

GEOLOGY
POST GRADUATE DEGREE STANDARD

UNIT I

GENERAL GEOLOGY:-

Origin of the Earth; Age of the Earth; Interior of the Earth; Colcanoes:- Effects and causes; Earthquakes:- Effects and causes; Isostasy.

UNIT II

GEOMORPHOLOGY:-

Landforms - their types and developments - Classification of shore lines and their evolution - submarine canyons - Ceosynclines - Island arcs - Plate tectonics.

UNIT III

STRUCTURAL GEOLOGY:-

Mechanics and causes of folding - Classification of faults - Recognition of faults in the field by different criteria - Kinds of unconformity and their recognition in the field - Brunton compass and its uses.

UNIT IV

REMOTE SENSING:-

Elementary mathematical concepts of photogrammetry - Interpretation of Aerial photographs as applied to Geology - Photographic images, tone, texture, drainage and landform - Application of satellite data in mineral, groundwater and oil exploration.

UNIT V

PALEONTOLOGY:-

Field and Laboratory techniques of Micropaleontology - Application of Micropaleontology in oil exploration - Evolution and stratigraphic importance of Ammonoids, Trilobites and Graptolites - Gondwana flora - their significance and paleoclimatic conditions.

UNIT VI

STRATIGRAPHY:-

Modern methods of stratigraphic correlation - Cretaceous - Eocene boundary problems with special reference to Tamil Nadu nature and Age of the Deccan Traps - Cretaceous of Trichy - Classification and economic importance of Dharwar and Cuddapah.

UNIT VII

CRYSTALLOGRAPHY:-

Stereographic and Gnomonic projections of natural crystals of normal classes of Tetragonal and Orthorhombic systems - Derivation of 32 classes of symmetry - Napier's theorem - Equations of a normal - Bragg's law - x-ray diffraction method.

UNIT VIII

OPTICS:-

Optical properties of Uniaxial and Biaxial crystals - Birefringence - optic axial angle - Determination of Anorthite content and Twin laws using U-stage - Optical anomalies.

UNIT IX

MINERALOGY-I:-

Description, Physical, Chemical and Optical properties of Feldspars, Feldspathoids, Pyroxene, Amphibole, Olivine and Mica.

UNIT X

MINERALOGY-II:-

Description and paragenesis of the following :- Chlorite, Zeolite, Zircon, Topaz, Tourmaline, Sillimanite, Kyanite, Andalusite, Corundum, Cordierite and Beryl.

PAPER - II

UNIT I

IGNEOUS PETROLOGY - I:-

Classification of Igneous rocks - Petrography and petrogenesis of Granites, Alkaline Rocks, Anorthosites, Carbonatite, Ultramafics.

UNIT II

IGNEOUS PETROLOGY -II:-

Study of Forsterite - Silica, Albite - Anorthite - Diopside systems - Bowen's Reaction Principle - Diversity of Igneous rocks variation diagrams - Crystallisation of Basaltic magma.

UNIT III

SEDIMENTARY AND METAMORPHIC PETROLOGY:-

Mechanical analysis of sediments - Heavy minerals and their significance - Lithification and Diagenesis - Depth zones and Facies concept - study of Migmatites and Granulites - ACF and AFM diagrams.

UNIT IV

ECONOMIC GEOLOGY-I:-

Classification of ore minerals - Geological thermometry - processes of ore formation - minerals used for the following Industries, cement, Refractory and ceramics.

UNIT V

ECONOMIC GEOLOGY II:-

Mineralogy, origin, uses and distribution of the following:- Iron, Manganese, copper, Aluminium, Barite, Graphite, Asbestos and Quartz - occurrence and origin of coal and petroleum in India.

UNIT VI

HYDROGEOLOGY:-

Hydrologic cycle - origin of Groundwater - vertical distribution of Groundwater - Aquifers - Groundwater movement - Groundwater quality - Groundwater pollution.

UNIT VII

ENGINEERING AND MINING GEOLOGY:-

Geological investigation pertaining to Dam foundation, Reservoir sites and Tunnelling - Engineering properties of rocks - Types of sampling - ore reserve estimation - Mining methods.

UNIT VIII

GEOEXPLORATION-

Electrical and magnetic methods of Geophysical prospecting - Prospecting for Radioactive minerals - Geochemical classification of Elements - Trace Elements - Geochemical Prospecting.

UNIT IX

ENVIRONMENTAL GEOLOGY-

Environmental impacts due to mining and mineral processes - Renewable and non-renewable resources - Environmental effects of large dams - Environmental hazards due to landslide and flooding.

UNIT X

REGIONAL GEOLOGY -

Cenomanian marine transgression of Trichy region - Neyveli Lignite deposits - Graphite beds of Sivaganga - Rare Earth deposit of Manavalakurichi - Magnesite of chalk hills salem - Granite Industries of Tamil Nadu.

