GOUR MAHAVIDYALAYA
Department of Geography
Lesson Plan for Honours (CBCS) for Academic Session 2021-2022

SEMESTER-I							
Type	**Paper**	**Unit**	**Topic**	**Learning Objectives**	**Related Questions**	**Teacher**	**Teaching Methods**
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. Students will understand the concept of geological time scale. Different divisions of geological time scale. 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? Q2. What is the working principle of plate margins? Q3. What is the geological time scale? Q4. Give a brief idea about different geological divisions. Q5. What are the different geological units and their characteristics?	SP	L ICT
		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. 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? Q2.How seismic waves help to understand the internal structural properties of the earth? Q3.What is the concept of isostasy and how Airy and Pratt explain this?	PG	L ICT 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. They will also know about different types of fault, fold and consequent landforms formed.	Q1. Give a brief idea about plate tectonics? Q2. What are the different types of plate margins? Q3. Differentiate between convergent and divergent plate boundaries. Q4. What are the landforms formed between convergent and divergent boundaries? Q5. Given brief description about different types of folds and faults and results of landforms due to fold and fault.	SP	L
			Part 2: Geomorphology				
		1	Fundamental concepts in Geomorphology	In this lesson students will gradually understand the 10 fundamental	Q1. What do you mean by fundamental concepts in geomorphology?		

				concepts of geomorphology and they will be able to apply this knowledge in the entire field of geomorphology.	Q2. What is the need of fundamental concept geomorphology? Q3.Explain the term uniformitarianism.		
			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. Q2. Describe the processes and their mechanism of mass wasting. 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. 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? Q2. How does Davis define landscape evolution? Q3. compare and contrast among the theories of landscape evolution.	PG	
		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. They will understand the process of developments of folded and uniclinal structures. From this lesson, students will understand the concept of slopes and different types of slopes. 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? Q2 What are the significant landforms formed during river network development? Q3 What is the process of development of folded structure? Q4. What is the process of development of uniclinal structure? Q5. What are the different types of slopes? Q6. Give the concept of slope development as proposed by Davis and king. Q7. What are the difference between the concept of Davis and King?	ST	L ICT
		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. To understand the geomorphic impacts of fluvial, aeolian, glacial and karst processes.	Q1. Discuss the different processes and landforms of the river. Q2. Describe the characteristics and mechanism of landforms produced by glacial and fluvio-glacial processes, aeolian and fluvial-aeolian processes.	DM	L ICT

	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. Q2. Draw four consecutive serial profiles and prepare superimposed, projected and composite profiles using them. Also mention the applications.	ST	L PPT 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 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. 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	
		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. Students will also know about different types of minerals and rocks and their characteristics 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? 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. Q3. Identify different types of Rocks and Minerals and prepare laboratory notebooks displaying their characteristics and method for identification.	DM	D H/O
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. They will learn about the concept of statement scale, ratio scale, graphical scale, their characteristics, uses and advantages and limitations. Description and classification of graphical scales such as plane scale, comparative diagonal and vernier scale are also given to them.	Q1. What is a map scale? Q2. What are the different types of map scale? Q3. What is the ratio scale statement scale and graphical scale? Q4. What are the advantages of graphical scale over statement scale and ratio scale? Q5. What is a simple linear scale and a comparative linear scale? Q6. What is diagonal skill and vernier scale? Q7. Define vernier constant.	SP	L D H/O

				They will learn about the advantages and limitations of simple linear scale, comparative linear scale diagonal scale and positive vernier scale.	Q8. What is least count? Q9. What are the area of uses of simple linear scale comparative skill diagonal scale and vernier scale. Q10. What are the advantages of diagonal and vernier scale over linear scale?		
		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. 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. 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? Q2.Define the concept of grid and describe the use of it in a map. Q3.Which geometric figure describes the shape of the Earth? compare among them.	ST	ICT L
		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? Q2. Differentiate between WCB and reduced bearing? Q3. Conversion of WCB to reduced bearing and reduced bearing to WCB.	PG	ICT L
		4	Map projections: Classification, properties and uses; Concept and significance of UTM projection.	Student students will understand the concept of map projection and use of different types of map projection in the field of cartography. They will also gain the knowledge of principles of construction of those map projections.	Q1.define map projection. What are the different types of my projection? Q2.describe the principle of different map projections and specific use of each of them. Q3.What is UTM Projection and where is it used?	SG	L
		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. They will also be able to differentiate the uses of different survey instruments.	Q1. Define surveying and differentiate between surveying and levelling. Q2. Describe the mechanisms and principles of uses of Prismatic compass, Dumpy level, theodolite, Abney level and Clinometer.	PG and DM	
		6	Survey of India topographical maps: Reference scheme of old	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?	PD	l D Pr

			and open series. Information on the margin of maps	A demonstration of statement scale to representative fractional scale or RF scale conversion and vice versa will be given to them. 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?		
	DC2B : (List of Practical)	1	Scale conversion: Statement, RF, Graphical (Linear, Diagonal, Positive vernier; enlargement and reduction of scale)	Students will learn about the concept of scale conversion and need for conversion. A demonstration of statement scale to representative fractional scale or RF scale conversion and vice versa will be given to them. 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.	Q1. How to convert statement scale to RF scale and RF scale to statement scale? Q2. What is the process of construction of simple linear scale comparative linear scale diagonal scale and positive vernier scale?	SP	Pr H/O
		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 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	pr
		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. They will also be able to differentiate the uses of different survey instruments.	Q1. What is surveying? Q2. What are the different types of surveying techniques? Q3. What is the difference between surveying and leveling? Q4. What are the principles of Prismatic compass dumpy level and theodolite survey? Q5. What is RL and benchmark?	SP	

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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. 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? Q2.What do you mean by population data and what are the different sources of population data? Why is population data important?	SG	
		2	Components of population change. Demographic Transition Theory	Students read and understand the concept and nature and various dimensions of population change. 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?? Q2. What is demographic transition and how demographic transition theory explains the population transition of any country?	PD	
		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? Q2. Why does population distribution vary across space?	PD	
		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? Q2. Describe the scope and content of settlement geography in the light of human geography.	ST	L ICT
		2	Nature and characteristics of rural settlements, Morphometry	students will be able to categorise the settlements into rural and urban settlements. 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? 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	L ICT

		3	Census definition (Temporal) and categories ……	Students will learn the characteristics of urban settlement and the census criteria defining urban settlement in India. 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? Q2. How does the census of India categorise urban settlement? 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, 2. To calculate and interpret basic demographic measures i.e. Growth rate, density of population (arithmetic, agricultural), and population pyramid. 3. Identify demographic trends and make predictions based on population pyramid shapes.	Q1.Calculate the decadal growth rate for a given population using the formula. Explain the significance of this rate in understanding population dynamics. Q2.Draw age-sex pyramid of population of the given region. Q3. Analyse an age-sex pyramid and interpret the population structure. Q.4 Discuss the implications of a pyramid with a wide or narrow base.	PD	L Pr
		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. 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? Q2. What is the Nearest Neighbour Index and how does it work? Q3. Explain with example the principle of the Rank Size Rule?	ST	L ICT H/O
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. Students will be able to understand the concept of scientific notation and how to use them. What are the different types of scientific notations? 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? Q2. What are the rules of rounding? Q3. What are scientific notations and why is scientific notation required? Q4. Given brief idea about logarithm and antilogarithm. Q5. What are the natural and log scales?	SP	L
		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.	Q1. What is geographical data? What are the sources of geographical data and difference between geographical data and other types of data?	SP	L ITC

				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.	Q2. Given a brief description about different types of cartographic techniques, their uses advantages and limitations.		
		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 between LULC and thematic map and its types	Q1. What are maps and their types? Q2. Importance of climatological map. Q3. What is thematic map and their types? Q4. What are the importance of thematic maps?	PG	L
		4	Application of GIS in thematic mapping, concept of Cadastral Map.	Students will learn about the basic concept of GIS and its components, thematic map and its types, the concept of Cadastral Map.	Q1. What is the importance of the Cadastral Map? Q2. What is thematic map and their types? Q3. What are the importance of thematic maps?	DM	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. In demonstration to prepare proportional divided circle will be given to them 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? Q2. What is the difference between proportional by and divided circle? Q3. What is a graphical scale? Q4. How to prepare a graphical scale for a proportional divided circle and sphere diagram?	SP	Pr D
		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? Q2. What are the importances of Choropleth, Isoline and Chorochromatic map	PG	L Pr

Type	Paper	Unit	Topic	Learning Objectives	Related Questions	Teacher	Teaching Methods
SEMESTER-III							

Discipline Core (DC)-5	**DC 5A Climatology (Theory)**	1	Structure and composition of the atmosphere, Insolation and heat budget	To know about the atmosphere, the concept, origin, composition of atmosphere and its structure. also learn about insolation and heat budget	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. Learners will understand the importance of ozone gas for the atmosphere. To understand the vertical and horizontal distribution of atmospheric temperature.	Q1. Discuss the causes of greenhouse effects. Q2. Describe the characteristics of horizontal distribution of temperature. Q3. What do you mean by inversion of temperature?	SG	L
		3	Condensation and precipitation process and forms; mechanism of precipitation: Bergeron-Findeisen theory, Collision and coalescence theory	Students will know the liquid and solid water particles that fall from clouds and reach the ground are known as 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.	.Q What causes precipitation to fall.what is the difference between a tropical storm and a tropical depression.	DM	L
		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. Differentiate between warm and cold fronts. Understand the contrasting characteristics of each front, including temperature gradients, cloud formations, and associated weather patterns. 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? 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	
		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? Q2. What is Jet stream and its formation process? Q3. Difference between tropical and mid-latitude cyclones. 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. Q2. Given a brief description of Thornthwaite's idea of climatic classification.	SP	L D
	DC 5B: (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.	Q .Write the uses of a hygrometer and Raingauge.Q.Difference between humidity and Rainfall.	DM	D H/O
		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? Q2. What is the need of representation of climatic data? Q3. Describe the construction, principles and application of Taylor's Climograph, Hythergraph, Star Diagram and Ergograph.	ST	D Pr
	DC 6A 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. Q2. What are the different sources of data and their methods of collection? Q3. Differentiate between survey schedule and questionnaire methods. Q4. What are the different scales of measurements of statistical data?	ST	L ICT H/O
		2	Sampling: Need, types, and significance and 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. Q2. Describe the mechanism of random sampling.	ST	L 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?	ST	L ICT

					Q2. What is probability distribution? Mention about some theoretical probability distribution.		
		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 the measures in the context of real-world data sets. Apply appropriate measures of central tendency to different types of data sets. Explore other partitioned values such as quartiles, percentiles, and deciles, and understand their utility in data analysis.	Q1. Identify situations where each measure of central tendency is most appropriate and why. Q2. Calculate the mean, median, and mode for given data sets using appropriate formulas or techniques. Q3. Evaluate the strengths and limitations of mean, median, and mode as measures of central tendency.	PD	L D
		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. Apply measures of dispersion to assess the spread and variability of data.	Q1. Calculate measures of dispersion for given data sets. Q2. Compute coefficient of variation and coefficient of quartile deviation. Q3. Compare and contrast different measures of dispersion in various scenarios.	PD	L 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. The students will be able to apply regressions to model the relationships between two continuous variables and predict outcomes. Utilize time series analysis with moving averages to identify trends and patterns in sequential data.	Q1. Explain rank correlation with examples. Q2. Explain product moment correlation as a measure of linear association between variables. Q3. Explore non-linear regression techniques for modeling complex relationships between variables. Q4. Calculate and interpret rank correlation coefficients, product moment correlation coefficients, and regression parameters.	PD	L D
	DC 6B: 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.	Q1. Prepare a frequency distribution table and construct the histogram and frequency curve from the frequency distribution. Q2. Find out the mean, median and mode as measures of central tendency.	ST	L Pr

				From the frequency distribution students are able to calculate the various measures of central tendency.			
		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 have capability to interpret the significance of each measure of dispersion in analyzing data variability. Apply measures of dispersion to assess the spread and variability of data.	Q1. Calculate Mean deviation and standard deviation for given data sets. Q2. Compute coefficient of variation and coefficient of quartile deviation.	PD	L Pr
		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. Can be able to compute product moment correlation coefficient and rank correlation coefficient.	Q1. Calculate rank correlation from the given data set. Q2. Compute product moment correlation as a measure of linear association between variables from the given data set.	PD	L Pr
	DC7 A 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. Q2. Give an idea about different physiographic divisions of India and their characteristics.	SP	L
		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? Q2. Write a short note on soil Characteristics and classification in India? 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? 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 aware of the problems, prospects of these industries.	Q1. Comment on the recent development of the automobile industry in India and describe its importance in the Indian Economy. Q2. Identify the present development and future prospects of the IT sector in India as compared to the world.	ST	L ICT
		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. Q2. Attempt a classification of socio-cultural regions of India.	PD	L ICT
		6	Contemporary population issues: Poverty, Illiteracy, Malnutrition and unemployment	Student will learn about contemporary population issues like poverty literacy malnutrition causes of poverty illiteracy and malnutrition and effect of poverty in Indian economy also they will learn about different policies to reduce poverty literacy and malligation adopted by the government	Q1. Define poverty. What are the indicators of poverty, illiteracy and malnutrition? Q2. What are the policies adopted by the government to reduce poverty, literacy and malnutrition in India	SP	L
	DC7 B 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? Q2. Interpret the prevailing weather characteristics of India from the given weather map.	ST	ICT 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. Students will also know about different types of minerals and rocks and their characteristics 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? 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. Q3. Identify different types of Rocks and Minerals and prepare laboratory notebooks displaying their characteristics and method for identification.	SP	L D H/O

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SEMESTER-IV							
Discipline Core (DC) -8	**DC8 A 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? Q2. Describe the mechanism of delineation of formal and functional regions.	PD	L 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. 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. 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? Q2. Critically analyse the level of regional development in India.	ST	ICT L
			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? Q2. What are the different indicators of economic development? Q3. Differentiate between development and growth. 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, Rostov and Friedman) theories for regional development	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? Q2. Critically discuss the growth pole theory and theory of Myrdal. Q3. Critically discuss the core periphery model and theory of Rostow.	ST	L ICT
		3	Strategies of regional development with reference to India, Need and measures for balanced	From this unit students will understand the various strategies of regional development in India with	Q1. Highlights the major points of regional imbalances in India. Q2. What are the strategies of reducing regional disparities in India?	ST	L ICT

			development in India, Regional inequality, disparity and diversity	reference to regional disparity and diversity. They will also understand the merits and drawbacks of these strategies.			
	DC3 B: (Practical)	1	Delineation of formal region: Weighted index number. Delineation of functional region: Gravity Analysis (Reilly's)	Students will learn and be skilled in delineating formal regions. Students will learn and be skilled in delineating functional regions.	Q1. Delineate formal regions. Q2. Delineate functional regions.	PD	L Pr
		2	Measuring regional disparity: 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 D Pr
Discipline Core (DC) -9	**DC9 A 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? Q2. Write a brief note on concepts of goods, services, production, exchange and consumption.	PG	L
			GATT, OPEC 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. Q2. What type of organisation OPEC is? Describe its role and functions. Q3. Define the concept of economic man and describe the theories of choices.	ST	
		2	Economic distance, transport costs, Transnational sea-routes, railways and highways with reference to India	This unit helps students to understand about Economic distance, transport costs, Transnational sea-routes, railways and highways with reference to India	Q1. What is economic distance? Q2. What is transport cost and its types? Q3. Write a short note on Transnational sea-routes, railways and highways with reference to India	PG	L
		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. They will also learn about factors affecting the location of economic activities And also know about Von Thunen and Weber concept of	Q1. What are the different types of activities? Q2. What are the characteristics of primary secondary tertiary and quaternary economic activities?	SP	L

				agriculture and industrial locational theories.	Q3. Describe Von Thunen agriculture location theory and Weber concept of industrial locational theory.		
		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? Q2. Write a short note on paddy cultivation in SE Asia? Q3.Write a short note on fishing in India with reference to inland and coastal? 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? 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 tertiary activities: transport-types and importance, trade (e- commerce) Quaternary and Quinary-concept	Q1. What is Tertiary activity and its features? Q2. Write a short note on transport-types and importance? Q3. Write a short note on trade and importance? Q4. What are Quaternary and Quinary activities?	DM	L
		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? Q2. What is globalization and its impacts on the Indian economy?	PG	L
	DC9 B: 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? Q2. How do you apply Kendal's method to measure agricultural efficiency?	ST	
		2	Measuring transport accessibility: Konig and Shimbel index	From this lesson learners will comprehend the concept and utility of	Q1. Define the concept of accessibility. How can it be measured?	ST	

				accessibility and become skilled in measuring the accessibility through Shimbel index and Konig number.	Q2. Apply the shimbel index and Konig number and assess the level accessibility.		
		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? Q2. What is the Geographical association and its implication? How can it be measured?	PG	L Pr

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 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, component of ecosystem, and its function	What is ecosystem?Discuss the structure and function of ecosystem	SG	
		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 Q2. What is waste management? what are the strategies of waste management can be adopted at local level	SP	L ICT
		6	Environmental programmes and policies - Global, national and local levels	Student 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	

	DC 10B: Practical	1	Preparation of check-list for Environmental 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 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? Q2. Identification of Soil texture determined by ternary diagram	PG	L 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 D

GEOH SEMESTER-V							
Type	**Paper**	**Unit**	**Topic**	**Learning Objectives**	**Related Questions**	**Teacher**	**Teaching Methods**
Discipline Core (DC) -11	**DC11 A:** Soil & Bio Geography **(Theory)**	1	Definition and classification (Genetic & USDA) of soil, Factors of soil formation, Physical (structure and texture) and chemical soil properties (pH and NPK)	Students will learn about Definition and classification (Genetic & USDA) of soil, Factors of soil formation, Physical (structure and texture) and chemical soil properties (pH and NPK)	Q1. What are the factors of soil formation? Q2. Write a short note on soil texture and structure. Q3. Write a short note on soil pH and NPK.	PG	L
		2	Origin and profile characteristics of Lateritic, Podzol and Chernozem soils.	Students will learn about Origin and profile characteristics of Lateritic, Podzol and Chernozem soils.	Q1. Write a short note on Origin and profile characteristics of Lateritic. Q2. Write a short note on Origin and profile characteristics of Podzol soil. Q3. Write a short note on Origin and profile characteristics of Chernozem soils.	PG PG	L
		3	Factors and processes of Soil erosion, degradation and mitigation measures.	Students will learn aboutFactors and processes of Soil erosion,	Q1. What are the factors and processes of Soil erosion?	Dm	L

				degradation and mitigation measures.	Q2. What are soil degradation and mitigation measures?		
		1	Definition of Biogeography, Concepts of biosphere, ecosystem, biome, ecotone, community.	After completion of the class students will learn to define and differentiate between biosphere and other spheres. Describe the different biomes that make up the biosphere. Describe the different life forms in the biosphere.	Q1. Describe the role of the biosphere in life form on the Earth. Q2.Differentiate among biome, ecosystem and Community Q2. Describe the components and function of Ecosystem.	PD	L
			Ecology, trophic structure, food chain and food web and biodiversity.	1. After the lesson students can form diagrams of relationships between organisms in an environment by creating a detailed food web. 2. Students will be able to define the food chain, food web, and biodiversity. 3.Students will understand the importance of biodiversity.	Q1. What do you mean by trophic level in ecology? Q2. Differentiate between food chain and food web. Q3. What is biodiversity? What is the importance of biodiversity in the environment? What is a biodiversity hotspot?	PD	L
		2	Energy flow in ecosystems, Biogeochemical cycles with special reference to carbon dioxide and nitrogen.	Students will learn and understand the flow of energy in the ecosystem through different biogeochemical cycles by the end of this lesson. Students will understand the role of carbon, nitrogen and oxygen in the environment along with their changing form through different states.	What do you mean by energy flow in an ecosystem? describe with the example. 2. Explain Lindeman's law of energy flow of the ecosystem. 3. Explain the energy flow of the ecosystem through the Nitrogen cycle with proper illustration.	PD	L
		3	Geographical extent and characteristic features of Tropical rainforest and Taiga biomes;	In this unit learners will gain the knowledge about the extent and characteristics of world major biomes.	Q1. Describe the geographical extent and characteristics of Tropical rainforest biome and figure biome.	DM	L
			Causes, consequences of deforestation and management; Wetland: concept and significance	This unit provides the idea of deforestation, its causes and consequences and management strategies.	Q1. What are the major causes of deforestation and describe the consequences of it. Q2. Provide management strategies to reduce deforestation.	DM	L

				Learners will also have the idea of wetland and its significance.	Q3. Define wetlands and describe characteristics and significance.		
	DC11B : (Practical)	1	Particle size distribution analysis by sieving method.	Students will learn about Particle size distribution analysis by sieving method.	Q1. Particle size distribution in different places by sieving method.	PG	Practical
		2	Measurement of soil nutrient (NPK) and Soil pH by using soil kit	Students will learn about Measurement of soil nutrient (NPK) and Soil pH by using soil kit	Q1. Procedure of measurement of soil PH and NPK	PG	Practical
			Time series analysis of biogeography data	1.Student will learn and understand the trend of different biogeographic elements like flora and fauna. 2. Student will conscious about the vulnerable and threatened and also extinct species	Q1. Explain the trend of threatened species of bird from the given table with the help of a 3 year and 5 year moving average method. Q2. Analyse the time series data on the following table of area under mangrove forest from 2021-2020 through Least Square method.	PD	Pr.
Discipline Core (DC) -12	**DC12 A: Hydrology and Oceanography (Theory)**	1	Definition of hydrology; Concept, Characteristics, Significance and Interpretation of Hydrological Cycles.	Learners will know the definition of hydrology; Concept, Characteristics, Significance and Interpretation of Hydrological Cycles.	Q1. Define hydrology. Q2.Describe the concept characteristics significance of hydrological cycle.	DM	L
		2	Definitions and Characteristics of Precipitation, Evaporation, Evapo-Transpiration,	Students will learn about precipitation, and its classification, what is evaporation and also learn about evapotranspiration.	Q1. What is precipitation? classify precipitation. Q2. What is evaporation discuss briefly	SG	L
			Infiltration, Rainfall Recharge Relationship and Runoff Characteristics.	Learners will understand the Infiltration, Rainfall Recharge Relationship and Runoff Characteristics.	Q1.Describe the various processes of infiltration. Q2.Explain the relationship between rainfall and groundwater recharge. Q3.What are the different processes and factors of runoff of water?	ST	L

		3	Flood Analysis of a drainage basin, Concept of Micro Watershed Planning,	Students learn about Flood Analysis of a drainage basin, Concept of Micro Watershed Planning	Q1. What is flood and its characteristics? Q2. What is micro watershed planning and its importance?	PG	L
			Water management in Tropical Cities and Rainwater Harvesting	This unit will introduce students about the various techniques of rainwater harvesting in tropical cities and the water management strategies of the cities with reference to India.	Q1.Describe the various techniques of rainwater harvesting used in tropical climatic regions. Q2. What are the water management techniques used in tropical cities?	ST	L
		1	Origin, Characteristics of major Structural and Morphological features of Pacific, Atlantic and Indian Ocean	Students will learn about the morphological structure of three major oceans of the world. They will also know about the different morphological features, their characteristics and distribution across these oceans.	Q1.Give an account of the morphological features of the Indian ocean and pacific ocean. Q2. Explain the reasons behind the shape of the Atlantic ocean. Q3. Detail the major submarine features (such as trenches, ridges, and basins) in each of these oceans and their significance.	SP	L
		2	Origin and evolution of coral reefs and atolls; Origin and Classification of oceanic sediments	Students will understand the processes involved in the formation and evolution of coral reefs and atolls. They will recognize the significance of coral reefs in marine ecosystems and their vulnerability to environmental changes. They will also learn about origins, composition, and classification of oceanic sediments and understand the significance of oceanic sediments in geological processes and environmental studies.	Q1. Compare and contrast fringing, barrier, and atoll reefs. What are the distinguishing characteristics of each type, and what factors contribute to their formation in different marine environments? Q2. Discuss Darwin's theory of atoll formation. How does the subsidence of volcanic islands lead to the formation of atolls? Q3.Differentiate between terrigenous, biogenous, hydrogenous, and cosmogenous sediments. contribution in oceanic environments.	SP	L ICT
		3	Temperature and Salinity characteristics of ocean water and marine resources	This unit helps learners to understand about the salient	Q1.Describe the salient characteristics of the distribution of ocean temperature.	ST	L

				characteristics of the distribution of ocean salinity and temperature.	Q2.Describe the distribution of salinity of the ocean water and compare the salinity of different oceans.		
	DC12B: Practical	1	Annual Hydrograph analysis and rating curve	Students will learn to determine the factors that affect peak discharge and volume passing through a particular reach. This can help engineers design structures such as bridges or culverts to better withstand high flows, as well as channel water away from areas prone to flooding Students will understand the practical applications of rating curves in hydrological studies. They will know how rating curves are used to estimate river discharge based on the observed stage. Students will predict river discharge during different water stages. This information is crucial for forecasting and managing floods.	Q1. Prepare an annual hydrograph from the given data and Interpret it. Q1. Prepare a rating curve from the given data on Gauge height and Discharge and Interpret it	PD	Pr.
		2	Runoff estimation: Float method	Students will learn about different methods of runoff estimation. They will practically collect data from the field to find the runoff estimation by float method.	Q1. Find the rate of discharge of the stream using the float method.	SP	Pr
		3	Preparation of temperature-salinity (TS)diagram.	This unit helps students to gain the skill of preparing temperature salinity curves using temperature salinity data to interpret the characteristics of the ocean water masses.	Q1. Prepare a temperature sanitary diagram and interpret the characteristics of the ocean water mass.	ST	L Pr
Discipline Specific Electi	**DSE1A - Remote Sensing and**	1	Concept, Principles, Stages, Types and Methods of RS, types of RS satellites and sensors	2. The lesson will allow graduates to build their knowledge and practical expertise in RS and GIS technologies 2.Students will learn concepts of Photogrammetry and its applications	Q1. What are the principles of Remote sensing? Q2. Describe the the different stage of remote sensing	PD	L, PPT

ve (DSE) -1 [Optional]	**Geographical Information System**			such as determination of heights of objects on terrain and land use land cover map.	Q3. What are Active and Passive Remote sensing? Q4. Describe the characteristics of LISS-I and LISS-II sensors.		
		2	Sensor resolutions and their applications with reference to IRS and Landsat missions, image referencing schemes and data acquisition; Concept of False Colour Composites from IRS LISS-3 and Landsat TM and OLI data.	1.Students will understand the sensor resolution (spatial, spectral, radiometric and temporal) of the RS image. 2.These will help to photogrammetry and image interpretation Student will learn true colour and false colour composition of image	Q1.What do you mean by spatial resolution of remote sensing? Briefly describe the image referencing scheme of IRS satellites. Q2. Illustrate the FCC of Landsat image. What is the standard FCC of IRS?	PD	L, PPT
		3	Principles of image interpretation. Preparation of inventories of land use/land cover (LULC) features from satellite images.	Students will learn about image interpretation, its principles, and inventories of land use land cover maps from satellite images.	Q1. What are the principles of image interpretation ? Q2. interpret landuse and landcover from satellite image	SG	L
		4	Concepts, Components, Developments, Functions and Advantages of GIS, raster and vector	Students will learn about the concept of GIS, its different components and how these components are related to each other. They will also learn about the functions and uses of GIS technology, its advantages over traditional mapmaking and other fields and also some of its limitations. Students will learn about different types of data structures of GIS and its classification. They will also learn about the raster and vector data structure, its characteristics and classifications.	Q1. Define GIS. What are the components of a GIS system? Q2. What are the fields of uses of GIS technology? Describe its advantages and some limitations. Q3. Define raster and vector data structure. Q4. What would you like to know about their roles or how they're used within GIS? Are you interested in understanding their differences, applications, or specific tools and software used for handling them in GIS?	SP	L PPT
		5	Principles of preparing attribute tables, data manipulation and overlay analysis	Students will understand the significance of attribute tables in GIS data.	Q1. What is the primary purpose of an attribute table in GIS, and how does it relate to spatial data?	SP	L PPT

				They will learn principles of data manipulation techniques within GIS. They will also learn about the comprehend overlay analysis and its applications in spatial data analysis.	Q2. How does data stored in attribute tables contribute to spatial analysis in GIS? Q3. Describe the process of sorting data in an attribute table and explain its significance in data analysis. Q4. Define overlay analysis in GIS and provide an example of its practical application. Q5. Describe the difference between the Union and Intersection operations in overlay analysis.		
		6	Principles of GNSS positioning and waypoint collection	Students will understand the principles of GNSS technology and its role in positioning. They will learn the fundamentals of waypoint collection using GNSS devices. Students will know about practical techniques for accurate waypoint collection.	Q1. What is the fundamental principle behind GNSS positioning? Explain how satellites help determine a receiver's location. Q2. Describe the differences between trilateration and triangulation in GNSS positioning methods. Q3. What factors can affect the accuracy of GNSS positioning, and how can these factors be mitigated? Q4. Explain the significance of having multiple satellite constellations (e.g., GPS, Galileo, GLONASS) for GNSS positioning	SP	L ICT H/O
		DSE1B - **(Practical)**	1	Geo-referencing of scanned maps/ images and assigning projection	Students will learn to import the scanned map in QGIS. They will learn to navigate the different tools for georeferencing in GIS and also be able to assign projection and finally georeference	Q1. Import the following scanned map in QGIS. Q2. Georeference the scanned map given to you by assigning it a proper projection.	SP	Pr H/O

				a scanned map in the QGIS environment.			
		2	Digitization: Point, Line & Polygon	Students will learn to create vector layers in GIS. They will be able to create different types of vector layers such as point, line and polygon.	Q1. Digitize the given georeferenced map.	SP	Pr H/O
			Preparation of thematic maps.	Students will be able to add and import data to the GIS database. They will also be able to prepare thematic maps in QGIS and afterwards they will also be able to export the prepared thematic map from the GIS.	Q1. Prepare thematic map by attaching or importing the data given to you and export the final map after labeling it properly.	SP	Pr H/O
	DSE1 A- Political Geography (Theory)	1	Nature and scope Political Geography			–	
		2	Concept of State, Nation and Nation State, Attributes of State – Frontiers, Boundaries, Enclave and exclave, Territory and Sovereignty and Emergence of new states			-	
		3	Geopolitics and geopolitical theories: Heartland and Rimland			-	
		4	Geography of Voting, Geographic Influences on voting pattern and Gerrymandering			-	
		5	Conflicts of resources– Oil, water and emission of greenhouse gases, Inter-state dispute on water resources of India,			-	
		6	Issues of relief, compensation and rehabilitation: with reference to Dams of India			-	

	DSE1B: Practical	1, 2	Index of democracy and autocracy & Failed State Index			-	
		3, 4	Happiness Index & Measuring voting behavior			-	
Discipline Specific Elective (DSE)-2 [Optional]	**DSE2A - Fluvial Geomorphology**	1	Scope and components of Fluvial Geomorphology; Rivers as a hydro system; Models of channel initiation and network development.	Students learn about Scope and components of Fluvial Geomorphology; Rivers as a hydro system; Models of channel initiation and network development.	Q1. What are the scope and components of Fluvial Geomorphology? Q2. Write a short note on Rivers as a hydro system Q3. Write a short note on Models of channel initiation and network development.	PG	L
		2	Flow measurement and characteristics assessment: Area velocity approach; laminar and turbulent flow	Students will understand the principles of flow measurement using the area-velocity approach. They will learn the differences between laminar and turbulent flow and their characteristics.	Q1. Explain the concept of the area-velocity approach in flow measurement. How does it differ from other flow measurement techniques? Q2. Discuss the factors that can affect the accuracy of flow measurements using the area-velocity method. Q3. Define laminar and turbulent flow, emphasizing their distinct characteristics in terms of velocity profiles and fluid behavior.	SP	L ICT
		3	Fluvial processes and forms; tectonic and modification and interruptions; adjustment with altered state	Students will understand the various fluvial processes and their impact on landforms. They will explore the influence of tectonic activities on rivers and their formations and also be able to analyze modifications, interruptions, and adjustments in rivers due to anthropogenic or natural alterations.	Q1. Describe the processes of erosion, transportation, and deposition in fluvial systems. How do these processes contribute to the formation of various landforms? Q2. Explain how meanders form in river systems and discuss their characteristics and impact on the surrounding landscape.	SP	L ICT

					Q3. How does the formation of deltas occur, and what environmental conditions contribute to their development?		
		4	Morphometric aspects of a drainage basin: Stream ordering (Strahler and Shreve), bifurcation ratio, Sinuosity indices, Hypsometry (percentage hypsometry)	Students will understand Morphometric aspects of a drainage basin: Stream ordering (Strahler and Shreve), bifurcation ratio, Sinuosity indices, Hypsometry (percentage hypsometry)	Q1. What is stream ordering and its importance? Q2. What is a hypsometric curve and its importances? Q3. Write a short note on bifurcation ratio, Sinuosity indices	PG	L
		5	Consequences of Human interventions on fluvial systems	Students will understand the impacts of human interventions on fluvial systems. They will know about the consequences of anthropogenic alterations on river ecosystems and landscapes and be able to analyze strategies for mitigating and managing the effects of human interventions.	Q1. How do dams and reservoirs affect downstream ecosystems, sediment transport, and river flow? Discuss the environmental consequences of such structures. Q2. Describe the impacts of channelization and river engineering on natural river processes, biodiversity, and flood risk in riparian areas. Q3. What are some sustainable river management practices that can help mitigate the negative impacts of human interventions while balancing human needs?	SP	L ICT
		6	Processes, management and impact on land use of River bank erosion and river degeneration,	Students learn about Processes, management and impact on land use of River bank erosion and river degeneration,	Q1. What are the impact on land use of River bank erosion and river degeneration, Q2. Write a short note on processes and management of river bank erosion.	PG	L
			Principles and significance of Integrated watershed management	Students learn about Principles and significance of Integrated watershed management	Q1. Write a short note on Principles and significance of Integrated watershed management	PG	L
	DSE2 B-	1	Stream ordering, Bifurcation ratio, Stream sinuosity indices, Drainage	From this unit learners will be understood Stream ordering,	Q1. Calculation of bifurcation ratio	PG	Pr

	(Practical)		density, Stream frequency and Dissection Index based on Survey of India Toposheet	Bifurcation ratio, Stream sinuosity indices, Drainage density, Stream frequency and Dissection Index based on Survey of India Toposheet	Q2. Compute the drainage density and frequency in the given area from toposheet Q3. Compute the Stream sinuosity indices.		
	DSE2A Social and Cultural Geography (Theory)	1	Nature and Scope of Social Geography	From this unit learners will be understood the definition, nature and development of social geography and its content.	Q1. Define social geography. Q2. Describe the nature, scope and contents.	ST	L PPT
		2	Concept of Space, Social differentiation and stratification; social processes	Students will learn about the concept of space, types of space and the definition and characteristics of social space. They will also learn about the social differentiation and stratification along with the social processes.	Q1. Define social space. How is a social space defined? Q2. Differentiate between social differentiation and stratification. Q3. Describe the various social processes and its role.	ST	L PPT
		3	Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution	Learners will be understood about the various elements of society-caste, class, gender, race, religion and their spatial dimensions.	Q1. Describe the origin and characteristics and significance of the caste system in India? Q2. How are class, caste, gender, religion and space spatially distributed?	ST	L
		4	Basis of Social region formation, Evolution of social-cultural regions of India, Social groups, social behaviour and contemporary social issues (dowry, delinquency, child labour, gender discrimination) with special reference to India.	This unit will provide insights about the origin and evolution of socio-cultural regions of India, social groups, and contemporary social issues in India.	Q1. What do you mean by social region? Describe the origin and evolution of social regions in India over time. Q2. What do you mean by social groups? Classify it. Q3. Describe the contemporary social issues in India and its remedies.	ST	L
		1	Scope and content of Cultural Geography	To Study of cultural products and norms and their variations across different places and regions	Q1. Attempt to define cultural geography. Q2. Identify the definition, scope and content of cultural geography.	PD	L

		2	Concepts of Cultural Hearth and Realm, Cultural diffusion, Cultural segregation, cultural diversity	Students will learn about the source region of major cultures in the world and the diffusion of culture. Devilal understands the cultural diversity culture segregation and the cultural realm and regions.	Q1. What are the major cultural Hearths in the world and describe their characteristics. Q2. Define cultural realm and describe major realms of the world. Q3. What is cultural segregation? Describe the process of cultural diffusion.	PD	L
		3	Races and racial groups of the world, Cultural regions of India	This unit help student to understand the concept of race and racial groups in India in world and also be able to differentiate between different racial groups.	Q1. Define race and describe its characteristics. Q2. Mention the different racial groups of the world and India and their basic identifying characteristics.	PD	L
	DSE2B: Practical	1	Mapping of composition of social/cultural group of Indian population in any Indian states (district wise) following choropleth technique, bar diagram/proportional divided circle.	This unit would prepare learners about the skill of mapping the socio-economic variables using cartographic techniques. They will be able to prepare the choropleth and isopleth techniques and other cartograms.	Q1. Mention the cartographic techniques used to represent socio-economic variables. Q2. Prepare the choropleth and Isopleth.	ST	D Pr
		2	Calculation of Human Poverty Index (HPI) Gender parity index.	From this unit students will gain the skill of measuring human poverty and gender parity indices.	Q1. Calculate HPI-1 and HPI-2 Q2. Calculate GPI.	PD	Pr
Skill Enhancement Course (SEC) -1	**SEC1: Geography of Tourism (Theory)**	1	Concept, scope and nature of Geography of Tourism, types of Tourism, Recreation and Leisure Inter-Relations Geographical Parameters of Tourism by Robinson.	From this unit learners will grasp the multifaceted character of tourism and tourism geography and its geographical parameters, leisure-recreation relationship.	Q1. Define the nature of tourism. Q2. What are the geographical dimensions of tourism? Q3. Describe the relationships between tourism-leisure-recreation.	ST	L

		2	Factors (historical, natural, socio-cultural and economic) influencing tourism, Spatial pattern of tourism	Learners will be able to assess economic, social, cultural, and environmental dimensions of tourism within the field of geography and spatial pattern of tourism.	Q1. What are the factors of tourism growth and development? Q2. Discuss the spatial pattern of tourism.	ST	L
		3	Physical, economic and social impacts of tourism. Environmental laws and tourism: current trends, spatial patterns and recent changes.	This unit helps students to understand and assess the various impacts of tourism and its geographical dimension- both positive and negative and its management. Learners will also be able to understand the relation between environmental laws and tourism.	Q1. Discuss the physical, social and economic impacts of tourism. Q2. Discuss how environmental laws influence tourism?	SP ST	L L
		4	Recent Trends of Tourism: International and Regional; Domestic (India); Sustainable Tourism, Meeting Incentives Conventions and Exhibitions (MICE), Role of foreign capital and impact of globalization on tourism.	This unit will provide the knowledge about recent trends of tourism-development of forms of recent tourism areas; impact of globalisation on tourism and the role of foreign capital.	Q1. Highlight the forms of tourism developed in recent times as a result of globalisation. Q2. What is the role of foreign capital in tourism growth and development?	ST	L
		5	Tourism Infrastructure, regional dimensions of tourist attraction in India, National Tourism Policy;	Learners will acquire insights into diverse policies and initiatives designed to foster the development of tourism at the state, national, and global scales.	Q1. Describe the tourism instructor in general and compare regional dimensions of tourist attractions across India. Q2. Describe the national tourism policy of India for promotion and development of tourism.	PD	L

SEMESTER-VI							
Type	**Paper**	**Unit**	**Topic**	**Learning Objectives**	**Related Questions**	**Teacher**	**Teaching Methods**

Discipline Core (DC) -13	**DC13 A: Disaster Management (Theory)**	1	Classification of hazards and disasters approaches to hazard study	Students will know about the classification of hazards based on their origin, nature, and impact. They will also explore the various approaches to studying hazards and their significance in risk assessment and mitigation. They will be able to identify the objectives and methods associated with different approaches to hazard study.	Q1. Describe the scientific approach to studying hazards. What methods and tools are commonly used in this approach, and what are its primary objectives? Q2. Explain the classification of hazards based on their origin (natural vs. anthropogenic) and provide examples of each type. Q3. Provide examples of methods or tools commonly used in hazard study approaches (scientific, social science, interdisciplinary) and explain how they contribute to understanding and managing hazards.	S P	L ICT
		2	Risk perception and vulnerability assessment, hazard paradigms	Students will understand the concepts of risk perception and vulnerability in the context of hazards and disasters. They will be able to explore methods for assessing vulnerability and perceptions of risk and also be able to analyze different hazard paradigms and their implications for disaster management.	Q1. How does risk perception differ from actual risk? Discuss factors that influence an individual's perception of risk. Q2. Define vulnerability in the context of hazards and disasters. What are the key components of vulnerability assessment? Q3. Discuss different methods used for assessing vulnerability, such as vulnerability indexes, participatory assessments, and social vulnerability mapping. Q4. Explain the principles of the disaster risk reduction paradigm. How does this paradigm differ from the traditional natural hazard approach?	SP	L
		3	Responses to hazards: Preparedness, trauma and aftermath. Resilience and capacity building.	Students will be able to understand the importance of preparedness, trauma management, and post-disaster responses in hazard events.	Q1. What are the key components of disaster preparedness, and how do early warning systems contribute to effective disaster response? Q2. Discuss the importance of community drills and evacuation plans in mitigating	SP	L PPT

				They will also be able to gain knowledge about the concepts of resilience and capacity building in the context of disaster management and also be able to analyze strategies for building community resilience and enhancing capacity to respond to hazards.	the impact of hazards. Provide examples where effective preparedness measures saved lives. Q3. Define resilience in the context of disaster management. How does community resilience reduce vulnerability to hazards? Q4. Explain the link between effective preparedness measures and reduced vulnerability during disasters. Provide examples where preparedness initiatives made a significant difference in disaster outcomes.		
		4	Factors, vulnerability, consequences and management of hydrologic disasters (Flood & Drought)	Students learn about Factors, vulnerability, consequences and management of hydrologic disasters (Flood & Drought)	Q1.What is flood and its consequences? Q2. What is drought and its consequences?	P G	L
		5	Factors, vulnerability, consequences and management of Geologic disasters (Earthquake & Landslide)	Students learn about Factors, vulnerability, consequences and management of Geologic disasters (Earthquake & Landslide)	Q1. What is Earthquake & Landslide and its factors and impacts?	PG	L
		6	Factors, vulnerability, consequences and management of Atmospheric disasters (Cyclones)	Students learn about Factors, vulnerability, consequences and management of Atmospheric disasters (Cyclones)	Q1. What is a cyclone and its factors, consequences and management?	PG	L
	DC13 B: (Practical)	1	Flood Frequency Analysis (Time series) Flood year determination based on peak flow data in reference to danger and extreme danger level	Students will learn about Flood Frequency Analysis (Time series) Flood year determination based on peak flow data in reference to danger and extreme danger level	Q1. Compute the flood frequency based on weibull method Q2. Compute and draw flood year determination based on peak flow data in reference to danger and extreme danger level before and after 2018	P G	L Pr

		2	Hydrological Drought Analysis: Standardized Precipitation Index (SPI)	Students will learn aboutHydrological Drought Analysis: Standardized Precipitation Index (SPI)	Q1. Compute Hydrological Drought Analysis based on SPI	PG	L Pr
Discipline Core (DC) -14	**DC14 A: Evolution of Geographical Thought (Theory)**	1	Definition, nature, scope and contents of Geography, Development of Geography and contributions of Greek, Roman and Indian geographers; Impact of 'Dark Age' on Geography and Arab contributions	Students will learn about the scope and content of geography , and also learn the contribution of greeks ,roman,and arab scholars in the development of geography.	Q1.Discuss the contribution of greek scholar Q2. Discuss the contribution of arab geographer for development in geography	S G	L
		2	Transition from Cosmography to Scientific Geography (Contributions of Bernard Varenius and Immanuel Kant); Dualism and Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Idiographic vs. Nomothetic)	From this unit students will know the development of scientific geography from traditional cosmographic approaches and the contribution of geographers. Students also learn about the dichotomy in geography, its nature and characteristics.	Q1. Define scientific geography of Varenius and Kant and explain how their approach is scientific. Q2. What do you mean by dualism and dichotomy in Geography? Discuss with some examples.	S T	L ICT
		3	Evolution of Geographical thoughts after pre-modern phase, contribution of German, French, British and American school of thought, Contributions of Humboldt and Ritter	Learners will understand the development of geographical thoughts in pre and modern times in Europe. learners will also understand Different schools of geographical thoughts in that period.	Q1. Describe the evolution of geographical thoughts in three modern phases. Q2. Describe the role of German friends beautician American schools of thoughts in the development of geographical ideas.	DM	L
		4	Quantitative Revolution and its impact, behaviouralism,	In this lesson learners will be able to understand the nature and characteristics of quantitative	Q1. Define quantitative Revolution and describe its characteristics and impacts in geographical discourse.	P D	L

			systems approach, radicalism, feminism in geography	Revolution and its impact on geographical development. They will also understand the post quantitative revolution critical thinking and the development of feminism radicalism and behaviouralism in geography.	Q2. Described critical thinking in the post quantitative Revolution period and the development of behaviourism, radicalism and feminism in geography.		
		5	Concept of hypothesis, theory, law and model, Changing concept of space in geography, Geography in the 21st Century	This lesson helps students to understand the concept of theory, law and model in the science arts and other streams.	Q1. Differentiate between hypothesis theory law and model. Q2. Describe the changing concept of space in geography.	PD	L
	DC14B: Practical	1	Hypothesis testing: t test, z test, chi square test (data base computation, testing and inferences)	From this practical unit students will Understand various techniques of hypothesis testing and become able use this hypothesis testings in statistical analyses.	Q1. Test the data using t-test and z-test. Q2. Compare the dataset using chi square test.	PD	L Pr
Discipline Specific Elective (DSE) [Optional]	**DSE3A: Applied Geomorphology (Theory)**	1	Anthropogenic Geomorphology: Subject and System;			–	
		2	Human Impact in a Systems Approach; Some Characteristics of Physical Systems, direct and indirect impacts of human activities on Geomorphology (processes and forms)				
		3	Geomorphic impacts of human society; Anthropogenic landforms			–	
		4	Stages of Intensifying Human Impact on the Landscape: natural, slightly modified, semi natural landscape, Formation			–	

			of alien landscape over natural landscape and anthropogenic landscapes				
		5	Societal problems and benefits associated with rivers and modification of rivers; damming, water diversion for irrigation purposes, embankment effects and river linking			–	
		6	Geomorphic impacts on urbanization, resource concentration, resource mining and cropping practices			–	
	DSE3 B: Practical- 2	1	Hypsometric curve and long profile.			–	
		2	Morphological mapping from toposheet.				
Discipline Specific Elective (DSE) [Optional]	**DSE3 A: Human Geography (Theory)**	1	Nature, scope, approaches and recent trends; elements of Human Geography.	From this unit students will understand the nature, scope and content of human geography and elements of it.	Q1. Define the nature and scope of human geography. Q2. What are the elements of human geography?	ST	L ICT
		2	Evolution of humans, concept of race and ethnicity.	From this unit students will understand the Evolution of humans, concept of race and ethnicity.	Q1. Write a short note on Evolution of humans, concept of race and ethnicity.	DM	L
		3	Space, society and cultural regions (language and religion); Evolution of human societies: hunting and food gathering, pastoral nomadism,	Learners will have the knowledge of the concept of space, society and culture- different types of cultural regions and their characteristics. Learners will also be able to understand the evolution of human	Q1. Define space. What are the characteristics of society? Q2. Define cultural regions and bring out the salient characteristics of the zone of major languages and religions of the world.	ST	L

			subsistence farming, industrial and urban societies.	societies- the stages and characteristics.			
		4	Human adaptation to the environment: Eskimo, Masai, Jarwa, Gaddi, Santhals.	Students learn about Human adaptation to the environment: Eskimo, Masai, Jarwa, Gaddi, Santhals.	Q1. Write a short note on Human adaptation to the environment with reference to Eskimo, Masai, Jarwa, Gaddi, Santhals.	DM	L
		5	Population–Resource regions (Ackerman).	Students learn about Population–Resource regions (Ackerman).	Q1. what is population resource region and its types as per Ackerman.	DM	L
		6	Human population and environment with special reference to development–environment conflict.	This unit helps students to have the knowledge of development and the relationship of development activities with their environment and the question of development environment conflict.	Q1. What is the relationship between environment and development activities? Q2. What is the ideal way of development activities with respect to environmental sustainability?	PD	L
	DSE3 B: Practical	1	Population Potential and Mean Centre of Population.	These practical tools will help the learners to measure the spatial pattern of population distribution in a quantitative way.	Q1. Determine the mean centre of population and the gravity centre. Q2. Measure the degree of interaction of population between different locations over a geographical space.	ST	ICT Pr
		2	Computation of Human Development Index (HDI)	This unit helps students understand the concept of human development and they will be able to measure the level of human development.	Q1. Mention the indicators of human development and the goal posts set for them. Q2. Measure the level of human development and compare between different countries.	PD	L Pr
Skill Enhancement (SEC)	**SEC2: Climate Change: Vulne**	1	Scope and trends of subject, Understanding Climate Change with reference to the Geological Time Scale.	From this unit students will be able to have the knowledge of Climate Change in the past and gain chronological history of climate change on Earth.	Q1. What are the past geological records of climate change? Q2. Describe the factors and evidence of climate change.	PG	L ICT

	rability and Adaptations (Theory)	2	Evidences and factors of climate change, GreenHouse Gases and Global Warming	Students will learn about how to change climate,impact of greenhouse gas, and about global warming	Q1. What are the major causes of climate change? Q2. Discuss about global warming in brief	SG	L
		3	Electromagnetic spectrum, Atmospheric window, heat balance of the earth.	Students will understand the components of the electromagnetic spectrum and their significance in Earth's energy balance. They will know the concept of atmospheric windows and their role in transmitting and absorbing electromagnetic radiation. Students will also know the heat balance of the Earth and the factors contributing to it.	Q1. Define the electromagnetic spectrum and discuss the various segments within it. How do these segments differ in terms of wavelength and energy? Q2. What are atmospheric windows, and why are they important in terms of transmitting electromagnetic radiation through the Earth's atmosphere? Give examples of wavelengths that are transmitted more effectively through these windows. Q3. Explain the concept of the Earth's energy budget, considering incoming solar radiation and outgoing terrestrial radiation. What factors contribute to maintaining this balance?	SP	L ICT
		4	Economic and social impact of climate Change, impacts on Agriculture and Water; Flora and Fauna; Human Health and morbidity	Students will know the economic and social consequences of climate change on different sectors. They will also know the impacts of climate change on agriculture, water resources, flora and fauna, human health, and morbidity.and be able to analyze strategies for mitigating these impacts and building resilience.	Q1. How does climate change affect agricultural productivity and crop yields? Discuss the vulnerabilities of different crops to changing climate patterns. Q2. Explain the relationship between climate change, water availability, and its impact on agricultural practices. How do droughts or floods influence farming communities? Q3. How does climate change contribute to habitat degradation and biodiversity loss? Explain the effects on ecosystems and species extinction.	SP	L ICT

					Q4. Explain the health risks associated with climate change, including heat-related illnesses, vector-borne diseases, and air pollution. How do these impact vulnerable populations?		
		5	Global initiatives to climate change mitigation: Kyoto Protocol, Carbon trading, Clean development mechanism, COP, Climate fund	Students will know the key global initiatives aimed at mitigating climate change. They will explore the significance and mechanisms of the Kyoto Protocol, carbon trading, Clean Development Mechanism, Conference of the Parties, and climate funds. They will be able to analyze the effectiveness and challenges associated with these initiatives.	Q1. Explain the objectives of the Kyoto Protocol and its significance in global climate policy. What were the key commitments made by participating countries? Q2. Define carbon trading and discuss its role in incentivizing emissions reduction. How does a cap-and-trade system function in reducing greenhouse gas emissions? Q3. How can global initiatives for climate change mitigation be improved or strengthened to achieve more ambitious climate goals?	SP	L
		6	Climate change vulnerability assessment and adaptive strategies with particular reference to South Asia, IPCC reports, National Action Plan (of India) on Climate Change	This unit will give to learners a comprehensive knowledge and skill about the dimensions of vulnerability to climate change and the adaptive strategies with particular reference to South Asia including India.	Q1. Discuss about the various dimensions of climate change vulnerability and the process of assessment. Q2. Discuss about the reports of IPCC on climate change vulnerability and adaptation strategies.	ST	L ICT
DP4: Field Report (06)	DP4 will focus on preparation of field report on specific topic on Physical or Human Geography			This is a full paper designed for preparing students to learn about doing research and preparing research reports through field survey and project preparation. This course will provide sufficient skill to students for all the possible research tools.	Q1. Prepare a project report using both primary and secondary data on any topic related physical or human geography. Q2. Prepare a model survey schedule for the same and attached in the project as annexure.	ALL	Project

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 = Dipankar Majumder; PG = Paban Ghosh; SG = Sanjay Ghosh

Principal
GOUR MAHAVIDYALAYA
Mangalbari, Malda