1. General Geology & Geodynamics


2. Geomorphology and Remote Sensing


Applications of remote sensing in geology.

3. Structural Geology


4. Stratigraphy

Geological time scale, Principles of stratigraphy, stratigraphic classification and nomenclature. Stratigraphic correlation. Detail study of various geological formations of Indian subcontinent. Brief
study of climates and igneous activities in Indian sub-continent

5. Palaeontology

Fossilization, Mode of preservation and uses of fossils, Morphology
and geological history of Rugose coral, Groptolite, Trilobite,
Brachiopoda, Mollusca : Lamellibranchia, Gastrophoda, Cephalopoda,
Echinoidea. Basic idea about micropaleontology. Brief study of
vertebrate paleontology. Gondwana plant fossils. Applications of
palaeontological data in palaeoecology, stratigraphy and
palaeogeographic studies.

GEOLOGY (CODE NO. 16)

PAPER – II

1. Mineralogy

Classification of crystals into seven systems. Study of forms of normal
classes. International system of crystallographic notations. Twinning
in crystals. Polarizing microscope. Isotropism and Anisotropism,
Pleochroism, extinction, Double refraction, becke effect, interference
colors, twinning, Classification of silicates. Isomorphism,
Polymorphism and Pseudomorphism, solid solution. Physical,
chemical and optical properities of feldspar, Pyroxenes, Amphiboles,
Micas, Garnets, Olivine, Felspathoids, Quartz, Calcite, Kynite,
andalusite, sillimanite and staurolite.

2. Igneous and Metamorphic Petrology

Generation and crystallization of magma. Crystallization of
unicomponent (SiO₂), binary (albite - anorthite and diopside -
anorthite) and ternary (diopside - albite - anorthite) component silicate
system. Bowen's reaction series. Magmatic differentiation and
assimilation. Forms and structures of igneous rocks. Textures and
microstructures of igneous rocks. Classification of igneous rocks.
Petrography and petrogenesis of granite, syenite, diorite, basic and
ultra basic groups, charnockite, anorthosite and alkaline rocks, carbonatites.


3. Sedimentology


4. Economic Geology


5. Hydrogeology, Engineering Geology and Mining Geology

Hydrologic cycle, occurrence of ground water and hydrological properties of rocks. Groundwater provinces of India. Concept of Watershed management. Quality of groundwater.
Geological conditions for construction of Dams and tunnels. Environmental considerations in the location and construction of large dams, reservoirs and tunnels.