T.E./Civil/Sem-VI/R-19/'C'Scheme/Sub-EE/S.H.2024
Date:- 12/12/2024
SP. Code:- 10070790

(3 Hours) [Total Marks : 80]

Notes :

1. Question No **ONE** is **Compulsory**.
2. Answer any **THREE** from remaining.
3. Draw **FIGURES** wherever necessary. Figures to the right indicate full marks.
4. **WRITE** proper question / sub question numbers on the left margin allotted in answer sheet.
5. Each Question carries **EQUAL** marks.
6. **ASSUME** any additional data if necessary and state it clearly.

1. Attempt (Any 4)

a) Explain the factors affecting the location of intake structure. **05**

b) Explain with neat sketch function of intercepting trap. **05**

c) Explain physical characteristics of water. **05**

d) Explain how our body protect us from particulate matter in air pollution. **05**

e) What is rain harvesting? Explain with neat sketch roof top rain water harvesting **05**

f) Explain the 5R principle of solid waste management. **05**

2. a) i) The BOD of a waste water incubated for two days at 30 °C has been found to be 210mg/lit. What will be the 5 day BOD at 20 °C ? K_D =0.15 at 20 °C. **05**

ii) Explain any one method to control noise pollution. **05**

b) What are the advantages of aeration process? Explain types of aeration systems. **10**

3. a) i) Explain with neat sketch oxygen sag curve? **5**

ii) Determine the velocity of flow and discharge flowing through sewer of diameter 0.45m flowing half full laid at gradient of 1:250. Take N=0.013 **5**

b) What is the carbonate hardness and non-carbonate hardness of water? Give the advantages of iron and manganese removal from water. **10**

4. a) The maximum daily demand of WTP is 5MLD. Design the dimension of suitable sedimentation tank if surface overflow rate is 500 lit/hr/m^2. Assume velocity of flow 20 cm/minute and detention period of 4 hours. **10**

b) What are the component (appurtances) of sewerage system. Explain the function of each unit. **10**

5. a) Explain role of monochloramine, dichloramine and trichloramine in water treatment. **10**

b) i)Design septic tank for the small colony of 200 persons. The rate of water supply is 150 lit/capita/day. Assuming the desludging period of 12 month and length to width ratio 3:1. **6+4**

ii) Differentiate between aerobic and anaerobic treatment process

6. i) What is SVI? Explain the process to calculate SVI in laboratory. **5x4**

ii) Explain the role of oxidation pond in sewage treatment process.

iii) Explain the function of under drainage system in rapid sand filter.

iv) Determine the efficiency of trickling filter for following data

a) Sewage flow -4MLD b) BOD of raw sewage – 280mg/l c)BOD removal in PST – 30% d)Effluent desired – 30mg/l