Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Examination (Regular and Supplementary), December 2020

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 are the necessities and components of a planned water supply scheme? (5)

b) Population of 5 decades from 1970 to 2010 are given below. Find out the population in the year 2026 by incremental increase method. (10)

Year	Population
1970	30000
1980	35000
1990	38000
2000	42000
2010	45000

2 a) Explain any 5 physical characteristics of water. (5)

b) What are the indicator organisms of microbiological quality? Explain MTFT for determination of microbiological quality of water. (10)

3 a) Specify the drinking water standards of any five chemical characteristics of water as per IS10500:2012. (5)

b) Explain logistic curve method for forecasting population. Derive an equation for the logistic curve. (10)

PART B

Answer any two full questions, each carries 15 marks.

4 a) What is surface over flow rate and its significance in sedimentation? (5)

b) Design a coagulation-cum-sedimentation tank for treating water to a city with 40000 persons. Assume suitable data required. (10)

5 a) Mention the commonly used coagulants for the removal of colloidal solids and explain the mechanism of removal. (8)

b) Design slow sand filter/s for supplying water to a village having a population of (7)

30000 persons. Assume per capita demand as 140litres/day. Assume suitable data required.

6 a) With the help of a neat sketch explain the working of a pressure filter. (8)

b) Explain the common operational troubles in a rapid sand filter. (7)

PART C

Answer any two full questions, each carries 20 marks.

7 a) What is break point chlorination and its significance? (7)

b) Describe any 2 methods of removing permanent hardness. (7)

c) Water is supplied to a population of 20000 at a per capita demand of 135 litres per day. Bleaching powder contains 25% available chlorine. Determine how much bleaching powder is required annually if 0.5ppm of chlorine dose is required for disinfection. If residual chlorine is 0.2ppm at the end of contact time of 30 minutes, what is the chlorine demand? (6)

8 a) What is defluoridation? Describe any 2 methods of defluoridation. (6)

b) Explain the process of electrodialysis with a neat sketch. (6)

c) Describe the methods of distribution of water with advantages and disadvantages. (8)

9 a) Explain equivalent pipe method of analysis. (6)

b) Derive the expression for correction to be applied in assumed flow in Hardy Cross method. (6)

c) Describe the various types of distribution networks with neat sketches. (8)

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