



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R,S) (FT/WP/S4PT) Examinations April 2026 (2019 Scheme)

Course Code: CET304

Course Name: ENVIRONMENTAL ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

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| 1 | Explain the term design period for a water treatment plant. | (3) |
| 2 | What are the factors affecting storm water flow? | (3) |
| 3 | Differentiate between Dry weather flow and Wet weather flow. | (3) |
| 4 | Explain any two types of screens used for water treatment. | (3) |
| 5 | Draw any two layouts of the water distribution network. | (3) |
| 6 | Explain any three methods of chlorination in a water treatment plant. | (3) |
| 7 | Differentiate suspended and attached growth process in biological treatment. | (3) |
| 8 | Distinguish between aerobic and anaerobic wastewater treatment processes. | (3) |
| 9 | Explain the disadvantages of a septic tank. | (3) |
| 10 | Explain wastewater treatment using constructed wetlands. | (3) |

PART B

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

Module I

- 11 a) A town of area 0.5 sq km has a population of 72,000. 30 % of the area consists of roof tops having an impermeability coefficient of 0.9, 25% of the area consists of paved surface of houses having an impermeability coefficient of 0.8, 35% of the area consists of gardens having an impermeability coefficient of 0.5, 10 % of the area is unpaved having an impermeability coefficient of 0.25. Determine the wet weather flow of a combined sewerage system if the time of concentration of the rain is 30 min. The per capita demand of water supply may be assumed as 150 lpcd. (10000 sq.m =1 hectare) (14)

OR

- 12 a) A water supply system is proposed to be designed for a city having a per capita demand of 135 lpcd. Determine the water demand to which the water supply system may be designed considering an average design period as 30 years. (14)

Adopt Arithmetic increase method and Geometric increase method.

Year	1971	1981	1991	2001	2011
Population	129163	275500	307600	485208	635375

Module II

- 13 a) Design a continuous flow rectangular sedimentation tank for a population of 20,000 persons with an average per capita demand of 120 litres per day. Assume detention period of 6 hours and SLR as 20000L/day/sq.m. (8)
- b) Explain the various types of coagulants commonly used in water treatment and the factors affecting coagulation. (6)

OR

- 14 a) Explain the different types of settling in a sedimentation tank. (8)
- b) Derive the Stokes equation for settling velocity. (6)

Module III

- 15 a) Describe any four methods of chlorination. (8)
- b) Explain the advantages and disadvantages of dead end system and grid iron system in water distribution. (6)

OR

- 16 a) Design the dimensions of a rapid sand filter for treating water required for a population of 50000 and the rate of water supply being 150 lpcd. The rate of water filtration is 5000l/hr/sq.m. Assume 0.5 hr is lost in washing the filter. (8)
- b) Explain the components of a rapid sand filter with a neat sketch. (6)

Module IV

- 17 a) Explain the purpose of flow equalization. Describe the different methods of flow equalization with figures. (6)
- b) With a neat sketch, explain the trickling filter treatment process. (8)

OR

- 18 a) Explain the different methods of aeration in activated sludge process. (6)
- b) With a neat layout, explain the various methods of treatment in a conventional wastewater treatment plant. (8)

Module V

- 19 a) Explain the various processes in sludge treatment. (8)
b) Explain the septic tank effluent disposal using absorption trenches with a neat sketch. (6)

OR

- 20 a) Design a septic tank for a small colony of 120 persons with daily water supply of 135 litres per head per day. Assume the required data. (14)
