JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST - 3 EXAMINATIONS- 2022

B.Tech-III Semester (Civil)

COURSE CODE (CREDITS): 18B11CE314 MAX. MARKS: 35

COURSE NAME: Water Supply Engineering

COURSE INSTRUCTORS: Dr. Rishi Rana Kalia MAX. TIME: 2 Hours

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

Q1. What are intakes? What are the important considerations which govern the selection of site of an intake? **[3 Marks]** (CO-3)

Q2. (a) Explain various methods of determining flood discharge in a stream? **[2 Marks]** (CO-1)

(b) The following data shows the variation in population of a town from 1922 to 1972. Estimate the population of the city in a year 2022. Use various methods: Geometric method, incremental method and decremented method:

Year	1922	1932	1942	1952	1962	1972
Population	72,000	85,000	1,10,500	1,44,000	1,84,000	2,21,000

[6 Marks] (CO-1)

Q3. Design a coagulation sedimentation tank to treat 10 million liters of water per day. Assume suitable data where necessary. **[3 Marks]** (CO-4)

Q.4 Determine the quantity of alum required in order to treat 13 million liters of water per day at a treatment plant, where 12 ppm of alum dose is required. Also determine the amount of carbon dioxide gas which will be released per liter of water treated? **[3 Marks]** (CO-3)

Q5. (a) Describe with the help of neat sketch, the component parts of a rapid sand filter. Explain its working, including the method of washing. **[3 Marks]** (CO-5)

(b) What is meant by sterilization of water? Describe briefly any two methods of doing so and state their relative advantages? **[2 Marks]** (CO-4)

Q6. What are the various forms of application of chlorine? Write a note on hypo chlorination. **[3 Marks]** (CO-4)

Q7. (a) Design a rapid sand filter unit for 4 million liters per day of supply, with all its principal components. **[2.5 Marks]** (CO-4)

(b) Explain the Hardy Cross method used for pipes net work analysis in water distribution system? **[3.5 Marks]** (CO-5)

Q8. (a) Calculate the amount of bleaching powder required to treat 3 million liters of water per day. The chlorine required is 0.5 ppm to maintain residual chlorine of 0.15 ppm. If high strength calcium hypochlorite is used in place of bleaching powder, calculate the difference in amount required. Make suitable assumptions. **[2 Marks]** (C0-3)

(b) Chlorine usage in the treatment of 50,000 cubic meters per day is 15 kg per day. The residual after 10 minute contact time is 0.20 mg/l. Calculate the dosage in milligram per litre and chlorine demand of the water. **[2 Marks]** (CO-4)