JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech-IV Semester (CE)

COURSE CODE (CREDITS): 23B11CE412 (3) MAX. MARKS: 35

COURSE NAME: WATER SUPPLY ENGINEERING

COURSE INSTRUCTOR: DR.NIRAJ SINGH PARIHAR MAX. TIME: 2 Hrs

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

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

Q.No	Question	CO	Marks
Q1	Answer the following in brief: a) Enlist three major schemes run by GOI for betterment of water supply facilities in India. b) Discuss the major drawback about usage of Jackson's turbidimeter. c) A water sample has 110 mg/l of $Ca(HCO3)_2$. Comment on the amount and type of hardness of water in terms of $CaCO_3$. d) How does presence of iron in water affects the water quality? e) Explain the significance of E-coli in determination of biological water quality parameters. f) Discuss the role of activated carbon in purification of water. g) Explain the ill-effects of nitrates in drinking water and their permissible limit in supplies.	CO1,2	7x1.5
Q2	Design a river intake for the following data: R.L. of river bed=100 m R.L. of lowest water level=102 m R.L. of normal water level=115 m R.L. of high flood level=120 m Population of town=50000 Per capita water demand= 200 l/d Assume and mention other data suitably when required for design.	CO3,4	7
Q3	Determine the quantity of alum required in order to treat 13 MLD water requiring 12 ppm of alum dose. Also determine the amount of CO_2 released and the volume of sludge deposited per day for 2% sludge content (Gs=2).	CO3	7

Q.No	Question	CO	Marks

Q4	Determine the dimensions of a settling tank for 0.5 m^3/s flow rate, overflow rate as 32.5 $m^3/d/m^2$ and detention time of 95 min.	CO5	03
Q5	A rapid sand filter is provided in a water treatment plan for a population of 2,75,000 having water demand of 200 l/c/d. The rate of filtration is 15 $m^3/m^2/hr$. Allowing 5% of the filtered water for backwash and 30 as backwashing period, find the no of filter beds required and design the filtration unit. Also calculate the head loss for expanding the bed to 0.66 m. Assume suitable data wherever required.	CO5	7.5