

## 24. EARTH SCIENCES

### **Physical Geology and Geomorphology:**

Weathering process and its kinds, products. Internal structure of the earth, fundamentals of plate tectonics. **Principles of Geomorphology**, Landforms produced by River, wind, glacier, sea and **groundwater**. Drainage patterns, Drainage Index, and geomorphic features.

### **Mineralogy, Petrology, **Stratigraphy** and Paleontology :**

Physical properties of rock forming and Industrial minerals. Origin, Classification, and description of Igneous, sedimentary and Metamorphic rocks. **Principles of stratigraphy**, major earth geological events through time scale, **Indian Stratigraphy** and Origin of Himalayas. Origin of life, types of fossils, evolution of mammals & Man.

### **Structural Geology, Economic Geology, Ore Geology, Geochemistry :**

**Attitude of beds, primary and secondary structures.** Origin, classification and field identification of Joints, Folds, Faults and other minor structures such as foliation and **lineations**. Origin, occurrence and distribution of Economic mineral deposits in India -Iron, manganese, gold, zinc, graphite, lead, coal and petroleum deposits. Ore-dressing, ore-reserves, estimation. **National Mineral policy**. **Geochemical classification of elements**, Major elements, application in environmental studies REE-its implication in genesis/ provenance of rocks.

### **Remote Sensing, Geophysics and Hydrogeology :**

Sensors & Platforms- Indian Remote Sensing –**Spectral system characterizes of rocks & minerals, Photogeology and Photogrametry.** **Geophysical methods and Logging methods.** **Groundwater cycle** – occurrence, movement, Aquifers, field parameters & Lab methods of estimations **of quality of groundwater.**

### **Engineering Geology, Environment Geology and Marine Geology:**

Engineering properties of Rock. Geological investigation required for Dam, Tunnel, highways and building constructions. Renewable and non-renewable resources, **Natural hazards and Mitigation measures**, pollution. Continental and marine environmental studies. Ocean features, physical, chemical & biological resources of the ocean, **Law of Sea.**