

# Geology

## DEGREE STANDARD

### UNIT I

#### GENERAL GEOLOGY

Origin, Interior and Age of the Earth - Weathering - Types and products - Geological work of Wind, River, Glacier, and Groundwater - Volcanoes - Earthquakes - causes and effects - Richter Scale - Principles of Plate Tectonics.

### UNIT II

#### STRUCTURAL GEOLOGY

Types of Folds - Types of Faults - Types of Joints - Types of Unconformities - Recognition of Top and Bottom of beds - Clinometer compass and its uses.

### UNIT III

#### STRATIGRAPHY AND PALEONTOLOGY

Principles of Stratigraphy - Correlation - Geological Time Scale - General characteristics, descriptive and economic importance of Archean, Cuddapah, Vindhyan and Gondwana systems of Peninsular India - Cretaceous system of Tamil Nadu. General principles of Paleontology - Fossils - Modes of preservation of Fossils - Uses of fossils.

### UNIT IV

#### CRYSTALLOGRAPHY

Definition of crystals - Forms - Faces - Edges - Solid angles - Interfacial angles - Goniometer Symmetry Elements - Study of Normal Classes of Isometric, Tetragonal, Hexagonal, Orthorhombic, Monoclinic and Triclinic systems - Twin crystals.

### UNIT V

#### MINERALOGY

Petrological Microscope, parts, accessories and uses - Physical properties of minerals - Isotropic and Anisotropic Minerals - Descriptive study of quartz and its varieties - Feldspar Group - Pyroxene Group - Amphibole Group - Mica Group - Garnet Group - Descriptive study of the following minerals - calcite, Dolomite, Tourmaline, Topaz, Staurolite, Chlorite and Zircon.

## PAPER - II

### UNIT I

#### IGNEOUS PETROLOGY

Definition of magma - Composition and constitution of magma - Forms and structures of Igneous rocks - Textures and Microstructures of Igneous rocks - Classification - Bowen's Reaction principle - Descriptive Study of the following - Granite - Syenite - Diorite - Gabbro - Ultramafics (Dunite, Peridotite, Pyroxenite and Anorthosite) - Differentiation - Assimilation.

### UNIT II

#### SEDIMENTARY AND METAMORPHIC PETROLOGY

Primary structures of sedimentary rocks - classification of sedimentary rocks - Descriptive study of Residual, clastic, Chemical and organic deposits - Definition of Metamorphism - Agents and kinds of metamorphism - classification of metamorphic rocks - Textures of metamorphic rocks - Different facies - study of marbles - Greenschist - Amphibolite - Granulite (Charnockite).

### UNIT III

#### ENONIMIC GEOLOGY I

Definition of Ore - Tenor - Gangue - Lindgren and Bateman's classification of ore deposits - study of the following ore - forming processes - Magmatic concentration Hydrothermal - Evaporation - Sedimentation - placer deposits - Oxidation and Supergene Enrichment.

## **Geology**

### UNIT IV

#### ECONOMIC GEOLOGY II

Important ores, their composition, physical properties, mode of occurrence, distribution in India and uses of the following - Gold, Iron, Aluminium, Manganese, Copper, Magnesium and Lead and Zinc - Building Stones, their characters, distribution and mode of occurrence in India - Mineral Wealth of Tamil Nadu - Lignite, Coal and Petroleum - their occurrence in India and origin.

### UNIT V

#### APPLIED GEOLOGY

Role of Geology in Mining - Principles of Geological mapping - Drilling Instruments and equipments - Field Techniques - Different methods of power boring, logging, borehole problems - Determination of strike, dip etc., from borehole strata - Investigation for tunnelling and landslides - Geological problems in mines including groundwater.