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Roll No.....

CE-703 (GS)

B.E. VII Semester

Examination, December 2017

Grading System (GS)

Environmental Engineering - II

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume missing data, suitably.

1. a) Discuss the comparative merits and demerits of the separate system and combined system of sewerage.
   b) Mention the various sewer appurtenances used in a sewerage schemes and state the location and utility of each.

2. a) What is the difference between BOD and COD? A 2% solution of a sewage sample is incubated for 5 days at 20°C. The depletion of oxygen was found to be 4mg/*l*. Determine the BOD of the sewage.
   b) What is sewage farming? What are its advantages over the method of disposal of sewage by dilution? What precautions must be taken in its operation to prevent health hazards using the produce?

3. a) Explain in detail the self-purification of streams and oxygen sag curve.
   b) The 5 days BOD at 20°C of a waste water is 200mg/*l*. Taking K_1=0.15/day, estimate the ultimate BOD. Also determine the 8 days BOD at 15°C.

4. a) With the help of neat sketch explain the working of trickling filter unit. Also mention the design criteria of the same.
   b) Design grit chamber for the treatment of dry weather flow 12 MLD. Assume suitable data as per requirement. Draw details of the grit chamber.

5. Design a conventional activated sludge plant to treat sewage with diffused air aeration system for the following data:
   Population = 36,000
   Average flow (sewage) = 180 *l*pcd
   BOD of sewage = 220 mg/*l*
   BOD removed in primary treatment = 30%
   Overall BOD reduction = 85%

6. a) Discuss in brief biological nitrification process.
   b) Design a septic tank for a small colony of 100 persons with daily sewage flow of 135 *l*pcd. Assume suitable data.

7. a) Explain in brief various types of privies use the rural areas.
   b) Explain the term composting. Describe Bangalore method in detail.

8. Write short notes on any four of the following:
   a) Pumps and pumping stations
   b) Population equivalent and relative stability
   c) Role of micro-organism in biological treatment
   d) Sludge thickeners
   e) Solid waste disposal

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