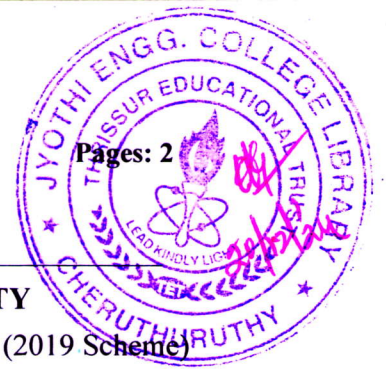


B

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S6 (S, FE) / S4 (PT) (S, FE) Examination December 2024 (2019 Scheme)

**Course Code: CET304**

**Course Name: ENVIRONMENTAL ENGINEERING**

Max. Marks: 100

**PART A**

*Answer all questions, each carries 3 marks.*

Marks

- |    |  |     |
|----|--|-----|
| 1  | Explain the factors to be considered in deciding the source for a water supply scheme? | (3) |
| 2  | Explain briefly any three methods of population forecasting?                           | (3) |
| 3  | Compare separate and combined sewerage systems?  | (3) |
| 4  | Explain the mechanisms of coagulation?   | (3) |
| 5  | Explain briefly any three disinfection methods of water?                               | (3) |
| 6  | Compare rapid sand filters with slow sand filters?                                     | (3) |
| 7  | Discuss the role of an equalization tank at a wastewater treatment plant?              | (3) |
| 8  | Explain what you mean by activated sludge?   | (3) |
| 9  | Explain the advantages of a septic tank?   | (3) |
| 10 | Explain the different methods of disposal of digested sludge?                          | (3) |

**PART B**

*Answer one full question from each module, each carries 14 marks.*

**Module I**

- |    |  |      |
|----|--|------|
| 11 | a) Explain any three types of raw water intakes with sketches? | (12) |
|    | b) Define per capita water demand?                             | (2)  |

**OR**

- |    |   |     |
|----|---|-----|
| 12 | a) Compute the population of the year 2000 and 2006 for a city whose population in the year 1930 was 25000 and in the year 1970 was 47000. Make use of geometric increase method? | (8) |
|    | b) Explain the different types of water demand?   | (6) |

**Module II**

- |    |   |      |
|----|---|------|
| 13 | a) The maximum daily demand at a water purification plant has been estimated as 12 million litres per day. design the dimension of a suitable sedimentation tank (fitted with mechanical sludge removal arrangements) for the raw supplies, | (14) |
|----|---|------|

assuming a detention period of 6 hours and velocity of a flow as 20 cm per minute.

**OR**

- 14 a) A rectangular sedimentation tank without mechanical equipment is to treat 1.8 million litres per day of raw water. The sedimentation period is to be 4 hours, the velocity of flow is 8cm/min and the depth of the water and sediment is 4.2 m if an allowance of 1.2m for sediment is made, what should be (8)

(a) length of the basin

(b) width of the basin?

- b) Explain the process of sedimentation aided with coagulation in water treatment process? (6)

**Module III**

- 15 a) Explain the requirements of a good disinfectant? (7)  
b) Write a note on operation troubles in rapid sand filters? (7)

**OR**

- 16 a) Explain the requirements of a good public water distribution network? (4)  
b) Explain the grid iron system and radial system of water distribution network with neat sketches? Compare the salient features of both the systems. (10)

**Module IV**

- 17 a) Explain primary, secondary and tertiary waste water treatment processes? (6)  
b) Briefly explain the working of an activated sludge treatment system with a neat sketch? (8)

**OR**

- 18 a) Discuss in detail conventional and high-rate trickling filter with a neat sketch? (10)  
b) Discuss the unit operations and unit processes in a wastewater treatment plant? (4)

**Module V**

- 19 a) Explain the working of an oxidation pond with a neat sketch which includes its plan and sectional views? (14)

**OR**

- 20 a) Explain the working of a septic tank with a neat sketch which includes its plan and sectional views? (14)

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