CBCS SCHEME

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15CV71

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Municipal and Industrial Wastewater Engineering

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain the need for Good sanitation. Describe types of sewerage system and their suitability. **(10 Marks)**

b. Explain factors affecting wet weather flow and the effects of flow variations on the design of sewerage system. **(06 Marks)**

OR

2 a. Define Sewer Appurtenances and explain with neat sketch construction and working of manhole. **(06 Marks)**

b. What do you understand by the term Low – cost treatment? **(02 Marks)**

c. Explain the following with sketches :
i) Septic tank ii) Oxidation pond. **(08 Marks)**

Module-2

3 a. Explain briefly the dilution method of disposal of sewage. What are the factors which influence the choice of the method to be adopted? **(06 Marks)**

b. Design a sewer to serve a population of 36,000, the daily per capita water supply allowance being 135 lt, of which 80%, find its way into the sewer. The slope available for the sewer to be laid is 1 in 625 and the sewer should be designed to carry four times the dry weather flow, when running full. What would be the velocity of flow in the sewer when running full? **(10 Marks)**

OR

4 a. Discuss in details the process Deoxygenation and Reoxygenation with respect to self – purification of Natural water with a neat sketch. **(08 Marks)**

b. Write short notes on :
i) Sewage sickness ii) Sewage farming. **(08 Marks)**

Module-3

5 a. Write the flow diagram employed for a municipal wastewater treatment plant. Indicate the importance of each unit indicated in the flow diagram. **(10 Marks)**

b. Explain the importance of screens and types of screens in the sewage treatment process. **(06 Marks)**

OR

6 a. Determine the size of the High rate Tricking Filters for the following data :
i) Sewage flow = 4.5 MLD ii) Recirculation ratio = 1.5
iii) BOD of Raw sewage = 250 mg/L iv) BOD removal in primary tank = 30%.
v) Final effluent BOD desired = 30 mg/L. **(08 Marks)**

b. Explain briefly the different stages of sludge digestion process in a "Digestor". With a neat sketch, explain the constructional details of sludge digestion tank. **(08 Marks)**

Module-4

7 a. Differentiate between Domestic sewage and Industrial waste. (08 Marks)
b. Explain the methods used for Neutralization of Acidic and Alkaline waste. (08 Marks)

OR

8 a. Briefly explain the effects of Industrial wastewater on sewage treatment plants. (08 Marks)
b. Explain different methods of Strength Reduction. (08 Marks)

Module-5

9 a. With process flow diagram, explain the cotton textile mill wastes origin. (08 Marks)
b. Enumerate the effects of discharging paper and pulp industrial wastes into water bodies or sewers. (08 Marks)

OR

10 a. With process flow diagram, explain the origin of wastes from Cane Sugar mill. List its characteristics. (08 Marks)
b. With a flow diagram, explain the units used for treatment of Dairy waste on receiving stream. (08 Marks)

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