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Printed Pages : 3

BT–6 / M–15

WATER SUPPLY AND TREATMENT

Paper–CE–312 E, Opt. II

Time allowed : 3 hours] *[Maximum marks : 100*

Note : Attempt five questions in all, selecting at least one question from each unit. Assume appropriate data wherever necessary.

Unit–I

1. Define 'per capita demand'. Enumerate and explain various water demands and give the break-up of domestic demand for an average Indian town. 20

2. The population data of a town is given as under : 20

Year	1961	1971	1981	1991	2001	2011
Population	76,000	90,000	1,15,000	1,50,000	1,87,000	2,25,000

Estimate the population of the city in the years 2021 and 2025 by arithmetic and incremental increase method. 20

Unit–II

3. (a) What is hardness in water and by what is it caused ? Discuss the problems caused by hardness in water treatment and water supply. 10

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(b) "Turbidity is an important consideration in public water supplies." Elucidate. 5

(c) What is the environmental significance of fluoride in drinking water ? 5

4. (a) Give the acceptable/permissible limits of the following parameters for drinking water as per Indian Standards :

Turbidity, total hardness, chloride, copper and lead. 10

(b) Define and state sanitary significance of pH. 5

(c) One solution has a pH of 4.0 and another a pH of 6.0. What is the hydrogen-ion and hydroxide-ion concentrations in each of the solutions ? 5

Unit–III

5. (a) Prove theoretically that the surface loading and not the depth is a measure of effective removal of particles in an ideal sedimentation tank. http://www.kuonline.in 10

(b) How will you determine the optimum coagulant quantity by jar test ? 5

(c) Determine the quantity of alum required in order to treat 10 million litres of water per day at a water treatment plant, where 15 ppm of alum dose is required. 5

6. (a) Draw a neat sketch of a rapid gravity filter and describe how it works. What are its advantages over the slow sand filter ? 15

(b) Discuss the use of chlorine as disinfecting agent. 5

Unit–IV

7. (a) Public water supply is conveyed from the source to the centre of supply by gravitational system or pumping system or combined system. Explain these systems with the help of three separate longitudinal sections showing the hydraulic gradients during maximum and minimum demands. 15

(b) Write a short note on the detection of leakage in the distribution pipes. 5

8. (a) State the functions of a distribution reservoir, and sketch the sectional elevation of the same, showing the various appurtenances. 15

(b) Write a short note on the wastage of water in public water supplies. 5