1. Burrough, P.A. and McDonnell, R. (1998): Principles of Geographic Information Systems. Oxford University Press, Oxford.
2. Chang, K.T. (2003): Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
3. Ahmed El-Rabbany: Introduction to GPS, 2nd ed., Artech House, Boston
4. Chauniyal, D. D. (2004): Remote Sensing and Geographic Information Systems. (in Hindi). Sharda Pustak Bhawan, Allahabad.
5. Demers, M. N. (2000): Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore.
6. Prithvish Nag and Samita Sengupta

HC-406
Digital Processing of Remote Sensing Data (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Distribution of Marks

Lab. Exercises:	24 marks (8x3)
Practical Record book:	6 marks
Viva-Voce:	10 marks

Note: **The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question/exercise from each unit**

Objectives: The objective is to enable the students to understand and analyze aerial photographs and different satellite imageries.

Outcome: It shall equip students with handing instruments, tools and techniques of aerial photo interpretation and satellite imageries.

UNIT I

1. Understanding Digital Image (Digital signature and Digital numbers)
2. Visualizing the DN values (1)
3. Georefrencing of Toposheets (1)
4. Image to Image Registration (1)
5. Preparation NCC and FCC (2)
6. Making Subset and resolution merge (2)

UNIT II

7. Image Enhancement (2)
8. Band Ratio (NDVI) (1)
9. Supervised Classification (1)
10. Unsupervised Classification (1)

Figures in parenthesis represent number of practical exercises

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HC-407
Fundamental of Geographical Information Systems (Practical)

End Sem. Max. Marks: 40
Time: 3 Hrs.

Distribution of Marks

Lab. Exercises:	24 marks (8x3)
Practical Record book:	6 marks
Viva-Voce:	10 marks

Note: **The examiner shall set four questions, two from each unit. The candidate shall attempt three questions in all, selecting at least one question/exercise from each unit**

Objectives: The objective of the course is to provide training to students in acquiring and managing digital geographical data obtained from maps, topographical sheets, and satellite imageries. It gives students experience of digital storage, manipulation and analysis of data and its presentation using GIS software.

Outcome: The course shall fully equip the students with the techniques and methodologies of Geographical Information System, Geographical Positioning Systems in preparing the maps and presentation of information in GIS environment.

UNIT-I

1. Generation of geographic framework: Georeferencing of Topographic maps
2. Generation of Geo-database/ Shape files: Vectorisation of data (point, line and polygon),
3. Editing and building topology
4. Joining of Spatial & non-spatial data
5. Analysis: Overlay, Query, Proximity
6. Symbolization: Chorochromatic, Choropleth and Point proportional.

UNIT-II

7. GPS: Introduction to the GPS
8. Different pages in GPS device,
9. Collection of GCP using GPS devices.