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10CV71

Seventh Semester B.E. Degree Examination, June/July 2019
Environmental Engineering - II

Time: 3 hrs.

Max. Marks:100

Note:1. Answer any FIVE full questions, selecting atleast TWO questions from each part.
2. Assume any missing data suitably.

PART - A

- 1 a. Give the various sources of sewage in a city. (04 Marks)
b. What is Water carriage system of sewerage? Give its advantages and disadvantages. (08 Marks)
c. Explain i) Sullage ii) Garbage iii) Invert iv) Drainage. (08 Marks)
- 2 a. Write a note on Velocity of sewage flow in sewer design. (08 Marks)
b. List the different methods of estimation of storm flow and explain the rational method. (06 Marks)
c. Give the requirements of a good sewer material and explain ventilation of sewer. (06 Marks)
- 3 a. Design a sewer to serve a population of 50,000 with daily per capita water supply rate of 135 litres, of which 85% find its way into the sewer. The slope available for the sewer to be laid is 1 in 600 and the sewer should be designed to carry 4 times the dry weather flow when running full. What would be the velocity of flow in the sewer? Assume $N = 0.012$ in Manning's formula. (08 Marks)
b. Explain with a neat sketch, a drop manhole. (06 Marks)
c. Give the basic principles of house drainage. (06 Marks)
- 4 a. Distinguish between BOD and COD. (06 Marks)
b. What is Combined system of sewerage? Give its merits and demerits. (06 Marks)
c. What is a Trap? Give its two requirements and its classifications. (08 Marks)

PART - B

- 5 a. Write a note on reuse and recycle of waste water. (06 Marks)
b. List any six conditions favourable for Land disposal of sewage. (06 Marks)
c. Give the flow diagram of a conventional secondary treatment of sewage, indicating the significance of units provided. (08 Marks)
- 6 a. What are Screenings? How they are disposed off? (06 Marks)
b. Explain the zones of purification. (08 Marks)
c. What is sewage sickness? List any four remedial measures of its prevention. (06 Marks)
- 7 a. The sewage of a town is to be discharged into a river. The quantity of sewage produced per is 10 million litres and its BOD is 200 mg/L. If the discharge in the river is 250 litres per second with its BOD 6 mg/L, find the BOD of the resulting mixture. What should be the river discharge if it is desired to reduce the BOD of the resulting mixture to 20 mg/L? (06 Marks)
b. With regard to trickling filter, explain hydraulic loading and organic loading. (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



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- c. With the help of a neat sketch, explain the working principle of stabilization pond and give the advantages and disadvantages of stabilization ponds. (10 Marks)
- 8 a. Explain with a neat sketch, the working of a septic tank. (06 Marks)
- b. Explain i) F/M ratio ii) Sludge Volume Index (SVI) iii) MLVSS. (06 Marks)
- c. Using NRC equation find the volume of a HRTF to produce an effluent having BOD concentration of 20 mg/L for a sewage flow of 5 MLD with BOD 300 mg/L. Assume 30% of BOD satisfied at primary treatment and recirculation ratio 2.0. (08 Marks)
