JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS- 2023
B.Tech-III Semester (CE)

COURSE CODE (CREDITS): 18B11CE314 (3) MAX. MARKS: 25
COURSE NAME: Water Supply Engineering
COURSE INSTRUCTORS: Dr. Rishi Rana Kalia MAX. TIME: 1 Hour 30 Minutes

Note: *(a) All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.1 What are the different materials, which are commonly used for water supply pipes? Discuss their comparative merits and demerits? **[5 Marks] (CO-3)**

Q.2 (a) A sample of water from a surface stream is analyzed for the common ions with the following results: Ca^{2+}= 98 mg/L; Cl^-= 89mg/L; HCO_3^-= 317 mg/L; Mg^{2+}=22 mg/L; Na^+=71 mg/L; SO_4^{2-}=125 mg/L. what is the percent error in the cations-anion balance, also draw the bar diagram for the water? At. Wt of Ca-40; Mg- 24.3; Na-23; HCO_3 – 61; SO_4-96; Cl-35.5.

[4 Marks] (CO-2&3)

(b) What are the sources and impacts of dissolved solids in water supplies? **[2 Marks] (CO-3)**

Q.3 (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) Distinguish between expansion joint and flanged joint? **[2 Marks] (CO-1&2)**

Q.4 (a) When is water required to be lifted up by means of pumping while arranging for water supply schemes serving towns and cities? **[3 Marks] (CO-2)**

(b) What is an intake structure? Enumerate the various types of intakes, discuss any two. Draw neat and labeled diagram of dry intake tower? **[5 Marks] (CO2)**

Q.5 The maximum daily demand at a water purification plant has been estimated as 12 million litres per day. Design the dimensions of a suitable sedimentation tank for raw supplies, assuming a detention period of 6 hours and the velocity of flow as 20 cm per minute? **[2 Marks] (CO-4)**