G.R. No. [ ]

paper code} P119.124(SSE)

DECEMBER 2019 / ENDSEM
F. Y. M. TECH. (Water Resources and Environmental Engineering- Civil Engineering) (SEMESTER - I)
COURSE NAME: Advanced Water Treatment (Elective II)
COURSE CODE: CVPA11184A
(PATTERN 2018:R1)

Time: [3 Hour]   [Max. Marks: 50]

(*) Instructions to candidates:
1) Answer Q.1, Q.2, Q.3, Q.4 OR Q.5, Q.6 OR Q.7, Q.8 OR Q.9
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed
4) Use suitable data where ever required

Q.1) a) Compare Geometrical Increase Method with Incremental Increase Method.
[3 marks]

OR

b) What is the Logistic Curve Method to find the Population at n^{th} decade?
[3 marks]

Q.2) a) What is the Spray Type of Aerator?   [3 marks]

OR

b) List down the Physical and Chemical Methods of Water Disinfection?
[3 marks]

Q.3) a) What are the factors affecting Adsorption?   [2 marks]

OR

b) State the Zeolite Process of Water Softening?   [2 marks]

Q.4) Design a set of rapid sand filters for treating water required for a population of 80,000. Rate of water supply= 200 lit/hr/day. The filters are rated to work at 5000 lit/hr/m2. Show the arrangement of filter units.   [14 marks]

OR

Q.5) a) for 1 lakh population with 200 liters per capita per day water supply, find out the dimensions of Rapid Sand Filter. The rate of filtration= 6000 lit/hr/m2. If break through index B=10-3 and mean size of sand=1mm, find the depth of sand (use **Hudson's formula**) for the terminal head loss of 2.5m. If 2% of daily demand is utilized for back washing, how much water is used for back wash? [14 marks]

b)

Q. 6) a) What is the Darcy's Law of Ground Water. Write down the derivation of finding out velocity of ground water. [6 marks]

b) Write down the various empirical formulas for estimating ground water? [8 Marks]

OR

Q.7) a) What the various forms of underground sources and their exploitation? [10 marks]

b) What are the various types of Aquifers? [4 Marks]

Q.8) a) State the principle involved in Ultra filtration? List down its various applications. [6 marks]

b) Explain the process of Reverse Osmosis. List down its various applications. [8 marks]

OR

Q.9) a) Write a note on Ion Exchange Theory. [6marks]

b) State the principle involved in Microfiltration? List down the various applications. [8 marks]

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