

Group Code: EN

Max: 100 Marks

ENVIRONMENTAL ENGINEERING, PUBLIC HEALTH ENGG.
AND
WATER TECHNOLOGY & HEALTH SCIENCES

Unit – 1: Materials of Construction

Stones – Classification, properties, uses. Bricks & Blocks - Classification, qualities of good bricks, tests, uses. Cement – Composition, types, properties and uses, tests on cement. Reinforcement steel and types. Cement Concrete – ingredients, grades of concrete and uses.

1X8=8marks

Unit – 2: Surveying

Chain Surveying – Different operation in chain surveying, obstacles in chain surveying, errors in chain surveying

Compass Surveying – Concepts of Meridians and Bearings, Types of Compass, Open and Closed Traverse, dip, declination and local attraction.

Levelling – Terms in levelling, levelling instruments and types of leveling, Contour.

1X8=8marks

Unit – 3: Hydraulics

Properties of Fluids, Total Pressure & Centre of Pressure, Flow through – orifices & Mouth Pieces, Flow over – Weirs & Notches, Flow through Channels & Pipes.

1X10=10marks

Unit – 4: Environmental Chemistry

Acids & Bases, Oxidation and Reduction Reactins, Membrane Processes – Osmosis & Dialysis.

Quantitative Chemistry: Types of Analysis – Colorimetric instruments, Chromatography.

Water Analysis – Turbidity, Color, pH, Acidity, Alkalinity, Hardness, Chlorides, Residual Chlorine and Chlorine Demand. Wastewater Analysis – DO, BOD, COD, TOC, Nitrogen Compounds, Solids, Iron & Manganese, Sulphates, Phosphates.

1X10=10marks

Unit – 5: Hydrology, Water Treatment & Supply Engineering

Hydrological Cycle, Sources of water, Water Collection & Conveyance facilities(Pipes , pumps & intakes), Characteristics of Water – physical, chemical and biological, Necessity of water

treatment – Pretreatment of water, Physical, chemical and biological treatment, miscellaneous treatment methods, water pollution and prevention, Water distribution systems.

1X15=15marks

Unit – 6: Sanitary Engineering

System of Sanitation, Types of Wastewater, Sources of Wastewater, Sewers and Drains – types. DWF, WWF, Design period, future forecast, estimation of sewage discharge, hydraulic formulae for determining flow velocity, Sewer appurtenances, Sewage pumping, Wastewater treatment – primary, secondary & tertiary, wastewater disposal methods, sludge – characteristics, treatment & disposal.

1X16=16marks

Unit – 7: Characterization and Control of Industrial Wastewater

Pollutants – Classification & Sources, Characteristics of Industrial Wastewater, Characterization of waste from – Pulp & Paper mill, Pharmaceutical, Distilleries, food processing, dairy, tannery, sugar industries. Industrial Wastewater Minimization – Volume reduction, strength reduction, Equalization & Neutralization. Treatment & Disposal methods of Industrial Wastewater.

1X10=10marks

Unit -8: Health Sciences & Environmental Sanitation

Biochemistry - Scope & Application, carbohydrates, lipids, proteins, Enzymes, Nutrients.

Microbiology: Cell – functions of components of a cell, Prokaryotes & Eukaryotes, Autotrophs & Heterotrophs, Sterilization, Culture media, Bacteria, Virus, Fungi, Algae, Water Borne Diseases

Environmental Sanitation - Communicable diseases, Food sanitation, Milk Sanitation, Excreta disposal in unsewered area, Institutional sanitation

1X10=10marks

Unit – 9: Air Pollution & its control

Composition of atmosphere, Sources and classification of air pollutants, Plume behavior, Wind rose, Effect of specific pollutant on human health & Plants. Economic Effects of Air Pollution. Air Pollution Controlling Equipments. Noise Pollution – Causes, effects and remedial measures

1X5=5marks

Unit – 10: Construction & Environmental Management

Elements of management and functions of management, Principles, Techniques, methods and structures of organization, Construction Planning and Organization, Construction team - owner, engineer and contractor – their relationship, Job Schedules, job layout. Application of CPM and PERT in construction planning, Network Analysis. Estimates – types, types of contracts, e-tendering.

EIA - Terminology in E I A, Objectives, Process and methodologies of E I A and Risk analysis

1X8=8marks