

SUBJECT : GEOGRAPHY

SYLLABUS

Unit I

PHYSICAL GEOGRAPHY

Geomorphology:

The origin of Earth: Gaseous Hypothesis of Kant, Nebular Hypothesis of Laplace, The Nova Hypothesis of Hoyle and Lytleton – **The Age of Earth:** Sedimentation method, Radioactivity method. **The Earth's Interior:** Layers of the earth interior: The Crust, Mantle, Core, Thickness and depth of different layers of the Earth, Distribution of continents and Oceans – Plate tectonics and continental drift – **Rocks:** Definition and classification: Igneous Rocks, Sedimentary rocks, Metomorphic rocks – **Mountain Building Process:** Volcanoes, Earthquakes, Mountains, Plateaus and Plains, Geomorphic processes – Denudational Agencies, **Cycle of erosion:** Davis and Penck, Theories and process of slope development.

Climatology:

Composition and Structure of Atmosphere, Solar Radiation, Heat Budget of the Earth and Atmosphere. **Distribution of Temperature:** Vertical, Horizontal distribution of temperature, Temperature Inversion – **Atmospheric Pressure:** factors affecting Atmospheric Pressure – Distribution of Atmospheric Pressure, **Wind:** Types of winds – Monsoon winds, Area of monsoon winds, the Indian monsoon, Jet stream, kinds of Humidity – **Clouds:** formation of clouds, classification of clouds, **Precipitation:** types of rainfall, **Air masses:** classification of air masses, Fronts – frontal zones, major fronts, **Cyclones:** Cyclones and Anticyclones, classification of thunderstorms – **Climatic classification:** Koppen and Thornthwaite – **Climate change:** Cause and effects of climate change – Global warming, Effect of El-Nino, La Nina.

Oceanography:

Distribution of Water and Land, **Relief of the Ocean:** Continental shelf, Continental slope, Continental rise, Mid Oceanic Ridges, Abyssal plain Island, Guyots and seamounts, Ocean deeps and Oceanic trenches – **Bottom Relief of the Ocean floors:** Pacific, Atlantic, Indian Ocean, Ocean temperature, Ocean salinity and density of Ocean water – Ocean deposits – Sea waves – **Ocean currents:** Major Ocean currents – Tides – Sea level changes – Tsunami – Coral reefs.

Unit II

HUMAN GEOGRAPHY

Population Geography:

Sources of population data in India – **Population:** Distribution, Density and Growth, world population distribution, factors affecting population distribution, density patterns – measures and determinants of fertility, mortality – World's population growth and its trend – **Theories of population growth:** Malthus, Sadler and Ricardo – **Migration:** types of migration, causes of migration,

consequences of migration, **Population composition and characteristics:** Age, Sex, Rural-urban, Occupational structure and educational levels and literacy – **Population of Tamilnadu:** Population, Distribution, Density and Growth, Optimum population – Over population, Under population – Potential population, Population policies.

Settlement Geography:

Geography of settlements: Nature and Scope of Settlement Geography – **Rural Settlements:** Types, Pattern and distribution of rural settlements – Problems of Rural Settlements: Rural-Urban Migration, land use changes, Land acquisition and Transactions; Urban Settlements: Theories of origin of Towns (Gordon Childe, Henri Pirenne, Lewis Mumford) – Characteristics and process of urbanisation in Developed and developing countries – **Urban settlements:** concept and characteristics – Functional classification of urban centres – functions and characteristics of CBD – Urban morphology – **Urban Classical models:** Burger, Homer Hoyth and Harris Ullmann – Rural-Urban fringe – hierarchy of urban centres – Rank size rule – Central Place Theory – Urban problems – Slums – Urban planning – Urbanisation in India and its associated problems.

Agricultural Geography:

Nature, Scope and significance of Agricultural geography – Approaches to study of Agriculture geography – Land Capability, Classification and land use planning – Determinants of Agriculture – Von Thunen's Theory of agriculture location – Agricultural productivity – crop combination (weaver's, Doi's, Raffiullah's), Crop diversification, **Types of Crops:** Food crops, Horticultural crops – Plantation crops, Fibre crops – Agricultural Systems of the world – Agricultural regions of India – Agricultural regions of Tamilnadu, Role of Remote sensing in Agricultural Studies.

Urban Geography:

Nature and scope of urban Geography – trends of urbanisation – size, structure and functions of urban areas – urban systems: law of primate city and rank size rule – Center Place theories: Christaller and bosch – Internal structure of the city – **Models of urban land use:** Burgess, Harris, Ullman and Homer Hoyt – **Concept of cities:** Mega cities, Global cities, edge cities – **Changing urban form:** peri-urban areas, rural – urban fringe – Sub-urban, ring and satellite towns – social segregations in the city – urban social area analysis – **Urban issues:** slums, in formal sectoral growth, crime and social exclusion.

Transport Geography:

Nature, scope and significance of transport Geography – Different types of transportation – Merits and demerits of transport – Terminal charges and operating charges – Tapering cost structure – Variation in freight structure on distance – Commodity – Size and elasticity of demand – Long haul advantages – Nodes and links – Connectivity – Accessibility – Centrality – Structural analysis

of transportation network – Graph theoretic measures – Measures of nodal accessibility – Matrix measures – Detour index – Theories of spatial interaction – Gravity model – Transportation and spatial structure – Role of transport in socio-economic integration – Urban and regional transport planning – Problems of transport.

Cultural Geography:

Concept of cultural – Evolution of Human beings – Major Races of the World – Culture interaction and diffusion – Culture exchange – **Measurement of Human Development:** Social, Economic and Environmental Indicators – Human Development Index.

Social Geography:

Nature and scope of social geography – Environmental and landscape ecology – Social structure (family, marriage and kinship) and processes – Rural and urban society – spatial distribution of ethnicity – Tribe – Dialect – Language – caste and religion in the world with special reference to India – welfare and social well being – Quality of life – Health – Education, Economic Status – Gender – well being of women – Spatial distribution of social groups in India – Health care planning and policies in India.

Economic Geography:

The significance of Economic Geography – Factors affecting spatial organisation of economic activities – **Natural resources:** Classification of Resources – Renewable and non – renewable resources – Distribution and associated problems conservation of resources – **Industries:** Agro based Industries – Mineral based Industries – Engineering – Industries – Chemical industries – Industrial regions of the world – Trade blocs – Major importing and exporting countries – World Energy crisis in developed and developing countries.

Political Geography:

Trends and development in political Geography – Geography of federation – Boundaries and frontiers of India – Electoral reforms in India – **Geopolitics:** climate change, world resources and Indian Ocean – **Regional organisations of co-operations:** SAARC, ASEAN, OPEC and EU – Neopolitics of world natural resources – India's Foreign Policies.

Unit III

GEOGRAPHICAL THOUGHT

Contributions of Greek, Romans, Arabs, German, French, British, America and Indian scholar in geography – **Contemporary trends in Indian geography:** Cartography, Thematic and Methodological contributions – **Major Geographic Traditions:** Earth science, Man and Environment relationship, Area studies and spatial analysis – Dualism in Geographical studies: physical vs human, region vs systematic, qualitative vs quantitative – Paradigm shift

in Geography – **Perspectives in Geography:** Positivism, Behaviouralism, Humanism, Feminism and Post modernism.

Unit IV

REGIONAL DEVELOPMENT AND PLANNING

Definition of region – Evolution – Types of region – Formal and functional region – Planning region – Need and types of regional planning – Characteristics and ideal planning region – Delimitation of planning region – Regionalisation of India for planning – Theories and models of regional planning – Growth pole model of perroux, growth centre model in Indian context myrdal, rostow and Friedman – Village cluster – Changing concept of development – Concept of under development – Efficiency – Explicitness – Indicators – Economic, social and environment – Global pattern of development – Inter-regional variation of human development – International – Interstate comparison of India – Geospatial technology of regional planning.

Unit V

GEOGRAPHY OF RESOURCE

Natural Resource: Concept, Classification and Techniques – Distribution, Utilisation of resources – Problems and Management of Land Resources and Water Resources – Distribution, Utilisation, Problems and Management of Forests and Energy Resources – Appraisal and Conservation of Natural Resources – Sustainable Resource Development – Concepts and definitions of Disaster and Natural Hazard – **Disaster:** Disaster Management Cycle – Basic Concepts of Disaster Risk Reduction (DRR) – **Hazards:** Hazard types and hazard mapping – **Vulnerability:** types and their assessment – physical, social, economic and environmental vulnerability – Disaster Risk Assessment – approaches and procedures for disaster management.

Unit VI

GEOGRAPHY OF ENVIRONMENT

Nature and scope of Environmental Geography – Concept of an Ecosystem – Structure and function of an Ecosystem – **Ecosystem:** Types of ecosystem – Forest, Grassland, Desert, Aquatic Ecosystem – Ecological succession – Energy flow in an ecosystem – **Biogeochemical Cycle:** Carbon, Nitrogen, Oxygen, Phosphorus and sulphur cycle – Food Chain, Food web, Ecological pyramid – **Biomes:** Major Biomes of the world: Tundra Biome, Temperate forest biome, Coniferous forest biome, Temperate Grassland biome, mediterranean biome, Savanna biome, Tropical Evergreen Rainforest biome, Monsoon Deciduous forest biome, Desert biome – **Biodiversity:** Hotspots of biodiversity – **Threats to biodiversity:** Habitat loss, poaching of wildlife, Man-wildlife conflicts – Endangered species of India – **Conservation of biodiversity:** In situ and Ex situ Conservation of biodiversity – hydrological cycle – International programmes and policies – Environment policy of India.

Unit VII GEOGRAPHY OF INDIA

Major physiographic Regions and their Characteristics – Drainage system – Indian Monsoon – Soil – Vegetation – Water – Mineral and Marine Resources – Regional variation in Agricultural Development – Population characteristics – Growth and Composition – development population – population policies in India – Development and Pattern of Transport – Internal and External Trade – Regional Development planning in India – Trade policy – Export Processing zones – India Space programme – Natural Disasters in India.

Unit VIII GEOGRAPHY OF TAMILNADU

Tamil Nadu: Location – Administrative units of Tamil Nadu – **Physiography:** Mountains, Plateaus, Plains – **Climate:** Seasons (South West, North East Monsoon, summer and winter) – **Rainfall:** Cyclonic Rainfall – Distribution of Rainfall – Rivers of Tamil Nadu – **Soils:** Types of Soil – **Natural Vegetation:** Forest and its types – Flora and Fauna – Wild life sanctuaries – Bird sanctuaries – Botanical gardens. **Distribution of Crops:** Food Crops: Paddy, Millets, Pulses, Oilseeds – **Cash Crops:** (Sugarcane, Cotton) – Plantation Crops (Tea, Coffee, Rubber and Spices) – Livestock (cattle, sheep and dairying) – Fisheries (inland and deep sea fishing). **Distribution of Minerals and Industries:** Metallic, Non-Metallic (Iron, Manganese, Bauxite, Copper, Mica, Illuminate and power resources) – Agro Based Industries – (Textile, Sugar, Paper) – Cement – Automobile – **Population:** Distribution – Growth, Density and Population Problems – **Transportation:** Roadways, Railways, Airways, Waterways Trade: (Import and Export) – Special Economic Zones.

Unit IX CARTOGRAPHY

Nature and scope of cartography – Maps: History and definition of maps – classification of maps – Scope and types of scale – **Map projection:** Meaning, definition, shape, distance, area and direction properties – classification of projections – Selection of projection – **Map compilation and design:** Base map concepts, scanning and digitization – Topographic and thematic maps – elements of maps and layouting principles – **Map design:** fundamental symbol, conventional signs, color theory, colors or patterns, Map lettering – **Map making:** Definition of Choropleth, Isopleth maps – class interval selection and shading – flow maps – cadastral maps – Demographic and statistical mapping – Map reproduction – Map printing – Printing standard in various medium.

Unit X**TECHNIQUES IN GEOGRAPHY**

Definition of Remote Sensing – Advantages and limitations in remote sensing – Remote Sensing System – Platforms and sensors – Resolutions in remote sensing – **Satellite data products:** Analog and digital products – Visual Image Interpretation – **Digital Image Processing:** Pre-processing, post-processing, **Digital Image Interpretation:** Supervised and unsupervised classification – Change detection analysis – Basic concepts of Geographic Information System (GIS) – Components of GIS – **Data Models in GIS:** Relational and entity relational model – **Data structure:** Raster and Vector – Data requirement – Methods of data capturing – Meta data – Raster and Vector Query – Geographic visualization – Data analysis – Geo statistical analysis.