

Total No. of Questions : 4]

SEAT No. :

P8861

[Total No. of Pages : 2

Oct-22/TE/Insem-516

T.E. (Civil Engineering)

WATER SUPPLY ENGINEERING

(2019 Pattern) (Semester - I) (301002)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) Solve Q.1 or Q.2, Q.3 or Q.4.
- 2) Each question carries equal marks.
- 3) Figures to the right indicates full marks.
- 4) Use of calculator is allowed.
- 5) Assume suitable data, if necessary.

- Q1) a) Using the data given below, find the population for the year 2020 using
i) Arithmetic Increase method. ii) Geometrical Increase Method. [6]

Year	1950	1960	1970	1980	1990	2000
Population (Thousand)	65	68	72	79	89	97

- b) Enlist various physical, Chemical and biological characteristics of water. [3]
- c) Enlist various units of water treatment plant. Also mention functions of each treatment unit. [6]

OR

- Q2) a) Find out water demand of a town in the year 2041 by Incremental Increase method from the following census data : [6]

Year	1961	1971	1981	1991	2001	2011
Population	858545	1015672	1201553	1691538	2077820	2585862

- b) State types of Aerators and list out the objectives of aeration. [4]
- c) What is principle of sedimentation? Enlist the various factors affecting sedimentation. [5]

Q3) Design a cascade type circular aerator with following data : [6]

- a) i) quantity of water flowing over aerator per day is 150 MLD.
- ii) loading rate is $0.03 \text{ m m}^2/\text{m}^3/\text{hr}$
- iii) velocity of flow in collecting channel 1 m/s
- b) The average daily demand at a town has been estimated as 8 million liters per day. Design a suitable sedimentation tank assuming a detention period of 5 hours and velocity of flow as 22 cm per minute . [5]
- c) Write a short note on: Tube settlers [4]

OR

- Q4)** a) A circular sedimentation tank fitted with mechanical sludge removal unit is to treat 40 million litres of water per day. The detention period of the tank is 5 hours. If the depth of the tank is to be restricted to 3 m, calculate the diameter of the tank. [6]
- b) Explain the various types of settling of particles in sedimentation tank. [4]
 - c) Draw and explain treatment flow sheet of surface water. [5]

