SYLLABUS IN GEOLOGY

General Geology: Seismology and internal structure of the earth; volcanoes: Causes, types and distribution; Earthquakes: Causes and effects.

Geomorphology: Rock weathering and erosion, Mass wasting, geological work of rivers; glaciers, wind, underground water and oceans. Geomorphic Cycles, Terrain evaluation.

Crystrography: Crystalline and non-crystalline substances, Crystals- Definition, characteristics, parameters, indices and zones, symmetry elements and classification of crystals into different systems. Study of axial relation, symmetry elements and forms present in normal classes of all systems.

Mineralogy: Physical properties of minerals, silicate structure and its classification, Isomorphism, Polymorphism and Pseudomorphism, description of silicates (Feldspars, Pyroxenes, Amphiboles, Garrets, micas).

Optical Mineralogy: Isotropism, anisotropism, Optic axis, Uniaxial and biaxial minerals. Extinction and extinction angle, Pleochroisms, Birefringence, interference colours.

Structural Geology: Fold geometry, classification and causes of folding; faults: geometry and classification of faults, Recognition of folds and faults, Vs. rules; Definition, geological significance, types and recognition of unconformity.

Economic Geology: Processes of formation of mineral deposits, Mineralogy, mode of occurrence and use of Fe, Mn, Cr, Cu, Pb-Zn ores, Bauxite and their Indian distribution. Distribution of coal, petroleum, mica, graphite, limestone, asbestos deposits in India.

Igneous Petrology: Forms of igneous rocks, texture, structure, Petrographic notes on Basalt, Dolerite, Gabbro, Granite, Pegmatite, Syenite, Dunite, Diorite, Peridotite, Carbonatite, Anorthosite, Kimberlite.

Metamorphic Petrology: Texture and structure of metamorphic rocks, Petrographic notes on important rock types: Schist, gneiss, marble, quartzite, state, phyllite, Khondalite and Charnockite.

Sedimentary Petrology: Texture and structure of sedimentary rocks, Petrographic notes on sandstone shale, limestone, breccias and conglomerate.

Palaeontology: Mode of preservation of fossils, geological significance of fossils, Morphology of the following groups- Trilobites, Brachiopoda, Palecypoda, Cephalopoda, Echinoidea, Gastropoda, Corals, Graptolites; plant fossils.

Photogeology and Remote Sensing: Principles of aerial photography and remote sensing, Application of Aerial photography and satellite imagery in mineral exploration, groundwater exploration and geomorphology.

Groundwater Geology: Distribution of groundwater, Hydrologic properties, Aquifers and their types, Groundwater provinces of India, Groundwater exploration

Engineering Geology: Geological considerations in the selection of sites for Dams, Tunnels, Bridges, Engineering properties of rocks and soils.

Stratigraphy: Principles of stratigraphy, stratigraphic units, standard stratigraphic time scale; principles of stratigraphic correlation, Dharwar supergroup, Eastern Ghats super group, Iron ore supergroup, Type areas of Cuddapah and Vindhyan supergroup, Gondwana supergroup, Triassic of Spiti, Jurasssic of Kutch, Cretaceous of Trichinopoly, Siwalik Group, Tertiary of Assam, Geology of Odisha.

******