

Total No. of Questions : 4]

SEAT No. :

PE16

[6579]-316

[Total No. of Pages : 2

T.E. (Civil) (Insem)

**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 indicate full marks.
- 4) Use of calculator is allowed.
- 5) Assume suitable data, if necessary.

Q1) a) Enlist the data to be collected for water supply scheme. [3]

b) Give the standards as per IS 10500 of the following for drinking water [6]

- i) pH
- ii) Alkalinity
- iii) Hardness
- iv) Chlorides
- v) Turbidity
- vi) Sulphate

c) Using the data given below, find the population for the year 2030 using [6]

- i) Arithmetic Increase method.
- ii) Geometrical Increase Method.

Year	2000	2010	2020	1980	1990	2000
Population (Thousand)	67	70	74	81	91	99

OR

Q2) a) Explain any three formulae to calculate Fire demand. [3]

b) Using the data given below, find the population for the year 2041 using Declining growth method. [6]

Year	1971	1981	1991	2001	2011
Population	90450	130550	184349	253575	326680

c) Discuss various factors that affecting the rate of water demand. [6]

P.T.O.

- Q3)** a) What are the objectives of treatment of water? [3]
- b) Design a cascade type circular aerator with following data. [6]
- i) Quantity of water flowing over aerator per day is 120 MLD.
 - ii) Loading rate is $0.03 \text{ m}^2/\text{m}^3/\text{hr}$.
 - iii) Inlet pipe diameter is 1.1 m.
 - iv) Velocity of flow in collecting channel is 1 m/s.
 - v) Tread is 1.2 m.
- c) What are the Various types of plain sedimentation basins? Explain any one with neat sketch. [6]

OR

- Q4)** a) Draw and explain treatment flow sheet of surface water. [4]
- b) Design a rectangular settling tank to treat 1.5 MLD of water. Assume detention time of 3 hours and flow through velocity of 0.07 m/min. Consider the depth of the tank 3m and 0.5m as free board. Find the overflow rate and dimension of the tank. [6]
- c) Enlist various methods of aeration. Draw plan and cross section for circular type cascade aerator. [5]

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