

19/05/14

BE [Civil] : Sem VII : EE-II

QP Code : MV-19959

[Total Marks : 80

(3 Hours)

- N.B : (1) Question No.1 is compulsory
(2) Attempt any four questions out of Six questions
(3) Assume suitable data wherever necessary

- Q1. Answer any Four 20 M
1. The 3 days 20°C BOD of domestic sewage is 400 mg/l. Estimate the 5 day BOD at 20°C. Assume value of $k_{20} = 0.1/\text{day}$ (base e).
 2. State the significance of BOD in waste water treatment.
 3. Name the two factors used as criteria for selection of pipe diameter and slope in design of sewer
 4. Define Noise and explain why it should be regarded as an environmental pollutant.
 5. Enumerate the various sources of air pollution.
- Q2. 1. What are traps, and why are they provided? How can the water seal in traps be broken? What methods are to be employed to maintain the seal? 10 M
2. Explain the various sewer appurtenances used in the sewerage system 10 M
- Q3. 1. Explain in detail the dilution method of disposal of sewage. State the oxygen sag curve. 10M
2. Differentiate between aerobic and anaerobic treatment of sewage giving major end products. Name one treatment method in each category. 10 M
- Q4. 1. Calculate the discharge of 1.25m circular sewer laid at a slope of 1 in 360, when it is running half full. Assume n in Manning's formula as 0.011. 10 M
2. Draw a flow diagram of an activated sludge plant for the treatment of sewage. Discuss the role of return sludge. 10 M
- Q5. 1. Design a septic tank for a hostel of 250 inmates with average daily sewage flow of 120 litres per head. Detention period is 30 hours. Cleaning interval is 6 months. Draw a neat sectional sketch showing all details. 12 M
2. Discuss the stages of biological action constituting sludge digestion. 8 M
- Q6. 1. Define sludge bulking and explain causes of sludge bulking. 08 M
2. Determine the size of a high rate trickling filter for the following data 12 M
- Sewage flow = 4 MLD Recirculation ratio=1.3 BOD of raw sewage = 300 mg/l
- B O D removal in Primary tank =25% Final effluent BOD desired = 30 mg/l
- Q7. 1. Explain the causes, effects and control measures of Air pollution. 10 M
2. Explain factors affecting self purification of stream. 10 M