JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS -2022

B.Tech-III Semester (Civil)

COURSE CODE (CREDITS): 18B11CE314 (3)   MAX. MARKS: 25

COURSE NAME: Water Supply Engineering

COURSE INSTRUCTORS: Dr. Rishi Rana Kalia   MAX. TIME: 1 Hour and 30 Minutes

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. (a) Two million liters of water per day is passing through a sedimentation tank which is 6 m wide, 15 m long and having a water depth of 3 m. find the detention time for the tank. What is the average velocity of flow through the tank? If 60 ppm is the concentration of the suspended solids present in turbid raw water, how many dry solids will be deposited per day in the tank, assuming 70% removal in the basin, and average specific gravity of the deposit as 2. Compute the overflow rate?   **[4 Marks]** (C0-3)

(b) State the permissible limits for fluorides in water to be supplied for domestic consumption. Mention ill-effects when they are not in the permissible limits.   **[3 Marks]** (C0-2)

Q2. Tests for common ions are run on the sample of water and results are given below. If a 10% error in the balance is acceptable, should the analysis be considered complete? At. Wt of Ca-40; Mg- 24.3; Na-23; HCO_3 - 61; SO_4-96; Cl-35.5   **[2.5 Marks]** (CO-3)

Constituents

Ca^{2+}= 65 mg/L HCO_3^-= 260 mg/L

Mg^{2+}=28 mg/L SO_4^{2-}=70 mg/L

Na^+=108 mg/L Cl^-=99 mg/L

Q3. (a) In a water treatment plant, the pH values of incoming and outgoing waters are 8.9 and 9.5 respectively. Assume a linear variation with time; determine the average pH value of water.

[2 Marks] (CO-2)

(b) Explain the advantage and disadvantage of CI pipes?   **[2 Marks]** (CO-3)

Q4. Explain the sampling procedures. What precautions must be taken during sampling of water samples?   **[3 Marks]** (CO-4)

Q5. (a) What is an indicator organism? Discuss the characteristics of the ideal pathogen indicators and indicate which organisms most nearly exhibit these characteristics. **[3 Marks]** (C0-3)

(b) Discuss the objectives of water treatment systems? **[2 Marks]** (CO-2)

Q6. A grit chamber is designed to remove the particles with a diameter of 0.2 mm, settling velocity of 0.02 m/s. A flow velocity of 0.5 m/s is to be maintained by a proportioning weir. Determine the channel dimensions for a maximum flow of water 98,000 m^3/d. Assume the suitable data. **[2.5 Marks]** (CO-4)

Q7. Explain stokes law with formulae? **[1 Marks]** (CO-3)