INDIAN GEOGRAPHY

India as a Geographical Unit	Location (latitudinal & longitudinal significance), Indian subcontinent, size & strategic importance, Indian Standard Time, international borders (China, Pakistan, others), physical divisions of India
Geological Structure of India	Rock systems (Archaean, Dharwar, Gondwana, Deccan Traps, Tertiary), geological evolution, mineral distribution relevance
Himalayan Ranges (Structure & Formation)	Origin of Himalayas, classification (Trans, Greater, Lesser, Shiwalik), regional divisions (Western, Central, Eastern), Purvanchal hills, comparative features
Himalayan Features & Significance	Valleys (Kashmir, Kullu, Kangra), glaciers, passes, snowline, role in climate, rivers, biodiversity, economy & security
Indo-Gangetic-Brahmaputra Plains	Formation, physiographic divisions (Bhabar, Terai, alluvial plains, delta), regional divisions (Punjab, Ganga, Brahmaputra), significance for agriculture & population
Peninsular Plateau	Divisions (Central Highlands, Deccan Plateau, Chotanagpur), hill ranges (Aravalli, Vindhya, Satpura, Western & Eastern Ghats), resources & significance
Coastal Plains & Islands	Western vs Eastern coastal plains, coastline types (emergence/submergence), Andaman & Nicobar, Lakshadweep, strategic importance

Drainage Systems of India	Classification of rivers, Himalayan vs Peninsular rivers, major river systems (Indus, Ganga, Brahmaputra), east vs west flowing rivers, river projects, water disputes, river interlinking
Indian Monsoon	Mechanism (classical & modern theories), jet streams, ITCZ, factors affecting onset & intensity, SW & NE monsoon, variability, impact on agriculture
Indian Climate	Climatic controls (latitude, relief, monsoon, jet streams), seasons (winter, summer, monsoon, retreating), climatic regions (Koppen & Stamp classification), cyclones & ENSO
Natural Vegetation	Types of forests (tropical, temperate, alpine), distribution, factors affecting vegetation, biodiversity importance
India State of Forest Report (ISFR)	Forest Survey of India (FSI), forest cover vs tree cover, forest resources data, carbon stock, criticisms of ISFR methodology
Indian Soils	Soil profile (horizons), factors of soil formation, major soil types (alluvial, black, red, laterite, desert, forest, saline, peaty), distribution & agricultural relevance

GEOMORPHOLOGY

Interior of the Earth	Sources of information (direct & indirect), seismic waves (types, behaviour), structure of Earth (crust, mantle, core), lithosphere & asthenosphere, seismic discontinuities
Earth's Magnetic Field	Dynamo theory, geomagnetic poles & reversals, magnetic declination & inclination, magnetosphere, auroras, Van Allen belts
Geomorphic Processes	Endogenic processes (diastrophism, sudden movements), exogenic processes (weathering, denudation), forces behind landform development
Plate Tectonics & Theories	Continental Drift (Wegener), Seafloor Spreading, Plate Tectonics (plates, movement, evidence), Indian plate movement, comparison of theories
Plate Boundaries (Convergent)	Ocean-ocean convergence (island arcs), continent-ocean convergence (Andes, Rockies), continent-continent convergence (Himalayas), associated volcanism & earthquakes
Plate Boundaries (Divergent)	Rift valley formation, mid-ocean ridges, rift lakes, evolution of oceans, Great Rift Valley
Mountains (Classification & Distribution)	Fold, block, volcanic mountains; mountain-building processes; global distribution (Andes, Rockies, Alps, Himalayas, Atlas, Urals); characteristics
Volcanism	Causes of volcanism, types of lava, volcanic landforms (intrusive/extrusive), eruption types (Hawaiian, Strombolian, Vulcanian, Plinian, Pelean), hotspot volcanism, geysers & hot springs, distribution of volcanoes, effects (positive & negative)

Rocks (Petrology Basics)	Igneous, sedimentary, metamorphic rocks; rock cycle basics
Earthquakes	Causes, types (focus depth), distribution, measurement (Richter scale), effects
Tsunami	Mechanism, properties, case study (2004 Indian Ocean tsunami), warning systems
Soil Erosion & Geomorphic Cycles	Water erosion (sheet, rill, gully), wind erosion, coastal & glacial erosion, landslides
Fluvial Landforms	Erosional & depositional features, drainage patterns, cycle of erosion
Karst Topography	Sinkholes, caves, stalactites/stalagmites, karst cycle
Marine Landforms	Coastal erosion & deposition, coastal landforms, shoreline evolution
Glacial Landforms	Erosional & depositional features, glacial cycle of erosion
Arid Landforms	Desert erosion & deposition, landforms (dunes, pediments), arid cycle
Lakes	Classification (tectonic, glacial, volcanic, etc.), human interaction, major lakes of world
Plateaus	Formation (tectonic, volcanic, erosion), types (dissected, volcanic), economic significance, major plateaus

CLIMATOLOGY

Latitudes & Longitudes (Basics of Earth Geometry)	Parallels & meridians, important latitudes, heat zones, longitude & time, time zones, International Date Line, comparison (latitude vs longitude)
Motions of the Earth	Rotation & its effects, revolution, solstices & equinoxes, perihelion & aphelion, eclipses
Atmosphere	Evolution of atmosphere, composition (gases), vertical structure (troposphere to exosphere), importance of atmosphere
Temperature Distribution	Heat transfer (radiation, conduction, convection), factors affecting temperature, isotherms, heat budget, latitudinal heat balance, lapse rate, temperature inversion
Pressure Systems & Wind Systems	Atmospheric pressure, pressure belts (equatorial, subtropical, polar), Coriolis force, pressure gradient, general circulation (Hadley, Ferrel, Polar cells), classification of winds (planetary, periodic, local winds)
Hydrological Cycle	Evaporation, condensation, humidity, clouds, precipitation processes, types of rainfall (convectional, orographic, frontal, cyclonic, monsoonal), global rainfall distribution
Thunderstorms & Associated Phenomena	Stages of thunderstorm development, types (single-cell, supercell, etc.), tornado formation, lightning, hailstorms, hazards

Tropical Cyclones	Conditions for formation (heat, Coriolis, wind shear), structure & lifecycle, cyclogenesis, distribution & paths, IMD classification, impacts (storm surge, floods), naming & warning systems
Jet Streams	Formation, types (STJ, PFJ, tropical easterly jet, Somali jet), role in weather & aviation
Temperate Cyclones	Air masses (types, source regions), fronts (warm, cold, occluded), polar front theory, lifecycle, characteristics & distribution
Comparison of Cyclones	Tropical vs temperate cyclones (structure, energy source, impact)
Polar Vortex	Mechanism, cold waves, role in ozone depletion
ENSO (El Niño–La Niña System)	Normal vs El Niño conditions, Walker circulation, La Niña, Indian Ocean Dipole, impact on Indian monsoon
Climatic Classification (Koppen)	Tropical (Af, Am, Aw), dry climates (BW, BS), temperate climates (Mediterranean, China type, British type), cold climates (Taiga, Laurentian), polar climates (Tundra)

OCEANOGRAPHY

Ocean Relief	Major Ocean Relief Features: Continental Shelf, Continental Slope, Continental Rise, Abyssal Plain, Continental Shelf: formation, types (glaciated, coral reef, river-based, dendritic, mountain shelves), width &

	depth, importance, Continental Slope: gradient, depth, boundary significance, canyons & trenches, Continental Rise: characteristics, transition to abyssal plain, Abyssal Plain: features, depth, sedimentation
Minor Ocean Relief Features	Oceanic Deeps/Trenches: origin, distribution, characteristics (e.g., Mariana Trench), Mid-Oceanic Ridges: formation, structure, extent, Abyssal Hills: seamounts, guyots, Submarine Canyons: types, formation, examples (Hudson Canyon, Indus Canyon), Island arcs, Atolls, Bank, Shoal, Reef: definitions, formation, significance
Major Oceans and Seas	Oceans of the world by size, ranking, area, depth
Pacific Ocean	General characteristics (size, depth, shape, islands), Subdivisions: North & Central Pacific, West & South-West Pacific, South-East Pacific, Trenches (Aleutian, Kuril, Mariana, Tonga, Atacama), Seamounts, Guyots
Atlantic Ocean	General characteristics (size, shape, trade importance), Continental Shelf: distribution, productivity (Grand Banks), Marginal Seas (Hudson Bay, Baltic Sea, North Sea, Gulf of Mexico), Mid-Atlantic Ridge: extent, significance, Seamounts, islands (Azores, Canary Islands, Bermuda), Trenches (Puerto Rico, South Sandwich, Romanche)
Indian Ocean	General characteristics (size, depth), Submarine ridges (Lakshadweep-Chagos, Carlsberg, Seychelles, Socotra-Chagos), Ocean basins (Central Basin, Arabian Basin, Mascarene Basin, South Indian Basin), Islands (continental, coral, volcanic), Continental Shelf (width,

	depth), Trenches (Sunda, Diamantina), Important straits (Hormuz, Malacca, Bab-el-Mandeb, Lombok, Palk)
Marginal Seas	Definition, characteristics, major marginal seas (Arabian Sea, Baltic Sea, Mediterranean Sea, Bering Sea, Red Sea, Black Sea), Human impact, Biomass production, Primary productivity, Water circulation
Bays, Gulfs and Straits	Bays, Gulfs, Straits, Isthmus
Ocean Movements – Ocean Currents	Forces: primary (winds, density), secondary (Coriolis force, gravity), Types of currents, Ocean-wise currents (Pacific, Atlantic, Indian), Effects of currents, Role in desert formation, Phytoplankton, Fishing
Ocean Movements – Tides	Tidal bulge, causes of two bulges, Types of tides, Characteristics of tides, Importance of tides, Tidal bore, Impacts of tidal bore
Temperature Distribution of Oceans	Sources of heat, Factors affecting temperature, Vertical distribution (thermocline, three-layer system), Horizontal distribution, General behaviour, Range of temperature, Sunspots
Ocean Salinity	Factors affecting salinity, Horizontal distribution, Vertical distribution
Coral Reefs	Types (fringing, barrier, atolls), Development theories, Ideal conditions, Distribution, Coral–zooxanthellae relationship, Coral bleaching, causes, impacts, spatial and temporal variation

Resources from the Ocean	Ocean deposits (terrigenous, pelagic), Mineral resources (continental shelf, deep sea), Energy resources, Freshwater, Biotic resources, UNCLOS (territorial waters, contiguous zone, EEZ, high seas), Geopolitical issues (South China Sea disputes)

ECONOMIC GEOGRAPHY

Economic Geography – Basics	Definition, scope, human economic activities (production, distribution, exchange, consumption), spatial organisation, environment–economy relationship, importance of study
Natural Resources – Classification	Biotic and abiotic resources, renewable and non-renewable resources, metallic and non-metallic resources, conventional vs non-conventional resources
Iron Resources	Types of iron ore (magnetite, haematite, limonite, siderite), characteristics, distribution in India (Odisha, Jharkhand, Chhattisgarh, Karnataka, Goa), world distribution (China, Europe, Africa, Russia, North America, South America, Australia), production and reserves

Coal Resources	Formation of coal (Carboniferous period), stages (peat, lignite, bituminous, anthracite), classification, distribution in India (Gondwana, Tertiary coalfields), world distribution, issues (imports, demand-supply gap)
Petroleum & Mineral Oil	Formation conditions, distribution in India (onshore, offshore), world distribution, oil reserves, OPEC, oil refining, pipelines
Natural Gas	Distribution in India and world, major producers and reserves, gas value chain
Unconventional Energy Resources	Coalbed methane, shale gas, tight gas, extraction methods, distribution, issues in India
Bauxite & Aluminium Resources	Distribution in India, world distribution
Lead, Zinc & Pyrites	Distribution in India and world
Precious Metals (Gold & Silver)	Distribution, reserves, production in India and world
Alloy Minerals	Manganese, tungsten, copper, nickel, molybdenum, chromite, cobalt, distribution patterns
Strategic Minerals	Lithium, importance, supply issues, government initiatives

Non-Metallic Minerals	Graphite, diamond, limestone, dolomite, magnesite, mica, asbestos, gypsum, kyanite, sillimanite, distribution in India and world
Atomic Minerals	Uranium, thorium, reserves and distribution, nuclear energy relevance