SEMESTER-II

MEN-C 201 : Environmental Monitoring and Instrumentation M.M. 70

UNIT – I

Air pollution sampling and monitoring: (Air quality standards, sampling methods, instruments, duration of sampling period, location of sampling sites, air sampler operations, stack sampling technique, measurement of SO_2, NO_2, SPM oxidation and ozone, hydrocarbon and particulate matter), control of gases contaminants, combustion, adsorption, adsorption recovery system.

UNIT – II

Physical, chemical, biological and bacteriological sampling and analysis of water quality. Sewage treatment: **(**pretreatment, primary, secondary & tertiary treatment methods; physical-chemical and biological methods of treatment). Odours and their control, Criteria for the application of aerobic and anaerobic biological treatment; types of biological treatment; separation and girt chambers, velocity control devices, disposal of grit, oil and grease separation.

UNIT – III

Treatment for various industrial effluents with reference to distillery, paper and pulp, textile and dyeing wastes, industrial pollution abatement. Pollution control in petroleum refineries and petrochemical units. threshold concentration, oxidation, water supply management: Introduction, demand of water, need of water supply: Quality criteria of water for drinking, irrigation and industrial uses. Treatment of ground water.

UNIT – IV

Solid-waste management: Waste generation, characterization collection techniques, need for management and planning, solid waste types: Municipal waste, domestic waste, sewage sludge and municipal waste, slaughter house waste, agriculture waste. Integrated solid waste management, solid waste reduction and recycling processes.

UNIT – V

Principles of analytical methods: Microscopy (Scanning & Transmission) Colorimetry, Flame photometry. Spectrophotometry, Chromatography (Gas, TLC, Ion exchange and HPLC chromatography), Atomic Absorption Spectrophotometry, Electrophoresis, X-ray fluorescence, X-Ray diffraction, Radio-immunoassay, ELISA, Polymerase Chain Reaction and Respirable Dust Sampler (RDS).

NOTE: The question paper shall consist of two sections (A & B). Section A shall contain ten short answer type questions of six marks each and student has to attempt any five questions in about 150 words each. Section B shall consist eight long answer type questions of ten marks each and student shall be required to attempt any four questions in detail. Questions shall be uniformly distributed from the entire syllabus. The previous year paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.