

31252- ENVIRONMENTAL ENGINEERING

DETAIL SYLLABUS

UNIT I

1.1 QUANTITY OF WATER Water supply-need for protected water supply-importance aspects of public water supply schemes-demand-types of demand-domestic demand, industrial and commercial demand, demand for public uses, fire demand, demand for compensating various losses-per capita demand – factors affecting the per capita demand - population forecast - methods of forecasting population-problems in arithmetical increase method, geometrical increase method, incremental increase method - total quantity of water required for villages/towns-sources of water - surface sources -lakes & streams, ponds, rivers and storage reservoirs- subsurface sources - Infiltration gallery , Infiltration wells - shallow wells - Deep wells, Tube wells (Description only for all sources)– Selection of suitable source for a water supply scheme.

1.2 QUALITY OF WATER Meaning of pure water – Requirements of potable or domestic water – Impurities in water - Sources, causes and effects of different types of impurities – Water Analysis -physical, Chemical and Bacteriological tests - standards laid down by B.I.S.I for drinking water – Living Organism in water-W.H.O standards - Maintenance of purity of water - water borne diseases and their causes.

UNIT II

2.1 TREATMENT OF WATER Layout of treatment plants – sedimentation – plain sedimentation, different types of sedimentation tanks – sedimentation with coagulation – common coagulants – choice of coagulants - Filtration - Theory of filtration -Types of filters - Description - Rapid sand Filters – Pressure filter (Horizontal type only) - Disinfection of water – Methods of Chlorination - Forms of chlorination – Dosage of chlorine - Mineral waters – Requirements - Treatment processes – Reverse Osmosis process.

2.2 DISTRIBUTION SYSTEM Different systems of supplying water - Gravity system, Pumping system and combined system- Continuous and intermittent supply of water-Different layouts of distribution systems – Dead end, Grid iron, Radial and Circular systems – Merits, demerits and suitability of different layout systems – Service reservoirs – underground and over head tanks

UNIT III

3.1 ECOSYSTEM Definition, Scope and importance of environmental study - Need for public awareness. Structure and function of an ecosystem – decomposers - Energy flow in the ecosystem – Ecological succession - Food chains, food webs and ecological pyramids. Types - characteristic features, structure and function of the following Forest ecosystem - Grassland ecosystem - Desert ecosystem – Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

3.2 BIODIVERSITY AND ITS CONSERVATION Introduction – Definition of Genetic, species and ecosystem diversity - Value of biodiversity - Consumptive use - productive

use, social, ethical, and aesthetic and option values - Hot spots of biodiversity - Threats to biodiversity - Habitat loss, poaching of wildlife, man-wildlife conflicts - Endangered and endemic species of India - Conservation of biodiversity -In-situ and Ex-situ conservation of biodiversity

UNIT IV

4.1 ENVIRONMENTAL POLLUTION AND CONTROL Environment - Definition – Water pollution – Sources of water pollution – Effects and prevention of water pollution- Land pollution – Sources of land pollution – Effects and prevention of Land pollution – Pollution impact on land due to non – biodegradable waste matters (polythene bags, P.V.C. & other plastic materials, Glass, etc.,) – Remedial measures - Air Pollution – Classification of Air Pollutants – Sources – Natural and Manmade sources– Effects of Air Pollution on human beings, animals, plants and materials – Control of Air Pollution – Different Equipments to control Air Pollution – Settling chambers, Cyclone and Electrostatic precipitators – Forest Management –Direct benefit from forest – deforestation causes and effective measures to conserve the forest wealth – Environmental degradation – Green House effect – Ozone layer depletion – Acid Rain. Noise pollution management – Effects of noise on people – Noise control methods .

UNIT V

5.1 DISASTER MANAGEMENT Introduction – Definition for disaster –Types of disaster- major disaster –Floods – causes and Effects – Flood management (Preventive measures)Earth quakes – Definition, occurrence, causes & Effects of earth quake -Earth Quake mitigation (Preventive measures). Tsunami – Definition, Causes and effects of Tsunami – Tsunami management. Cyclone – Definition, Occurrence and effects of cyclone – cyclone management – Cyclone shelters – Warning systems – Man-made disasters – crisis due to fires, accidents, strikes, etc, - loss of property and life – causes for fireaccident – Fire escapes in buildings.

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For Notes , Question Paper, Syllabus and Many more

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