

GEOGRAPHY

GEOMORPHOLOGY

Earth's Interior, Continental Drift, Endogenetic and Exogenetic Forces (seismicity, folding, faulting and vulcanicity), Plate Tectonics, Mountain Building, Isostasy, Denudation (Weathering and Erosion), Factors controlling Landform Development, Landforms: River, Glacial, Aeolian, Karst, Coastal, Geomorphic Cycle: Davis and Penck

CLIMATOLOGY

Composition and Structure of Atmosphere; Insolation, Temperature, Pressure and Winds, Atmospheric Circulation (air-masses, fronts and upper air circulation, cyclones and anticyclones (tropical and temperate), Climatic Classification of Koppen and Thornthwaite, ENSO Events (El Nino, La Nina and Southern Oscillations), Anthropogenic Impacts on Global Climatic Change

OCEANOGRAPHY

Bottom Relief of Oceans (Pacific, Atlantic and Indian), Temperature and Salinity, Ocean Deposits, Waves, Currents and Tides, Coral Reefs, Coral Bleaching

BIOGEOGRAPHY

Geomorphic bases of Soil Formation, Soil Profile (USDA), Classification and Distribution of Soils, Soil Erosion; Factors affecting distribution of plants and animals, Types of Biomes, Deforestation, Biodiversity Loss, Wildlife Diversity and Biosphere Reserves

ENVIRONMENTAL GEOGRAPHY

Components of Ecosystem, Functions: Trophic Levels, Energy Flows, Biogeochemical Cycles (Carbon, Nitrogen, Oxygen), Food Chain and Food Web, Human Interaction and Impacts, International Programmes and Policies: Brundtland Commission, Kyoto Protocol, Agenda 21, Sustainable Development Goals, Paris Agreement); Environmental Programmes and Policies in India: Legal Framework, Environmental Policy; Environmental Education and Ethics

CONCEPTUAL DEVELOPMENT IN GEOGRAPHY

Developments in Pre-Modern Period (Greek, Roman and Arab); Development in Modern Period (German, French, American, British, Indian); Darwinian Impact of Geographical Thought; Dichotomy and Dualism (Physical vs Human, Systematic vs Regional, Idiographic vs Nomothetic, qualitative vs quantitative); Recent Trends: Quantitative Revolution, Behaviouralism, Humanism, Feminism, Radicalism, Post-Modernism; Concept of Paradigm: Environmentalism, Areal Differentiation, Spatial Analysis.

HUMAN GEOGRAPHY

Economic Geography: Factors affecting spatial organization of economic activities (primary, secondary, tertiary and quaternary); Agriculture and Land Use, Land Capability Classification, Cropping Pattern Methods, Crop Combination Regions, Crop Diversification, Von Thunen's Model, World Agricultural System. Classification of Industries, Factors of Industrial Location, Industrial Location Theory (Weber, Hoover, Losch), World Industrial Regions. Theories and Models of Spatial Interaction (Ullman and Hurst), Gravity Model, World Trade Organisation, World Trade Patterns, Problems and Prospects of Inter and Intra- Regional Cooperation and Trade, Tourism Industry, Ecotourism. **Social and Cultural Geography:** Social Structure and Processes, Social Well-Being, Quality of Life; Concept of Culture, Cultural Realms, Race, Religion, Tribes and Language. **Population and Settlement Geography:** Factors affecting Distribution of Population, Growth and Distribution in the World, Population Theories, Population Dynamics (Fertility and Mortality), Population Pyramids, Population-Resource Regions; Migration: Causes and Consequences, Overpopulation and Under-population, Population Policies in Developed and Developing Countries. Rural Settlements (Types and Patterns), Rural Landuse; Urban Settlements: Hierarchy of Urban Settlements, Urban Morphology, Urban Systems (Primate City Concept and Rank Size Rule), Christaller's Central Place Theory, Models of Urban Land Use (Burgess, Hoyt, Harris and Ullman), Functional Classification of Towns; Slums, Rural-Urban Fringe; Mega Cities and Sustainable urbanization, Futuristic Cities (Smart City, Network City, Global City, Inclusive City)

DISASTER MANAGEMENT

Hazards and Disaster: Definition and Concepts; Risk and Vulnerability; Classification of Disasters; Natural Disasters: Flood, Drought, Heat and Cold Waves, Earthquake, Landslides, Tsunami, Cyclone (Causes, Impact and Management); Human-induced Disasters: Types, Causes, Consequences and Management; Disaster Management, Mitigation and Preparedness; Community-Based Disaster Management; Institutional Framework in India (NDMA, NIDM); Do's and Don'ts During and Post-Disasters

OUR FUTURE: RESOURCES AND SUSTAINABLE DEVELOPMENT

Natural Resources (Land, Surface and Ground water, Energy, Minerals, Biotic and Marine Resources, Forest and Wildlife Resources): Distribution and Associated Problems; Natural Resources Conservation and Management; **Sustainable Development**: Concept, Historical Background, Components and Indicators, Sustainable Development Goals, Inclusive Development, Human Development Index, Sustainable Development Policies and Programmes

PRACTICAL GEOGRAPHY AND GI SCIENCE

Cartography: Concepts, Map and its Type, Scale, Projections, Toposheet Interpretation, Morphometric Analysis, Profiles and Slope Analysis, Techniques of Map-Making; **Statistics**: Source of Data, Data Representation Techniques, Central Tendency, Dispersion, Spatial Statistics, Correlation, Regression, Principal Component Analysis, Sampling Procedure and Hypothesis Testing, Time Series Analysis; **Remote Sensing**: Concept, History, Platforms and Types, Resolution, Satellites Data (Landsat and IRS Series), Application; **Aerial Photographs**: Types, Image Interpretation Keys, Application; **Global Positioning System**: Segments, Application, GLONASS, IRNSS; **Digital Image Processing**: Image Preprocessing, Image Enhancement, Image Classification; **Geographical Information System**: Concept, Development, Components, Data Types and Data Structure, Application.

GEOGRAPHY OF INDIA

Physical: Major Physiographic Regions, Drainage System, Climate (Indian Monsoon and Jet Streams); **Natural Resources**: Types and Distribution of Land, Soil, Vegetation, Water, Mineral and Marine; **Population**: Patterns, Distribution, Growth and Composition, Determinants of Population, Population Policies in India; **Agriculture**: Production, Productivity and Yield of Major Food Crops, Cropping Regions, Environmental, Technological and Institutional Factors affecting Indian Agriculture; Agro-Climatic Zones, Green Revolution, Food Security and Agricultural Development; **Industries**: Development since Independence, Industrial Regions, Industrial Policies in India; Development and Patterns of Transport Networks; **Internal and External Trade**: Trends, Composition and Directions; Regional Development and Planning in India; **Natural Disasters**: Flood, Drought, Heat and Cold Waves, Earthquake, Landslides, Tsunami, Cyclone.

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