

ENTRANCE TEST SYLLABUS**M.Tech. (Environmental Science and Engineering)****Program Code: M45****Analytical Ability (20 marks)**

Reasoning; Number series, letter series, codes; Relationships; classification, Understanding the structure of arguments; Evaluation and distinguishing deductive and inductive reasoning; Verbal analogies; word analogy, applied analogy; ; Verbal classification; Logical diagrams; simple diagrammatic relationship, multi-diagrammatic relationship; Analytical reasoning; Data interpretation; Quantitative and Qualitative data; Graphical representation and mapping of data.

Ecology (10 marks)

Elements of ecology; structures and functions of an ecosystem; Lithosphere, hydrosphere and biosphere; renewable and non-renewable sources; energy and matter flow in ecosystems; Climate change, global warming, acid rain, depletion of ozone layer etc.

Water Supply and Water Treatment (20 marks)

Water demand, impurities of water and their significance, physical, chemical and bacteriological analysis, water borne diseases, standards for potable water. Water supply systems, Water treatment: principles of coagulation, flocculation and sedimentation; slow-, rapid-, pressure-, filters; disinfection, softening, removal of taste, odour and salinity.

Water storage and distribution: storage and balancing reservoir types, location and capacity. Distribution systems: layout, hydraulics of pipe lines, pipe fittings, Analysis of distribution systems,, pumping stations and their operations.

Wastewater Collection, Treatment and Disposal (20 marks)

Domestic and industrial wastes, -separate and combined collection systems, flow through sewers, design of sewers, sewer appurtenances, manholes, inlets, junctions, etc. Sewage characterisation; BOD, COD, solids, dissolved oxygen, nitrogen and TOC. Standards of disposal in normal water course and on land. Sewage treatment; Working principles, units, chambers, sedimentation tank, aerobic and anaerobic biological treatment, disposal of sludge, recycling of waste water.

Air and Noise Pollution (15 marks)

Meteorology and natural purification processes, atmospheric composition, air pollution sources, primary and secondary pollutants, effect of pollutants on human, .Pollutants dispersion.

Sources, effects and standards of noise pollution, sound intensity levels and sound pressures level, measurement of noise level; basic concept of community noise. Noise control.

Solid Wastes Management (15 marks)

Municipal Solid wastes, generation, transportation and disposal measures. physical and chemical characteristics of MSW. Generation, collection and disposal of solid wastes, solid wastes treatment technologies. Waste Segregation and waste to energy techniques