

G.R. No.

Paper Code 20359-112 (ESE)

**DECEMBER 2019/ ENDSEM****T. Y. B. TECH. (Civil Engineering) (SEMESTER - I)****COURSE NAME: Environmental Engineering-I****COURSE CODE: CVUA31172****(PATTERN 2017)**

Time: [2 Hour]

[Max. Marks: 50]

**Instructions to candidates:**

- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8.
- 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) Write a note with a suitable sketch on Electrostatic Precipitator. [6 marks]

**OR**

b) Write a note on –

- i) Sound Pressure Level
- ii) Sound Power Level

[6 marks]

Q.2 a) Write a note on- incineration and pyrolysis process of disposal of solid waste. [6 marks]

**OR**

b) What are the various methods of disposal of Hazardous waste

[6 marks]

Q.3 a) Explain with neat sketch-

[6 marks]

- i) Gravity System of Water Distribution
- ii) Pumping System of Water Distribution

**OR**

b) Compare Radial System and Grid Iron System of Water Distribution

[6 marks]

Q.4 a) Write a note on-

[4 marks]

- i) Fill and Draw type of Sedimentation Tank.
- ii) Continuous Flow type of Sedimentation Tank.

**OR**

b) What is Stokes Law of Sedimentation? List down its Limitations.

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[4 marks]

Q.5 a) 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<sup>2</sup>. Show the arrangement of filter units. [6 marks]

b) Write a note on- [4 marks]

i) Mechanical Straining of filtration

ii) Biological Action in filtration

c) What are various methods of Disinfection of water? [4 marks]

OR

Q.6 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/m<sup>2</sup>. 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? [6 marks]

b) Compare Slow Sand Filter and Rapid Sand Filter. [4 marks]

c) What are various Appurtenances used in Slow Sand Filter. [4 marks]

Q.7 a) Explain in details the Lime Soda Process of water softening with possible reactions. [6 marks]

b) What is the Electro Dialysis process of Demineralization of Water?

[4 marks]

c) Write a note on SCADA System of smart city. [4 marks]

OR

Q.8 a) Explain in details the Ion Exchange Process of water softening with possible reactions. [6 marks]

b) How the odor and color will get removed from water? [4 marks]

c) Explain smart water supply for a smart city. [4 marks]