

Question Paper Code : 50531

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

For More Visit our Website
EnggTree.com

Third Semester

Civil Engineering

CE 3303 – WATER SUPPLY AND WASTEWATER ENGINEERING

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define design period.
2. Specify the permissible limits for at least four water quality parameters as per Indian standards for drinking water.
3. Define coagulation and flocculation in water treatment.
4. Define softening and desalination of water.
5. What are the requirements of a good water distribution system?
6. What is a combined pumping and gravity system of a water pumping system?
7. Define BOD and COD.
8. Define self-cleansing velocity and limit velocity.
9. What is bacteria-algae symbiosis?
10. Define organic and hydraulic loading rate for a trickling filter.

PART B — (5 × 13 = 65 marks)

- 11 (a) How could the physical and biological characters of water be fixed? Explain.

Or

- (b) Demonstrate the various factors which would contribute to the total demand for water in a city.

12. (a) Demonstrate the operation of a rapid sand filter unit during filtration and backwashing.

Or

- (b) Explain the phenomenon of disinfection of water using chlorine and bring out the factors that influence its efficiency.

13. (a) Illustrate the importance of various types of valves in the transportation and distribution of water.

Or

- (b) Explain the various methods of locating a leaking point in a water supply main.

14. (a) Determine the diameter of separate sewer section running 0.7 times full at maximum discharge for a population of 50,000 persons. Water is supplied at a rate of 140 litres per capita per day. Manning's constant $N = 0.013$ at all depths of flow. The slope of the sewer is 1 in 700.

Or

- (b) Demonstrate the importance of various sewer appurtenances in sewerage for its smooth functioning.

15. (a) With help of a flow diagram explain the Activated Sludge Process and various design parameters involved.

Or

- (b) Explain the various stages of Sludge Digestion and the factors influencing it

PART C — (1 × 15 = 15 marks)

16. (a) A town a population of one million has a continuous water supply; the Average supply is 270 lpcd is phased as follows:

Time	lps
6 am to 9 am	90
9 am to 12 noon	54
12 noon to 3 pm	81
3 pm to 6 pm	27
6 pm to 9 pm	18

Water is supplied from the treatment plant at uniform rate of 11.25 million liters per hour, for 24 hours. Find out the capacity of the reservoir required for the distribution of water. Assume no loss or drawn from the trunk main.

Or

- (b) Compare the various water distribution layouts practiced in the field. How do you choose a particular layout for a city?