

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

**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 various sources of water available on the Earth? (5)  
 b) What do you understand by the term 'Design Period'? (5)  
 c) Write a note on variation in rate of demand. (5)
- 2 a) Explain Graphical comparison method of population forecasting. (5)  
 b) The following is the population data of a city available from past census records. (10)  
 Determine the population of the city in 2021 by (a) arithmetical increase method  
 (b) geometrical increase method (c) incremental increase method.

Year	1941	1951	1961	1971	1981	1991	2001
Population	12500	17000	27000	42000	58000	68000	74000

- 3 a) Prepare a standard chart giving the drinking water quality standards for any 10 (5)  
 parameters as per BIS.  
 b) With the help of neat sketches, describe any two types of intakes? (5)  
 c) Explain any five chemical characteristics of water. (5)

**PART B**

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

- 4 a) What is meant by coagulation? Enumerate the different coagulants used. (5)  
 b) Design a continuous flow rectangular sedimentation tank for a population of (10)  
 20,000 persons with an average per capita demand of 120 litres per day. Assume  
 detention period of 6 hours.
- 5 a) Design a clariflocculator for treating 3 MLD of water. Make suitable (15)  
 assumptions. Prepare a neat sketch.
- 6 a) Explain the theory of filtration. (4)  
 b) With a neat sketch, explain the working of a slow sand filter. (6)  
 c) Compare slow sand and rapid sand filters. (5)

**PART C**

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

- 7 a) What are the requirements of a good disinfectant. (4)  
b) Explain the theory of chlorination. (6)  
c) Explain different types of chlorination. (10)
- 8 a) Give an account on Ion Exchange Process. Explain its advantages also. (10)  
b) How can you remove permanent hardness by Lime Soda Process? (10)
- 9 a) What are the requirements of a good distribution system? (5)  
b) Write short note on the different layout of distribution networks. (10)  
c) Explain the equivalent pipe method with neat sketch. (5)

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