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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S7 (S, FE) / S5 (PT) (S, FE) Examination December 2023 (2015 Scheme)

**Course Code: CE405**

**Course Name: ENVIRONMENTAL ENGINEERING- I**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks.*

Marks

- 1 a) What does fire demand refer to? What methods would you use to determine the fire demand? (5)
- b) Discuss about the fluctuations in water demand. (5)
- c) Analyse and contrast various water sources to decide on their viability for inclusion in a water supply project. (5)
- 2 a) Enumerate different types of pumps used in water supply systems and explain any four with the help of neat sketch. (9)
- b) Discuss various factors affecting consumption of water. (6)
- 3 a) Explain about river intakes with neat sketch. (7)
- b) Mention any 10 parameters used to assess the quality of drinking water with their limits as per BIS standards. (5)
- c) Explain the importance of indicator organisms in water. Enumerate different methods of its analysis. (3)

**PART B**

*Answer any two full questions, each carries 15 marks.*

- 4 a) Discuss the theory of sedimentation. (5)
- b) What are the distinctive features and mechanisms of various types of coagulants employed in purification of water? Give advantages and disadvantages. (10)
- 5 a) Design a rapid sand filter to treat 5 million litres of raw water per day for a town. 4% of filtered water is used for backwashing. Half hour per day is used for backwashing. Assume necessary data. (10)
- b) Compare slow sand and rapid sand filter. (5)

- 6 a) Design a plain rectangular sedimentation tank for water supply scheme having capacity to treat water=12 MLD. Assume the data which is required. (10)
- b) Discuss the theory of filtration. (5)

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) What are the essential qualities of an effective disinfectant? (5)
- b) Explain disinfection. Discuss various methods of disinfection with advantages and disadvantages. (10)
- c) With the help of neat sketch, explain break point chlorination. (5)
- 8 a) Describe the working principle of electro dialysis. (5)
- b) What are the objectives of providing aerators in water treatment plant? (5)
- c) What are the different pipe appurtenances used in water supply systems? Explain their functions. (10)
- 9 a) Explain the Hardy cross method for water distribution network analysis (7)
- b) Describe various layout of water distribution network with neat sketches. (8)
- c) What is equivalent pipe method? (5)

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