

SYLLABUS FOR ADMISSION TO M.Sc APPLIED GEOLOGY (2022-2023)

(Regular and Self Supportive)

UNIVERSITY OF MADRAS

Marks for Entrance Examination: 40 Marks

Marks for the Personal Interview: 10 Marks

Physical Geology and Geomorphology

Origin, age, structure of the Earth ----- Process of weathering, erosion, transportation and deposition----- Geological work of running water(river), lake, glaciers, sea wind and ground water----- Volcanoes and Earthquakes----- Isostasy----- Continental drift and Seafloor spreading----- Elementary ideas of Plate tectonics.

Crystallography and Mineralogy

Elements of crystal forms and symmetry----- Crystal systems and lasses----- Twinning----- Physical and Chemical properties of minerals----- Pleochroism----- Birefringence----- Silicate mineral structure. Brief explanation about Amphibole, Mica, Pyroxene, Quartz, Zeolites and feldspathoids.

Petrology

Crystallization, differentiation and assimilation of magma----- Bowen's reaction principle----- Classification, mode of occurrence, texture, structure, and mineralogical composition of Igneous, Sedimentary and Metamorphic rocks.

Structural geology

Stratification, joints, cleavage, schistosity and lineation----- Dip and strike----- Clinometer compass and its uses----- Fold, Fault and Unconformity and its classification

Economic Geology

Forms, mode of occurrences and classification of mineral deposits----- Important process of formation of mineral deposits----- Common and important metallic and non- metallic mineral deposits of India with particular reference to their geology, geographical occurrences and utilization.

Stratigraphy and Paleontology

Standard stratigraphical scales and its subdivisions----- Principles of stratigraphy----- Physiographic divisions of India----- Major geological formations of India with special reference to Archean, Proterozoic, Paleozoic, Mesozoic and Tertiary stratigraphy----- Geological

formations of Tamilnadu----- Fossil----- Definition, nature and mode of preservation----- General description of most common fossil groups of invertebrates and plants.

Environmental Geology and Hydrogeology

Different ecosystems----- Renewable and non renewable resources----- Environmental problems due to surface geological processes----Landslides, Floods & soil erosion; Causes, Hazards remedial Measures---Earthquakes & Volcanism; Prediction, Control and Warning---- Environmental degradation due to Mining and Mineral processing-----Pollution----- Population explosion effects in Ground water. Origin of Ground Water and its types----Vertical distribution . Aquitard, Aquiclude, Aquifer and its types----- Standard Ground Water Qualities----Rainwater Harvesting and its effects in Rural and Urban areas----Rainwater Harvesting Methods.

Remote Sensing and GIS

Definition of Remote Sensing----- Electromagnetic spectrum----- Atmospheric interactions --- Spectral Reflectance ---Platforms – Data acquisition --- LANDSAT and overview of Indian Remote Sensing satellites, Aerial Photographs – Geometry, Applications of remote sensing data in Mineral Exploration And Ground Water Exploration---Geographical Information System (GIS) Concepts and Applications of various fields in Geology, Economy, Agricultural and Vegetations.