GEOGRAPHY

PART – A : RESEARCH METHODOLOGY

1. **Research Aptitude *: Research***: Concept, Meaning, Objectives and characteristics, Types of Research. ***Methods of Explanation in Geography***: Systems and Models, Research ethics, Research paper, article and significance of workshop, seminar, conference and symposium. ***Report writing***: its characteristics and format.
2. **Data Interpretation*:*** Types of Data - Secondary Data: Census, NSS, CSO, Aerial Photographs and satellite Imageries, Web Portal, Primary Data, Qualitative and Quantitative, Techniques of Data Collection, Sources, Acquisition and Interpretation of Data, Tabulation and Compilation of Data, Sampling Methods, Graphical representation of Mapping of Data.
3. **Information and Communication Technology:** ***ICT***: Meaning, Advantages and Disadvantages and Uses, General Abbreviations and Terminology, Basics of Internet and Emailing.
4. **Reasoning (Including mathematical):** Number Series, Letter Series, Codes, Relationships, and Classification.
5. **Higher Education System: Governance, Polity and Administration :** Structure of the Institution for Higher Education and Research in India, Formal and Distance Education, Professional/Technical and General Education. Value Education, Governance, Policy and Administration Concepts; Institutions and their Interaction.
6. **People and Environment :** Concept of environment and ecosystem, components of ecosystem, forms and functions of major Ecosystem-forest, mountain, grassland and marine ecosystem, Biosphere as a Global Ecosystem, Major Biomes of the world, Limits to growth. People and Environment Interaction, Types and causes of environmental degradation, Reduction of bio-diversity; Sources of pollution, Pollutants and their impact on human life, Natural hazards and mitigation, The Stockholm Conference, The Earth Summit, Environmental policies and legislations in India (The Wildlife Act, Water Act and Environmental Protection Act), Environmental conservation and management, Millennium Development Goals, Sustainable Development Goals.

PART – B : GEOGRAPHY

1. **Geomorphology :** Fundamental Concepts of Geomorphology, Geological Time Scale, Geomorphic Processes, Earth Movements-Epeirogenesis and Orogenesis; Concept of Plate Tectonics: Mountain Building; Vulcanicity and Earthquakes, Models of Landscape Development by W.M. Davis, W. Penk, L.C. King, and M. Morisawa. Morphometric Analysis of Relief - Hypsometric Curve, Altimetric Frequency Curve, Histogram and Clinographic Curve; Strahler's Method of Drainage Ordering; ***Denudation*:** Weather and Erosion, Mass Movement and Resultant Landforms. Geomorphic Cycle and Landforms by Fluvial, Arid, Glacial, Periglacial, Underground & Marine Processes. Polycyclic Landforms; Erosional Surfaces. ***Applied Geomorphology*** : Geomorphology and Agriculture. Minerals, Energy. ***Civil Projects*** : Dam and Road Construction.
2. **Climatology :** Definition and Scope of Climatology, Composition and Structure of the Atmosphere: Insolation. Heat Budget of the Earth, Distribution of Temperature and Atmospheric pressure; General Circulation of Winds; Origin of Monsoon-Recent concepts; Jet streams and Air Masses; Stability and Instability of the Atmosphere; Fronts and Associated Weather: Tropical and Temperate Cyclones: Types of Clouds; Types and Distribution of Precipitation; Regionalization of World's Climate: Schemes of Koppen's, Trewartha and Thornwaites, Urban Climatology: Heat Island. Applied Climatology - Climate and Landforms; Climate and Natural Vegetation. Climate and Agriculture, Climate and House Types, Weather Forecasting.

3. **Oceanography :** Major Relief Features of Ocean Basins, Distribution of Temperature, Salinity and Density; Circulation Patterns in oceans- Waves, Currents and Tides; Marine Deposits and its Distribution; ***Ocean Resources*** - Biotic Resources, Food Resources, Minerals & Energy. Coral Reefs and Atolls. ***Anthropogenic Pollution*** - Sea Level Change and Coastal Erosion, Law of the Sea; ExclusIve Economic Zone, Geopolitics of Indian Ocean Region.

4. **Geographical Thought :** Geographic ideas and knowledge during the ancient and medieval period, Foundation of Modern Geography: Contribution of German, French, British and American Schools, Conceptual and Methodological Development During the 2oth century, Changing Paradigm of Man Environment Relationship: Determinism, Possibilism, Neodeterminism and Probabilism, Concept of Areal Differentiation and Spatial Organization; Quantitative Revolution, Positivism, Phenomenology, Humanism, Radicalism and Behaviouralism in Geography; Post-modernism in Geography, Feminist and Gender Geography, Progress of geographical Research in India.

5. **Advance Geography of India :** Geological Evolution & Relief Features - Plains, Plateau & Mountains. Origin of Hirnalaya; Origin of River Systems, Delimitation and Characteristic of Physiographic; Climatic & Agro-Climatic Regions; Population Growth and Distribution, Population Resource Regions; Population Problems; Agricultural Development, Role of Irrigation and Fertilizer; Green Revolution; Agricultural Regions & New Trends of Agriculture in India; Mineral & power resources; Industrial Policies & Trends of Industrialization; Major Industries and Industrial Regions. Regional Development Policies in Five Year Planes; Impact of Globalization and Multinationals on Indian Economy; Regional Pattern of Development and Disparities; Problem and Prospects of Resource base and Economic Development Pattern in Hill Region, Desert, Drought Prone Area, Flood Prone Area, Tribal Region.

6. **Environmental Studies :** Concept of environment and ecosystem, components of ecosystem, forms and functions of major Ecosystem-forest, mountain, grassland 'and marine ecosystem, Bio-sphere as a Global Ecosystem, Major Biomes of the world, Limits to growth, Types and causes of environmental degradation, Reduction of bio-diversity; Sources of pollution, Pollutants and their impact on human life, Natural hazards and mitigation, The Stockholm Conference, The Earth Summit, Environmental policies and legislations in India (The Wildlife Act, Water Act and Environmental Protection Act), Environmental conservation and management, Millennium Development Goals, Sustainable Development Goals.

7. **Economic Geography :** Nature and Scope of Economic Geography. Approaches to Study of Economic Geography, Fundamental Concepts, Natural resources-classifications, approaches to resource conservation and management, classification of economies, Evolution of World Economic Systems, Concept and Models of Development. Von Thunen Theory of Agricultural Location. Christaller's Central Place Theory, Importance of Different Productive Elements in Localization of Industries Economic Agricultural Regions of the World. Major Industrial Regions of the World. Factor influencing the International Trade. Modern Theory of International Trade. World Trade pattern.

8. **Agricultural Geography :** Major Agricultural Systems of the World, Agricultural Efficiency and Productivity Measurement; Crop-Combination Regions: Concept and Techniques, Agricultural Intensity and Diversification Measurement of Level of Agricultural Development: Impact of Modern Agriculture on Environment; Sustainable Agriculture. Food Security in India. Agricultural Revolutions & Recent Policies.

9. **Industrial Geography :** Classification of industries; Resource based and footloose industries; Factors of Location of Industries; Theories of Industrial Location - Weber, Hoover, Losch; Industrial Complexes Centralization and Decentralization of Industries, Linkages of Industries; major Industrial Regions of World.

10. **Cultural Geography :** Nature and Scope of Cultural Geography; Environment and Culture; Evolution of Man, Human Races; Concept of Cultural Hearths; Major Cultural Realms and Regions of the World, Culture Landscape and Cultural Ecology; Habitat and Economy and society of Tribal groups.
11. **Political Geography :** Nature & Scope, Evolution & Development of Political Geography, Contribution of German, British & American Scholars; Global Strategic View-Heartland and Rimland Theories; Concept of Nation, State, and Nation-State; Boundaries and Frontiers, Federalism; Elements of Electoral Geography, Contemporary Geo Political Issues.
12. **Settlement Geography :** Site and Situation, Types and Internal Morphology of Rural and Urban Settlements; Ecological Process of Urban Growth; Urban Fringe, City Regions, Urban Growth Models: Concentric Zone Sectoral, and Multi-nuclei Model, Megalopolis & Conurbation; Primate City, Rank Size Rule, Settlement Hierarchy; August Losch's Theory of Market Centres.
13. **Remote Sensing & GIS :** Definition; Nature of Electro-magnetic spectrum; Stages of Remote Sensing, Platforms and Sensors, Types of Remote Sensing; Concept of Atmospheric Windows, Signature; Types of Resolution, Component of GIS, Functional Elements of GIS; GIS Hardware & Software; Data Structure - Raster & Vector; Concept of GPS.
14. **Population Geography :** Sources of Population Data - Their Reliability and Comparability; Factors Influencing Distribution and Density of Population; World Pattern of Population; Population Agglomeradone. ***Growth of Population*** - Theories and World Pattern; Population Explosion; ***Measurements of Birth and Death Rates***: Demographic Transition Theory: Occupational Structure. Literacy, Urbanization with Reference to India; ***Migration*** – Types, Laws, Causes and Consequences; Concept of Optimum, Over and Under Population; Population Resource Region of the World; India's Population Policy.
15. **Transport Geography :** Characteristics and Relative Significance of Different Means of Transport: Structure of Transport Network; Concept of Accessibility and Locational Utility, Concept of Gravity Potential Model and Spatial Interaction, Theories Related to Freight Determination, Transport System in India: Rail, Road, Waterway, Air Transport; Major Transport Routes of the World: Transport and Regional Development, Transport Planning.
16. **Regional Planning :** Theories of Regional Development - Economic Base Theory, The Concept of Growth Centres, Concepts of Rural Economy and Core-Periphery Relationship: Delimitation of Planning Regions: Planning Regions of India; Role of Innovation Diffusion: Significance and Role of Infrastructural Elements viz. Irrigation, Power, Transport Communication and Marketing in Regional Planning; Metropolitan Regions and Approaches to their Planning in India, Rural Development: Government Policies.
17. **Cartography :** Types of maps, Techniques for the study of spatial patterns of distribution. Choropleth, isopleth, and chorochromatric maps and Climatic Cartogram, mapping of location-specific data, accessibility and flow maps, Principles and Characteristics of Projections, Choice of Projections. Remote sensing and computer application in mapping, digital mapping, geographical Information System.
18. **Statistical Methods :** Frequency Distribution and Measures of Central Tendency, Selection of Class Intervals for Mapping, Measures of Dispersion and Concentration, Standard Deviation, Lorenz Curve, Methods of Measuring Association among Different Attributes, Correlation and Regression, t-Test, Testing of Significance, Nearest Neighbour Analysis, Scaling Techniques, Rank Score, Weighted Score, Sampling Techniques for Geographical Analysis.