Total No. of Questions – [06] Total No. of Printed Pages: 02

G.R. No.	

DECEMBER 2021 - ENDSEM EXAM

S. Y. B. TECH. (Civil Engineering) (SEMESTER - I)

COURSE NAME: Environmental Engineering – I

COURSE CODE: CVUA21203

(PATTERN 2020)

Time: [1Hr] [Max. Marks: 30]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6.**
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 Distinguish in between Rapid Sand Filter with Slow Sand Filter. 4

Q.1 b Design six units of slow sand filter for the following data. 6

i) Population to be served= 60,000 persons
ii) Per capita water demand= 150 lit/person/day
iii) Rate of filtration= 180 lit/hr/m^2
iv) L/B= 2
v) Maximum Demand= 1.8*Average daily demand
vi) Out of six units, one unit will act as stand by.

Draw its layout

OR

Q2 a Compare Mechanical Straining of filtration with Biological Action of filtration 4

Q2 b 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/m^2. Show the arrangement of filter units. 6

Q.3 a Distinguish in between Continuous Water Supply and Intermittent Water Supply. 4

Q.3 b Explain the Carbon Adsorption Technique towards the removal of Taste and Odor from water. 6

OR

Q.4 a Explain Automation in Water Supply. 4

Q.4 b Classify the Membrane Techniques used to removal of Dissolved Salts from water. 6

Q.5 a Explain the Causes of leakages and its detection in Water Distribution System 4

Q.5 b Design the ESR for balancing capacity to a town having a population of 2 million and water supply rate 300 Lit/capita/day. 6
Water is pumped continuously for 24 hrs.
Breakup of the demand is as follows-

Time	**Demand (Lit/Cap/Day)**
3 am to 9 am	80
9 am to 1 pm	50
1 pm to 7 pm	85
7 pm to 11 pm	30
11 pm to 3 am	35

OR

Q.6 a Compare Radial System and Grid Iron System of Water Distribution 4

Q.6 b Design the Balancing Capacity of Service Reservoir for a town with a population of 1 lakh is to be supplied with water daily at 250 lit/ head/ day. The variation in demand is as follows. 6

6 am to 9 am	40% of Total
9 am to 12 noon	10% of Total
12 noon to 3 pm	10% of Total
3 pm to 6 pm	15% of Total
6 pm to 9 pm	25% of Total

The Supply to the town is 6am to 9pm. Determine the capacity of service reservoirs assuming pumping to be at uniform rate and period of pumping to be 6 am to 6 pm.

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