

SYLLABUS FOR M.Sc GEOLOGY ENTRANCE EXAM

Physical Geology-Branches of Geology.

Earth as a Planet- Its shape, size, and density. Origin and age of Earth. Geological processes – exogenic and endogenic,– Types of weathering of rocks – physical and chemical- Erosion and agents of erosion.

Rivers- (fluvial) cycle, land forms by river erosion and deposition. V-shaped valley, meander, ox-bow lake.

Glaciers- Types of glaciers, typical land forms by glacial erosion and deposition – cirque, U-shaped valley, monadnocks, moraines, eskers.

Groundwater –porosity, permeability aquifer, water table, zone of saturation, artesian well, spring, geysers , karst topography, sinkhole, cavern, stalactities and stalagmites.

Seas: Offshore profile – land forms of sea – lacustrine deposits,

Wind: Characteristic features by wind erosion and deposition – pedestal rock, epi orogenic and orogenic movements – mountains, geosyncline.

Earthquakes : Causes, kinds of earthquake waves, Richters scale – seismograph and scismogram, Interior of the earth.

Volcanoes : Origin, products of Volcanoes.

Crystallography: Morphology of crystals.

Forms : Simple, combination, closed, and open forms.

Symmetry : Plane, axis, centre, crystallographic axes, crystallographic notation – parameter system of Weiss, index system of Miller. Classification of crystals into seven systems. Morphological study of the normal class of seven crystal systems.

Mineralogy - Physical properties of minerals. isomorphism, solid solution, polymorphism, pseudomorphism, silicate structure. Study of physical properties, chemical properties and mode of occurrence of the following mineral groups. nesosilicate-Olivine, Garnet, aluminum silicates, sorosilicate- Epidote, cyclosilicate-Beryl, inosilicate-Pyroxene; Amphibole, phyllosilicate -Mica, Hydrous magnesium silicate-tekto-silicate- Feldspars, Feldspathoids and quartz.

Miscellaneous minerals - Calcite, Corundum, Apatite, talc.

Optical Mineralogy- Petrological microscope, mechanical and optical parts. Isotropic and anisotropic minerals, crossed nicols – extinction, pleochroism, optical properties of important minerals, Garnet, Quartz, Plagioclase, Olivine, Hornblende, Biotite.

Igneous Rocks- Intrusive and extrusive forms, structures and textures of Igneous rocks, plutonic, hypabyssal and volcanic rocks, sills, laccolith, bysmalith, lopolith, dykes, phacoliths and batholiths. uni-component magma, binary system, Bowen's reaction principle. CIPW classification of Igneous rocks. Descriptive study of following rock types - Granite, Gabbro, Peridotite, Dunite, Dolerite, Rhyolite, Trachyte, and Basalt.

Sedimentary Rocks - Sedimentary structures. Classification of Sedimentary Rocks - clastic, non-clastic rocks, Conglomerate, Breccia, Sandstone, Shale, Limestone. **Metamorphic Rocks** - Agents of metamorphism, types of metamorphism, textures and structures of metamorphic rocks. classification of metamorphic rocks, metasomatism, Gneiss, Schist, Slate, Quartzite, Marble, Charanockite and Khondalite.

Structural Geology - Primary and secondary structures; strike, dip and apparent dip, clinometer. Folds, nomenclature of folds.–Classification of Joints and Faults. Unconformities – types of Unconformities, cleavage, schistosity, foliation and lineation.

Palaeontology -Modes of preservation and uses of fossils. Morphology of phylum Brachiopod, Mollusca and Arthropoda – study of Turritella, Pecten, Grapheya, Nautilus, Ammonoids, Bellemnites. Plant fossils - Glossopteris, Gangamopteris.

Indian Geology-Standard geological time scale. Physiographic divisions of India. Systems Archaen, Cuddapah, Vindhyan, and Gondwana and Deccan Traps.

Economic Geology-Ore minerals, gangue, tenor, syngenetic deposits, epigenetic deposits. Study of ore deposits with respect to their mineralogy, mode of occurrence, distribution in India of - Gold, Copper, Lead, Zinc, Aluminum, Iron, Chromium, Uranium. Distribution of Industrial minerals in India for the following industries - Cement, Ceramic, Glass.

Fossil fuels: Coal, origin and types of Coal – Coal deposits of India. Oil and Natural Gas: Origin, migration and distribution in India, Beach sands: Monazite, Ilmenite. Mineral resources of Andhra Pradesh.

MODEL QUESTION PAPER for M.Sc. (Geology)

Time: **90 Minutes**

Max Marks: **100**

Objective type: **MULTIPLE CHOICE**

1). Gold deposits in Andhra Pradesh occur in

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|--------------------|--------------------------|
| a. K-G Basin | b. Eastern Ghats |
| c. Godavari Valley | d. Ramagiri Schist belt. |

2). The Radius of the Earth is

- | | |
|---------------|--------------|
| a. 10,400 km. | b. 6,400 km. |
| c. 7,400 km. | d. 5,400 km. |