

Environmental Engineering

B.E. Sem. VIII [CHEM]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral	–	25
Oral Exam	–	–
Term Work	–	25

SYLLABUS

1. Introduction

Environmental pollution, Importance of environmental pollution control, Concept of ecological balance, Role of environmental engineer, Hydrological & nutrient cycles, Environmental Legislation & Regulations, Industrial pollution emissions & Indian standards, Water (prevention & control of pollution) act, Air (prevention & control of pollution) act

2. Water Pollution

Classification, sources & effect of water pollutant on human being & ecology, Sampling, measurement & standards of water quality, Determination of organic matters: DO, BOD, COD, TOC, Determination of inorganic substances: nitrogen, phosphorus, trace elements, alkalinity, Physical characteristics: suspended solids, dissolved solids, colour & odour, Bacteriological measurements.

3. Waste Water Treatment

Primary treatment: pretreatment, settling tanks & their sizing, Secondary treatment: micro-organisms growth kinetics, aerobic biological treatment, activated sludge process, evaluation of bio-kinetic parameters, trickling filters, sludge treatment & disposal, Tertiary treatment: advanced methods for removal of nutrients, suspended & dissolved solids, Advanced biological systems, Chemical oxidation, Recovery of materials from process effluents.

4. Air Pollution

Air pollutants, sources & effect on man & environment, acid rain, smog, greenhouse effect, Ozone depletion, global warming, Temperature lapse rate & stability, Plume behaviour, Dispersion of air pollutants, Gaussian plume model, Estimation of plume rise, Air pollution sampling & measurement, Analysis of air pollutants.

5. Air Pollution Control Methods & Equipment

Source correction methods for air pollution control, Cleaning of gaseous effluents, Particulate emission control, Equipment, system & processes for (a) Particulate pollutants: gravity settler, cyclones, filters, ESP, scrubbers etc. (b) Gaseous pollutants: scrubbing, absorption, adsorption, catalytic conversion

6. Waste Management

Solid waste including plastic, nuclear & hazardous waste management

Noise Pollution

Noise pollution: measurement & control, effect on man & environment

Reference Books :

1. Environmental Pollution Control Engineering (*Rao, C.S.*) New Age International (P) Limited
2. Environmental Engineering (*Peavy, H. S., Rowe, D.R., Tchobanoglous, G.*) McGraw-Hill Book Company Limited
3. Waste Water Treatment, Disposal & Reuse (*Metcalf et al.*) Tata McGraw Hill Publishing Company Limited
4. Pollution Control in Process Industries (*Mahajan, S.P.*) Tata McGraw Hill Publishing Company Limited

