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## Department of Geography
## Lesson Plan for Honours (CBCS) for Academic Session 2020-2021

| Type | Paper | Unit | Topic | Learning Objectives | Related Questions | Teacher | Teaching Methods |
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| **SEMESTER-I** | | | | | | | |
| Discipline Core (DC) -1 | **DC1A Geotectonics and Geomorphology (Theory)** | **Part 1: Geotectonics** | | | | | |
| | | 1 | Earth's tectonic and structural evolution and geological time scale | A brief idea about tectonic structure will be given. Different types of plates, their working mechanism and how it evolved meaning their geological past.<br>Students will understand the concept of geological time scale. Different divisions of geological time scale.<br>Students will also learn about different geological units, their characteristics. Concept of modern geological time scale. | Q1. What are the different types of plate margins?<br>Q2. What is the working principle of plate margins?<br>Q3. What is the geological time scale?<br>Q4. Give a brief idea about different geological divisions.<br>Q5. What are the different geological units and their characteristics? | SP | L<br>ICT<br>D |
| | | 2 | Earth's interior with special reference to seismology; Isostasy: theory of Airy and Pratt. | In this lesson, Students will understand the internal structure of the Earth and the role of earthquake waves in this.<br>Students will also learn the concept of Isostasy higher the crystal stability and balance will be understood by them. | Q1.What are the different layers of Earth's interior?<br>Q2.How seismic waves help to understand the internal structural properties of the earth?<br>Q3.What is the concept of isostasy and how Airy and Pratt explain this? | PG | L<br>ICT<br>D |
| | | 3 | Mechanism of plate tectonics and resultant landforms, origin and types of Folds and Faults and consequent landforms. | Students will understand the concept of plate tectonic, concept of plate margins and different types of landforms formed due to plate movements.<br>They will also know about different types of fault, fold and consequent landforms formed. | Q1. Give a brief idea about plate tectonics?<br>Q2. What are the different types of plate margins?<br>Q3. Differentiate between convergent and divergent plate boundaries.<br>Q4. What are the landforms formed between convergent and divergent boundaries?<br>Q5. Given brief description about different types of folds and faults and | SP | L<br>D |

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| | | | | | results of landforms due to fold and fault. | | |
| | | **Part 2: Geomorphology** | | | | | L |
| | | 1 | Fundamental concepts in Geomorphology. | In this lesson students will gradually understand the 10 fundamental concepts of geomorphology and they will be able to apply this knowledge in the entire field of geomorphology. | Q1. What do you mean by fundamental concepts in geomorphology?<br>Q2. What is the need of fundamental concept geomorphology?<br>Q3.Explain the term uniformitarianism. | PD | |
| | | | Denudation processes (weathering, mass movement and erosion) and resultant landforms. | To know about mechanism and its geomorphic importance denudational processes like weathering, mass wasting and agents of erosion. | Q1. What is weathering? Discuss the different types of weathering.<br>Q2. Describe the processes and their mechanism of mass wasting.<br>Q3. How do erosional agents work? Explain their erosional mechanisms and resultant landforms. | SG | L |
| | | | Models on landscape evolution: Views of Davis, Penck, King and Hack. | In this lesson students will understand the evolution and development of lens forms and landscape.<br>Students will also be able to understand the various theories that explain the evolution and development of landscape and also differentiate among the theories. | Q1.what do you know about landscape evolution?<br>Q2. How does Davis define landscape evolution?<br>Q3. compare and contrast among the theories of landscape evolution. | PG | L<br>ICT |
| | | 2 | Development of river network and landforms on uniclinal and folded structures; slope development and evolution of slope (Davis and King). | Students will understand the process of river network development and different types of landforms developed during river network development.<br>They will understand the process of developments of folded and uniclinal structures.<br>From this lesson, students will understand the concept of slopes and different types of slopes.<br>They will also learn about the theory of evolution of slope given hy Davis and King. And also learn about the difference between the ideas of Davis and King. | Q1 What is the process of river network development?<br>Q2 What are the significant landforms formed during river network development?<br>Q3 What is the process of development of folded structure?<br>Q4. What is the process of development of uniclinal structure?<br>Q5. What are the different types of slopes?<br>Q6. Give the concept of slope development as proposed by Davis and king.<br>Q7. What is the difference between the concept of Davis and King? | ST | L<br>ICT |

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| | | 3 | Surface and subsurface flow in Karst region, fluvial processes and landforms, glacial and fluvio-glacial processes and landforms, aeolian and fluvial-aeolian processes and landforms. | To know about the mechanism of fluvial and karst processes.<br>To understand the geomorphic impacts of fluvial, aeolian, glacial and karst processes. | Q1. Discuss the different processes and landforms of the river.<br>Q2. Describe the characteristics and mechanism of landforms produced by glacial and fluvio-glacial processes, aeolian and fluvial-aeolian processes. | DM | L |
| | **DC1B : (List of Practical)** | 1 | Relief profile analysis (representative profile, serial, composite, superimposed, projected, long and cross profile). | Students will understand the process of doing topographic cross-section and drawing profiles based on which they will be able to understand and identify the landforms as well as the application of such profiles. | Q. Draw a representative profile of the given toposheet and identify major physiographic divisions.<br>Q2. Draw four consecutive serial profiles and prepare superimposed, projected and composite profiles using them. Also mention the applications. | ST | D<br>H/O |
| | | 2 | Geological maps: Horizontal, Uniclinal and Folded structures. | 1.Students will develop a deep understanding of the Earth's internal structure, including the composition of the Earth's crust, mantle, and core<br>2.Student will develop proficiency in reading and interpreting geological maps, including the ability to understand symbols, colours, and contour lines commonly used in geological cartography. | Q1. From the given geological map of a specific region, identify and describe the major rock formations, fault lines, and fold structures present.<br>Q2:Given a geological map showing various structural features such as anticlines and synclines, analyze the structural characteristics and propose potential tectonic forces responsible for their formation. | PD | D,<br>Pr, |
| | | 3 | Identification of rocks and minerals (megascopic) (Basalt, granite, gneiss, sandstone, quartzite, limestone, mica, talc, calcite and feldspar) | Students will learn about minerals and they will also learn about different types of rocks. They are in the process of forming their characteristics.<br>Students will also know about different types of minerals and rocks and their characteristics<br>Demonstration of Rocks and Minerals and how to identify them based on their colour, hardness, and other special characteristics will also be demonstrated. | Q1. What is mineral?<br>Q2. What is rock, what are the different types of Rock what is sedimentary rock, what is Metamorphic rock and what is the process of evolution of the sedimentary igneous and Metamorphic rock and its characteristics.<br>Q3. Identify different types of Rocks and Minerals and prepare laboratory notebooks displaying their characteristics and method for identification. | DM | L<br>D |

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| **Discipline Core (DC) -2** | **DC2A Cartographic Techniques (Theory)** | 1 | Concept and application of scale: Plain, comparative, diagonal and Positive Vernier | Students learn about the concept of Map scale. They will also learn about different types of scale or classification of scale.<br>They will learn about the concept of statement scale, ratio scale, graphical scale, their characteristics, uses and advantages and limitations.<br>Description and classification of graphical scales such as plane scale, comparative diagonal and vernier scale are also given to them.<br>They will learn about the advantages and limitations of simple linear scale, comparative linear scale diagonal scale and positive vernier scale. | Q1. What is a map scale?<br>Q2. What are the different types of map scale?<br>Q3. What is the ratio scale statement scale and graphical scale?<br>Q4. What are the advantages of graphical scale over statement scale and ratio scale?<br>Q5. What is a simple linear scale and a comparative linear scale?<br>Q6. What is diagonal skill and vernier scale?<br>Q7. Define vernier constant.<br>Q8. What is least count?<br>Q9. What are the area of uses of simple linear scale comparative skill diagonal scale and vernier scale.<br>Q10. What are the advantages of diagonal and vernier scale over linear scale? | SP | L<br>D<br>H/O |
| | | 2 | Coordinate systems and Map: Grid, concept of geoid, spheroid, rectangular and geographical coordinate system, concept of map, classification of map, components of a map | From this lesson, students will understand the coordinate system and the map.<br>They will also learn about the basic components and characteristics of Map and how maps are made. In this lesson, they will also understand the use of grid and coordinate.<br>In this lesson students will have the idea of the shape of earth in comparison to different geometrical forms. | Q1.What do you know about the coordinate system? How is it used in maps and in practical life?<br>Q2.Define the concept of grid and describe the use of it in a map.<br>Q3.Which geometric figure describes the shape of the Earth? compare among them. | ST | L<br>ICT |
| | | 3 | Bearing: Magnetic and true, whole-circle and quadrantal | Students will learn about the basic concept of bearing and its types and calculation. | Q1. What is bearing and its types?<br>Q2. Differentiate between WCB and reduced bearing?<br>Q3. Conversion of WCB to reduced bearing and reduced bearing to WCB. | PG | L |
| | | 4 | Map projections: Classification, properties and uses; Concept | Student students will understand the concept of map projection and use of | Q1.define map projection. What are the different types of my projection? | SG | L<br>D |

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| | | | and significance of UTM projection. | different types of map projection in the field of cartography.<br>They will also gain the knowledge of principles of construction of those map projections. | Q2.describe the principle of different map projections and specific use of each of them.<br>Q3.What is UTM Projection and where is it used? | | |
| | | 5 | Basic concepts of surveying and leveling: Prismatic compass, Dumpy level, theodolite, Abney level and Clinometer. | From this lesson, students will know the concept of surveying and leveling. They will also understand the application of surveying and the instruments that are used in field surveys.<br>They will also be able to differentiate the uses of different survey instruments. | Q1. Define surveying and differentiate between surveying and levelling.<br>Q2. Describe the mechanisms and principles of uses of Prismatic compass, Dumpy level, theodolite, Abney level and Clinometer. | PG and DM | L<br>D |
| | | 6 | Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps | Students should be able to differentiate between the old and open series of Survey of India topographical maps. Understand the purpose and scope of each series in terms of geographic coverage and scale. Develop an awareness of the reference systems used in Survey of India maps. This includes understanding the grid system, map symbols, and coordinate systems employed for accurate location referencing. Recognize the importance of information provided in the margins of Survey of India maps. Understand the key elements such as legend, scale, grid references, and other metadata.<br>Familiarize students with the legend and symbols used in Survey of India maps. Develop the ability to interpret symbols representing topographic features, infrastructure, and other relevant information. | Q1.Compare and contrast the characteristics of Survey of India's old and open series maps. Analyse the scale differences between old and open series maps.<br>Q2. Investigate the historical evolution of the Survey of India map series. How has the transition from old to open series maps reflected advancements in mapping technology and changing mapping needs?<br>Q3. Explain the importance of the information provided in the margins of Survey of India topographical maps.<br>Q4. Interpret the legend found in the map margins. Identify and explain the symbols used for topographic features, infrastructure, and cultural elements. | PD | L<br>D<br>Pr |
| | **DC2B : (List of** | 1 | Scale conversion: Statement, RF, Graphical (Linear, Diagonal, Positive vernier; | Students will learn about the concept of scale conversion and need for conversion. | Q1. How to convert statement scale to RF scale and RF scale to statement scale? | SP | Pr<br>H/O |

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| | **Practical)** | | enlargement and reduction of scale) | A demonstration of statement scale to representative fractional scale or RF scale conversion and vice versa will be given to them.<br>Demonstration of construction or process of construction of simple linear scale, comparative linear scale diagonal scale and positive vernier scale will be given to them. | Q2. What is the process of construction of simple linear scale comparative linear scale diagonal scale and positive vernier scale? | | |
| | | 2 | Construction of projections: Polar Zenithal Stereographic, Simple conical with standard parallels, Bonne's, Cylindrical Equal Area and Mercator's | Student will learn the process of construction of the projections<br>Students will gain the knowledge of use of these projections in mapmaking. | Q1.Draw a Bonne's projection with 4 degree to 40 degree lat. 40 to 80 E. Rf. Q1 100000 interval 4 degree. | SG | L<br>H/O |
| | | 3 | Surveying: Prismatic compass (closed traverse), dumpy level (along a line), and theodolite (base accessible and inaccessible with same vertical plain) | From this lesson, students will know the concept of surveying and leveling. They will also understand the use of surveys and operations in field surveys.<br>They will also be able to differentiate the uses of different survey instruments. | Q1. What is surveying?<br>Q2. What are the different types of surveying techniques?<br>Q3. What is the difference between surveying and leveling?<br>Q4. What are the principles of Prismatic compass dumpy level and theodolite survey?<br>Q5. What is RL and benchmark? | SP | L<br>D |

| **Type** | **Paper** | **Unit** | **Topic** | **Learning Objectives** | **Related Questions** | **Teacher** | **Teaching Methods** |
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| **SEMESTER-II** | | | | | | | |
| **Discipline Core (DC) -3** | **DC3A Population and Settlement Geography (Theory)** | 1 | Definition, scope and contents of Population Geography, Source of population Data | In this lesson, students will understand the scope and content of population, geography and the need of studying population in geography.<br>They will also understand the different sources of population data. | Q1.Define population geography. Describe the scope and content of operation geography. What is the difference between population, geography and demography?<br>Q2.What do you mean by population data and what are the different sources of population data? Why is population data important? | SG | L |

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| | | 2 | Components of population change. Demographic Transition Theory. | Students read and understand the concept and nature and various dimensions of population change.<br>They will also understand the cycle of population change and the demographic transition with the help of demographic transition theory. | Q1. What do you understand about population change and what are the different factors of population change??<br>Q2. What is demographic transition and how demographic transition theory explains the population transition of any country? | PD | L<br>PPT |
| | | 3 | Population distribution and density of Population Policy. | Students will learn about the basic concept of population and its spatial distribution through various types of densities. | Q1. What are the different types of population densities?<br>Q2. Why does population distribution vary across space? | PD | L<br>PPT |
| | | 1 | Definition, scope and contents of Settlement Geography. | Students will be able to understand the concept of human settlement and what are the scope and content of settlement geography and where settlement Geography falls in the domain of women geography. | Q1. Define human settlement, how the settlements are grown?<br>Q2. Describe the scope and content of settlement geography in the light of human geography. | ST | L<br>PPT<br>ICT |
| | | 2 | Nature and characteristics of rural settlements, Morphometry. | students will be able to categorise the settlements into rural and urban settlements.<br>They will also be able to understand the characteristics of rural settlements, their types and patterns and morphological structures both internal and external. | Q1. Define rural settlement. What are the basic characteristics of it?<br>Q2. What do you know about rural settlement morphology? Describe the different types and patterns of rural settlements found in different parts of India. | ST | |
| | | 3 | Census definition (Temporal) and categories …… | Students will learn the characteristics of urban settlement and the census criteria defining urban settlement in India.<br>Students will also be able to classify urban settlements in terms of size and function. | Q1. Define urban settlement: what are the characteristics of urban settlement?<br>Q2. How does the census of India categorise urban settlement?<br>Q3. Classify urban settlements in terms of its function and size. | SG | L |
| | **DC3B: (Practical)** | 1 | Population data analysis: Decadal growth, population density and Age-sex pyramid | 1. To define and explain fundamental demographic concepts of population distribution and growth, like decadal growth rate Density of population,<br>2. To calculate and interpret basic demographic measures i.e. Growth rate, density of population (arithmetic, agricultural), and population pyramid. | Q1.Calculate the decadal growth rate for a given population using the formula. Explain the significance of this rate in understanding population dynamics.<br>Q2.Draw age-sex pyramid of population of the given region.<br>Q3. Analyse an age-sex pyramid and interpret the population structure. | PD | D, Prc, |

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| | | | | 3. Identify demographic trends and make predictions based on population pyramid shapes. | Q.4 Discuss the implications of a pyramid with a wide or narrow base. | | |
| | | 2 | Spatial Distribution and Interactions: Nearest-Neighbour Analysis (Clerk and Evans) and Rank-Size Rule (Zipf). | Students will be able to understand the special distribution and pattern of rural settlements.<br>They will also be able to measure the spatial distribution pattern of rural settlements from the map and interpret accordingly. | Q.1 What are the techniques of representation of spatial distribution and interaction?<br>Q2. What is the Nearest Neighbour Index and how does it work?<br>Q3. Explain with example the principle of the Rank Size Rule? | ST | D<br>Pr |
| **Discipline Core (DC) -4** | **DC4A Cartograms and Thematic Mapping (Theory)** | 1 | Concepts of rounding, scientific notation, logarithm and antilogarithm, natural and log scales. | Students will learn about the concept of rounding and they will also know about different rules of rounding.<br>Students will be able to understand the concept of scientific notation and how to use them. What are the different types of scientific notations?<br>A concept of logarithm antilogarithm and natural log scale will give into them what the uses of log scale and antilog scale will be demonstrated to them along with a few examples. | Q1. What is rounding and what are the needs of rounding?<br>Q2. What are the rules of rounding?<br>Q3. What are scientific notations and why is scientific notation required?<br>Q4. Given brief idea about logarithm and antilogarithm.<br>Q5. What are the natural and log scales? | SP | L<br>D |
| | | 2 | Concept, use, geographical data: Line, Bar, Dot and Sphere, Proportional circles, Isopleths and choropleth | Students will learn about geographical data. Need and sources of geographical data different methods of Representation of geographical data.<br>They will also learn about different representation methods of Geographical data such as Line, Bar, Dot and Sphere, Proportional circles, Isopleths and choropleth. an idea about required data uses advantages and limitations of said cartography techniques will be given to them. | Q1. What is geographical data? What are the sources of geographical data and difference between geographical data and other types of data?<br>Q2. Given a brief description about different types of cartographic techniques, their uses advantages and limitations. | SP | L<br>ICT |
| | | 3 | Preparation and interpretation. maps, climatological maps, Land Use/land cover maps and Thematic Maps | Students will learn about the basic concept of map and its types, importance of climatological map, difference | Q1. What are maps and their types?<br>Q2. Importance of climatological map.<br>Q3. What is thematic map and their types? | PG | L |

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| | | | | between LULC and thematic map and its types. | Q4. What are the importance of thematic maps? | | |
| | | 4 | Application of GIS in thematic mapping, concept of Cadastral Map. | students will learn it applies to spatial features.on the other hand a thematic map of the U.S showing about the states and help answer questions about those locations. | Q1.What is a thematic map.what are the three most important types of thematic map.<br>Q2. what the thematic dimensions of GIS. | DM | Pr<br>L |
| | **DC4B: Practical** | 1 | Cartograms: Proportional squares, pie diagram, proportional divided circle, dots and spheres | Students will learn about the process of construction of Pie diagrams.<br>In demonstration to prepare proportional divided circle will be given to them<br>For construction of dot and sphere diagrams they will learn about how to construct it and also proper representation of dot and sphere diagrams along with a map will be given to them. | Q1. What type of data is required for dot Pie diagrams?<br>Q2. What is the difference between proportional by and divided circle?<br>Q3. What is a graphical scale?<br>Q4. How to prepare a graphical scale for a proportional divided circle and sphere diagram? | SP | |
| | | 2 | Preparation of thematic maps: Choropleth, Isoline and Chorochromatic map | Students will learn about the basic concept of thematic map and its types, importance of Choropleth, Isoline and Chorochromatic map. | Q1. What is a thematic map?<br>Q2. What are the importances of Choropleth, Isoline and Chorochromatic map | PG | L and practical |

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| **SEMESTER-III** | | | | | | | |
| Discipline Core (DC) -5 | **DC5A Climatology (Theory)** | 1 | Structure and composition of the atmosphere, Insolation and heat budget | To know about the concept, origin, composition of atmosphere and its structure. | 1.Discuss the structure and composition of the atmosphere? | SG | L |
| | | 2 | Horizontal and vertical distribution of temperature, concept and types of inversion of temperature: its causes and consequences, Ozone layer and greenhouse effects | To know about greenhouse gases and its contribution and global warming.<br>Learners will understand the importance of ozone gas for the atmosphere.<br>To understand the vertical and horizontal distribution of atmospheric temperature. | Q1. Discuss the causes of greenhouse effects.<br>Q2. Describe the characteristics of horizontal distribution of temperature.<br>Q3. What do you mean by inversion of temperature? | SG | L |
| | | 3 | Condensation and precipitation process and forms; mechanism of precipitation: | Students will know the liquid and solid water particles that fall from clouds and reach the ground are known as | .Q What causes precipitation to fall.what is the difference between a | DM | L |

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| | | | Bergeron-Findeisen theory, Collision and coalescence theory | precipitation. These particles include drizzle, rain, snow pellets, ice crystals, and hail. The main discussion of precipitation can be found in the article rainfall .For additional information see weather,precipitation and storms,cloud and snow. | tropical storm and a tropical depression. | | |
| | | 4 | Air mass: typology, origin, characteristics and modification; Fronts: warm and cold; frontogenesis and frontolysis; weather: stability and instability; barotropic and baroclinic conditions | Students can learn and describe the source region of continental and ocean air masses.<br>Differentiate between warm and cold fronts. Understand the contrasting characteristics of each front, including temperature gradients, cloud formations, and associated weather patterns.<br>Define atmospheric stability and understand how it is related to temperature profiles in the atmosphere. Identify stable, unstable, and neutral conditions. | Q1.How does the presence of a continental air mass influence local weather conditions?<br>Q2. Discuss the formation and characteristics of occluded fronts. How do occluded fronts differ from warm and cold fronts, and what types of weather are associated with them? | PD | L |
| | | 5 | Circulation in the atmosphere: Planetary winds, jet stream, index cycle; tropical and mid-latitude cyclones; monsoon circulation and mechanism with reference to India | Students will learn about the basic concept of Planetary winds and its classification. They also learn about jet stream, index cycle; tropical and mid-latitude cyclones and also understand monsoon circulation and mechanism with reference to India | Q1. What is planetary wind and its types?<br>Q2. What is Jet stream and its formation process?<br>Q3. Difference between tropical and mid-latitude cyclones.<br>Q4.Given a brief description of monsoon circulation and mechanism with reference to India | PG | L |
| | | 6 | Climatic classification after Köppen and Thornthwaite. | Students will know about the needs of climatic classification Köppen's concept of climatic classification. They will also learn about different notations used by Köppen for classifying the climate regions of the world and also understand Thornthwaite's climatic classification system. | Q1. Given a brief description of Köppen's idea of climatic classification.<br>Q2. Given a brief description of Thornthwaite's idea of climatic classification. | SP | L<br>D |

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| | **DC5: (Practical)** | 1 | Measurement of weather elements by Meteorological Instruments: Hygrometer, Maximum-Minimum Thermometer, Barometer, Rain gauge (Simon's). | Students will know a standard weather report usually includes information about humidity, rainfall and temperature. | Q1 .Write the uses of a hygrometer and Raingauge.<br>Q2.Difference between humidity and Rainfall. | DM | D<br>Pr |
| | | 2 | Preparation of Climatic Graphs and Charts: Taylor's Climograph, Hythergraph, Star Diagram and Ergograph. | From this module students will be able to understand the construction and uses of various representation techniques of climatic data. | Q1. What are the techniques of representation of climatic data?<br>Q2. What is the need of representation of climatic data?<br>Q3. Describe the construction, principles and application of Taylor's Climograph, Hythergraph, Star Diagram and Ergograph. | ST | D<br>Pr |
| | **DC6 A Statistical Methods in Geography (Theory)** | 1 | Concept and significance of Statistics; Concept of data, sources of data, methods of data collection, discrete and continuous data, population and samples and scales of measurement (nominal, ordinal, interval and ratio). | Learners will understand the concept and significance of Statistics, data, its various sources and methods of collection of data. students will also be able to know the types of data- discrete and continuous, and will know the concept of population, samples and scales of measurement of data. | Q1. Define the term statistics.<br>Q2. What are the different sources of data and their methods of collection?<br>Q3. Differentiate between survey schedule and questionnaire methods.<br>Q4. What are the different scales of measurements of statistical data? | ST | L<br>ICT<br>H/O |
| | | 2 | Sampling: Need, types, and significance; methods of random sampling. | Learners will be able to understand the concept of sample, need of sampling and the types. Students will be able to use random sampling as a tool of statistics. | Q1. Define sampling and describe the principles of each sampling method.<br>Q2. Describe the mechanism of random sampling. | ST | L<br>PPT |
| | | 3 | Theoretical distribution: frequency, cumulative frequency, normal and probability distribution. | From this module students will understand about the different types of theoretical distribution used in statistics. They will be able to understand the uses of these distributions. | Q1. What is frequency distribution and normal frequency distribution? Describe the assumptions behind this distribution?<br>Q2. What is probability distribution? Mention about some theoretical probability distribution. | ST | L<br>ICT |
| | | 4 | Central tendency: Mean, median, mode and other partitioned values . | Understand the concept of central tendency and its significance in descriptive statistics and differentiate between mean, median, and mode as measures of central tendency to interpret | Q1. Identify situations where each measure of central tendency is most appropriate and why. | PD | L<br>D |

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| | | | | the measures in the context of real-world data sets.<br>Apply appropriate measures of central tendency to different types of data sets.<br>Explore other partitioned values such as quartiles, percentiles, and deciles, and understand their utility in data analysis. | Q2. Calculate the mean, median, and mode for given data sets using appropriate formulas or techniques.<br>Q3. Evaluate the strengths and limitations of mean, median, and mode as measures of central tendency. | | |
| | | 5 | Measures of dispersion: range, quartile deviation, mean deviation, standard deviation; coefficient of variation and coefficient of quartile deviation. | Understand measures of dispersion: range, quartile deviation, mean deviation, standard deviation in order to have capability to interpret the significance of each measure of dispersion in analyzing data variability.<br>Apply measures of dispersion to assess the spread and variability of data. | Q1. Calculate measures of dispersion for given data sets.<br>Q2. Compute coefficient of variation and coefficient of quartile deviation.<br>Q3. Compare and contrast different measures of dispersion in various scenarios. | PD | L<br>D |
| | | 6 | Correlation: Rank correlation, product moment correlation; Regression (linear and nonlinear) and time series analysis (moving average). | Understand rank correlation and product moment correlation and their application in analyzing the relationship between dependent and independent variables.<br>The students will be able to apply regressions to model the relationships between two continuous variables and predict outcomes.<br>Utilize time series analysis with moving averages to identify trends and patterns in sequential data. | Q1. Explain rank correlation with examples.<br>Q2. Explain product moment correlation as a measure of linear association between variables.<br>Q3. Explore non-linear regression techniques for modeling complex relationships between variables.<br>Q4. Calculate and interpret rank correlation coefficients, product moment correlation coefficients, and regression parameters. | PD | L<br>D |
| | **DC6: Practical** | 1 | Construction of histograms and frequency curve; measures of central tendency; computation of mean (arithmetic and geometric), median and mode. | From this practical students shall be able to understand and be able to use the frequency distribution. They will also be able to construct the graphs for representing the frequency distribution.<br>From the frequency distribution students are able to calculate the various measures of central tendency. | Q1. Prepare a frequency distribution table and construct the histogram and frequency curve from the frequency distribution.<br>Q2. Find out the mean, median and mode as measures of central tendency. | ST | L<br>Pr |
| | | 2 | Measures of dispersions: standard deviation and coefficient of variation. | Learners will understand measures like-range, quartile deviation, mean deviation, standard deviation in order to | Q1. Calculate Mean deviation and standard deviation for given data sets. | PD | L<br>Pr |

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| | | | | have capability to interpret the significance of each measure of dispersion in analyzing data variability.<br>Apply measures of dispersion to assess the spread and variability of data. | Q2. Compute coefficient of variation and coefficient of quartile deviation. | | |
| | | 3 | Computation of correlation (Pearson); Regression and graphical plotting. | The students will be able to apply regressions to model the relationships between two continuous variables and predict outcomes.<br>Can be able to compute product moment correlation coefficient and rank correlation coefficient. | Q1. Calculate rank correlation from the given data set.<br>Q2. Compute product moment correlation as a measure of linear association between variables from the given data set. | PD | L<br>Pr |
| | **DC7A Geography of India (Theory)** | 1 | Tectonic and stratigraphic provinces, physiographic divisions. | Student will learn about tectonic divisions of India tectonic shifts in different geological past and formation of Indian subcontinent due to tectonic movement and also different of physiographic divisions of India | Q1. Give a brief description about Indian tectonic activity in different Geological Time.<br>Q2. Give an idea about different physiographic divisions of India and their characteristics. | SP | L<br>ICT |
| | | 2 | Climate, soil and vegetation: Characteristics and classification. | Students will learn about Climate, soil and vegetation in India and its Characteristics and classification. | Q1. Write a short note on Climate Characteristics and classification in India?<br>Q2. Write a short note on soil Characteristics and classification in India?<br>Q3. Write a short note on vegetation Characteristics and classification in India? | DM | L |
| | | 3 | Agricultural regions. Green revolution and its consequences; mineral and power resources distribution and utilisation of iron ore, coal, petroleum and gas. | Students will learn about Agricultural regions in India, Green revolution and its consequences; importance and distribution of power resources, iron ore, coal, petroleum and gas. | Q1. Write a short note on agricultural regions in India?<br>Q2. What are the importance of and distribution of power resources, iron ore, coal, petroleum and gas? | PG | L |
| | | 4 | Industrial development: Automobile and information technology. | This module will provide selective knowledge about the recent industrial development of India with reference to automobile and IT. Learners will be | Q1. Comment on the recent development of the automobile industry in India and describe its importance in the Indian Economy. | ST | L<br>ICT |

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| | | | | aware of the problems, prospects of these industries. | Q2. Identify the present development and future prospects of the IT sector in India as compared to the world. | | |
| | | 5 | Regionalisation of India: Physiographic (R. L. Singh), Socio-cultural (Sopher) and Economic (Sengupta). | Students will be able to understand the physiographic and socio-cultural characteristics of India and regionalisation schemes. | Q1. Describe the characteristics of physiographic regions of India.<br>Q2. Attempt a classification of socio-cultural regions of India. | PD | L<br>ICT |
| | | 6 | Contemporary population issues: Poverty, Illiteracy, Malnutrition and unemployment. | Students will learn about contemporary population issues like poverty literacy, malnutrition, causes of poverty, illiteracy and malnutrition and the effect of poverty in the Indian economy. Also they will learn about different policies to reduce poverty, literacy and mitigation adopted by the government. | Q1. Define poverty. What are the indicators of poverty, illiteracy and malnutrition?<br>Q2. What are the policies adopted by the government to reduce poverty, literacy and malnutrition in India | SP | L |
| | **DC7B Practical** | 1 | Interpretation of Indian daily weather Map: Temperature, pressure, sky condition, wind direction and speed, sea condition and other weather phenomena (Pre-monsoon, Monsoon and Post-monsoon). | Students will be able to analyse the Indian Daily Weather Maps and will be able to interpret the weather characteristics. | Q1. Recognise the season of the given weather map?<br>Q2. Interpret the prevailing weather characteristics of India from the given weather map. | ST | ICT<br>Pr |
| | | 2 | Identification of rocks and minerals: Sandstone, Limestone, Shale, Basalt, Granite, Gneiss, Marble, Quartzite, Conglomerate; Quartz, Chalcopyrite, Feldspar, Galena, Calcite, Haematite, Magnetite, Mica and Talc. | Students will learn about minerals and they will also learn about different types of rocks. They are in the process of forming their characteristics.<br>Students will also know about different types of minerals and rocks and their characteristics.<br>Demonstration of Rocks and Minerals and how to identify them based on their colour, hardness, and other special characteristics will also be demonstrated. | Q1. What is mineral?<br>Q2. What is rock, what are the different types of Rock what is sedimentary rock, what is Metamorphic rock and what is the process of evolution of the sedimentary igneous and Metamorphic rock and its characteristics.<br>Q3. Identify different types of Rocks and Minerals and prepare laboratory notebooks displaying their characteristics and method for identification. | SP | L<br>D<br>H/O |

| Type | Paper | Unit | Topic | Learning Objectives | Related Questions | Teacher | Teaching Methods |
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| **SEMESTER-IV** | | | | | | | |
| **Discipline Core (DC) -8** | **DC8A Regional Planning and Development (Theory)** | 1 | Concept, Types and delineation of regions. | Students will understand the concept of region and types. They will also understand the process of delineation of regions. | Q1. Define region. What are the different types of region?<br>Q2. Describe the mechanism of delineation of formal and functional regions. | PD | L<br>ICT |
| | | 2 | Types of planning, tools and techniques of planning, principles, needs and objectives of regional planning and multi-level planning in India. | From this unit students will have the knowledge of concepts, principles, needs, objectives, types and techniques of planning. | Q1. What do you mean by economic planning? Describe principles, needs, objectives, types and techniques of planning.<br>Q2. What is regional planning? | PD | L |
| | | 3 | Concepts of metropolitan areas and urban agglomerations. | Understand urban agglomeration, its nature, characteristics and types with reference to metropolitan regions. | Q1. Define urban agglomeration. Describe nature, characteristics and types.<br>Q2. What is the metropolitan region? | PD | L |
| | | 1 | Development: Meaning and Concept of regional development with reference to India, | From this unit learners will be able to comprehend the concept of development and its various dimensions. | Q1. What is development? Mention the characteristics and dimension of development?<br>Q2. Critically analyse the level of regional development in India. | ST | L<br>ICT |
| | | | Indicators (Economic, social and environmental) of development, growth versus development | Students will learn about different indicators of development. difference between economic, social and environmental development. a concept of development and growth and difference between them will be given. | Q1. What is economic development?<br>Q2. What are the different indicators of economic development?<br>Q3. Differentiate between development and growth.<br>Q4. How economic development differs from social and environmental development. | SP | L |
| | | 2 | Growth pole model of Perroux, growth centre model and Cumulative causation (Myrdal) and Core periphery (Hirschman, | This unit will help students to understand the theories and models of development and application of these models in regional development. | Q1. What are the development theories available?<br>Q2. Critically discuss the growth pole theory and theory of Myrdal. | ST | ICT<br>L |

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| | | | Rostov and Friedman) theories for regional development. | | Q3. Critically discuss the core periphery model and theory of Rostow. | | |
| | | 3 | Strategies of regional development with reference to India, need and measures for balanced development in India, Regional inequality, disparity and diversity. | From this unit students will understand the various strategies of regional development in India with reference to regional disparity and diversity.<br>They will also understand the merits and drawbacks of these strategies. | Q1. Highlights the major points of regional imbalances in India.<br>Q2. What are the strategies of reducing regional disparities in India? | ST | L<br>ICT |
| | **DC3B: (Practical)** | 1 | Delineation of formal region: Weighted index number. | Students will learn and be skilled in delineating formal regions. | Q1. Delineate formal regions. | PD | L<br>Pr |
| | | | Delineation of functional region: Gravity Analysis (Reilly's). | Students will learn and be skilled in delineating functional regions. | Q1. Delineate functional regions. | PD | |
| | | 2 | Measuring regional disparity:<br>Lorenz curve, Gini Coefficient and Simson's method. | Students will be able to measure regional disparity and can have the ability to use Lorenz curve and Gini coefficient. | Q1. Represent the level of disparity through Lorenz curve and measure using Gini coefficient. | ST | L<br>Pr |
| **Discipline Core (DC) -9** | **DC9A Economic Geography (Theory)** | 1 | Meaning, Concepts and approaches of Economic Geography, concepts of goods, services, production, exchange and consumption. | Students will learn about the concept of economic geography, and its meaning and approaches; they also learn about of concepts of goods, services, production, exchange and consumption. | Q1. Write a short note on economic geography and its approaches?<br>Q2. Write a brief note on concepts of goods, services, production, exchange and consumption. | PG | L |
| | | | GATT, OPEC<br>Concept of economic man, theories of choices. | This unit helps students to understand about the process of globalisation and role of global economic groups like OPEC in global economy and politics. Students will also learn about the core concept of economics e.g. economic man and theory of choices. | Q1. What does GATT mean? Explain the role GATT in expanding economic globalisation.<br>Q2. What type of organisation OPEC is? Describe its role and functions.<br>Q3. Define the concept of economic man and describe the theories of choices. | ST | L<br>ICT |
| | | 2 | Economic distance, transport costs, Transnational sea-routes, | This unit helps students to understand about Economic distance, transport costs, Transnational sea-routes, | Q1. What is economic distance?<br>Q2. What is transport cost and its types? | PG | L |

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| | | | railways and highways with reference to India | railways and highways with reference to India | Q3. Write a short note on Transnational sea-routes, railways and highways with reference to India | | |
| | | 3 | Concept and classification of economic activities, factors affecting location of economic activity with special reference to agriculture (Von Thunen), and industry (Weber). | Students will learn about the meaning of economic activities and different types of economic activities.<br>They will also learn about factors affecting the location of economic activities And also know about Von Thunen and Weber concept of agriculture and industrial locational theories. | Q1. What are the different types of activities?<br>Q2. What are the characteristics of primary secondary tertiary and quaternary economic activities?<br>Q3. Describe Von Thunen agriculture location theory and Weber concept of industrial locational theory. | SP | L |
| | | 4 | Primary activities: Subsistence (paddy) and commercial agriculture (tea), forestry (lumbering), fishing (India: inland and coastal ) and mining (coal, iron in India); | This unit helps students to understand about Subsistence (paddy) and commercial agriculture (tea), forestry (lumbering), fishing (India: inland and coastal ) and mining (coal, iron in India); | Q1. What is primary activity and its features?<br>Q2. Write a short note on paddy cultivation in SE Asia?<br>Q3.Write a short note on fishing in India with reference to inland and coastal?<br>Q4. Write a short note on mining based on coal and iron in India? | DM | L |
| | | | Secondary activities: Manufacturing (cotton textile and iron and steel), Special economic zones (SEZ) and technology parks (India); | This unit helps students to understand about Secondary activities: Manufacturing (cotton textile and iron and steel), Special economic zones (SEZ) and technology parks (India); | Q1. What is secondary activity and its features?<br>Q2. What is Sez and characteristics? | DM | L |
| | | | Tertiary activities: transport-types and importance, trade (e-commerce) Quaternary and Quinary-concept | This unit helps students to understand about<br>tertiary activities: transport-types and importance, trade (e- commerce) Quaternary and Quinary-concept | Q1. What is Tertiary activity and its features?<br>Q2. Write a short note on transport-types and importance?<br>Q3. Write a short note on trade and importance? | DM | L |

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| | | | | | Q4. What are Quaternary and Quinary activities? | | |
| | | 5 | Liberalization, privatization, globalization and Indian economy | This unit helps students to understand about Liberalization, privatization, globalization and Indian economy | Q1. What is LPG and its impacts on the Indian economy?<br>Q2. What is globalization and its impacts on the Indian economy? | PG | L |
| | **DC9B: Practical** | 1 | Agricultural Efficiency Analysis: Kendal's Method | From this practical learners will be able to assess agricultural efficiency and become skilled in the techniques and can apply it. | Q1. What do you mean by agricultural efficiency?<br>Q2. How do you apply Kendal's method to measure agricultural efficiency? | ST | D<br>Pr |
| | | 2 | Measuring transport accessibility: Konig and Shimbel index | From this lesson learners will comprehend the concept and utility of accessibility and become skilled in measuring the accessibility through Shimbel index and Konig number. | Q1. Define the concept of accessibility. How can it be measured?<br>Q2. Apply the shimbel index and Konig number and assess the level accessibility. | ST | D<br>Pr |
| | | 3 | Comparison of spatial industrial development: Location quotient and Geographical association. | From this lesson learners will comprehend the concept and utility of Location quotient and Geographical association and calculation | Q1. What is the location quotient and its implication? How can it be measured?<br>Q2. What is the Geographical association and its implication? How can it be measured? | PG | L<br>Pr |

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| **Discipline Core (DC) -10** | **DC 10A Environmental Geography (Theory)** | 1 | Geographers' approach to environmental studies, concept of holistic environment and system approach | Students will learn about various approaches to environmental studies in reference to holistic environment and system approaches. | Q1. Define Holistic environment how Holistic environment is differ from system approach<br>Q2. What are the concepts of environmental studies? | SP | L |
| | | 2 | Perception of environment in different stages of civilization | Students will learn about different stages of Civilization and changing Perception about the environment. | Q1. How environmental perceptions changed in different stages of Civilization? | SP | L |
| | | 3 | Concept, structure and functions of ecosystem | students will learn about ecosystem, how it form, | Q1. What is the ecosystem? Discuss the structure and function of ecosystem | SG | L |

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| | | | | component of ecosystem, and its function | | | |
| | | 4 | Environmental pollution and degradation (Land, water and air), Space-time hierarchy of environmental problems (Local, regional and global) | students will learn environmental pollution , like land, water, and air, causes and consequences | Q1. What are the Causes of Air pollution.? discuss its consequences | SG | L |
| | | 5 | Urban environmental issues with special reference to waste management | Concept of urban environmental issues and its related problems will be delivered to the student. They will also understand the concept of waste management and the importance of waste management in relation to environmental sustainability. | Q1. Give a concept about different urban environmental issues<br>Q2. What is waste management? what are the strategies of waste management can be adopted at local level | SP | L<br>ICT |
| | | 6 | Environmental programmes and policies - Global, national and local levels. | Students will learn about the different types of environmental policies formed at Global, National and local level. | Q1. Given brief description about Global and national level in Environmental policies? | SP | L |
| | **DC 10B: Practical** | 1 | Preparation of check-list for E nvironmental Impact Assessment of an urban / industrial project. | Students will be able to assess the environmental impacts of any projects and become skilled in preparing checklists for EIA. | Q1. Prepare a checklist of a development project for EIA. | PD | L<br>Pr |
| | | 2 | Determination of soil type by ternary diagram textural plotting. | Students will learn about soil types and its determined by ternary diagram | Q1. What is ternary diagram and its importances?<br>Q2. Identification of Soil texture determined by ternary diagram | PG | L<br>Pr |
| | | 3 | Quality assessment of water using lab kit: pH and TDS. | Students will learn about the water quality A demonstration of pH and TDS metre will be given to them. | Q1. What is the standard of water quality? How to measure pH and TDS using water using a lab kit. | SP | Pr<br>D |

**Note:**

**L= Lecture, D= Demonstration, ICT= Information and Communication Technology, A/V= Audio visual, PPT= Powerpoint, H/O= Hands on, Pr= Practical**

ST = Syfujjaman Tarafder; SP = Satyajit Paul; PD = Prabir Das; DM = DM; PG = Paban Ghosh; SG = Sanjay Ghosh

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