

Geology

The Planet Earth: Origin of the Solar System and the Earth; Geosphere and the composition of the Earth; Shape and size of the earth; Earth-moon system; Formation of continents and oceans; Dating rocks and age of the Earth; Energy in the earth system; Volcanism and volcanic landforms; Interior of earth; Earthquakes; Earth's magnetism and gravity, Isostasy; Elements of Plate tectonics; Orogenic cycles.

Geomorphology: Weathering and erosion; Transportation and deposition due to wind, ice, river, sea, and resulting landforms, Structurally controlled landforms.

Structural Geology: Concept of stratum; Contour; Outcrop patterns; Maps and cross sections; Dip and strike; Classification and origin of folds, faults, joints, foliation and lineation, unconformities; shear zones.

Palaeontology: Major steps in the evolution of life forms; Fossils; their mode of preservation and utility; Morphological characters, major evolutionary trends and ages of important groups of animals - Brachiopoda, Mollusca, Trilobita, Graptolitoidea, Anthozoa, Echinodermata; Gondwana plant fossils; Elementary idea of vertebrate fossils in India.

Stratigraphy: Principles of stratigraphy; Litho-, chrono- and biostratigraphic classification; distribution and classification of the stratigraphic horizons of India from Archaean to Recent.

Mineralogy: Symmetry and forms in common crystal classes; Physical properties of minerals; Isomorphism and polymorphism, Classification of minerals; Structure of silicates; Mineralogy of common rock-forming minerals; Mode of occurrence of minerals in rocks. Transmitted polarised light microscopy and optical properties of uniaxial and biaxial mineral.

Petrology: Definition and classification of rocks; Igneous rocks - forms of igneous bodies; Crystallization from magma; classification, association and genesis of igneous rocks; Sedimentary rocks - classification, texture and structure; size and shape of sedimentary bodies. Metamorphic rocks - classification, facies, texture and properties

Economic Geology: Properties of common economic minerals; General processes of formation of mineral deposits; Physical characters; Mode of occurrence and distribution in India both of metallic and non - metallic mineral deposits; Coal and petroleum occurrences in India.

Applied Geology: Ground Water; Mineral exploration, elements of Mining Geology and Environmental Geology; Principles of Engineering Geology.