CBCS SCHEME

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15CV71

Seventh Semester B.E. Degree Examination, July/August 2022
Municipal and Industrial Waste Water Engineering

Time: 3 hrs. Max. Marks: 80

Note : 1. ***Answer any FIVE full questions, choosing ONE full question from each module.***
2. ***Assume any missing data suitably.***

Module-1

1 a. Explain necessity, importance and methods of Domestic Waste Water disposal. **(08 Marks)**

b. Calculate the quantity of combined sewage system for a town for the following data :
Area of the town = 500 hect ; Population density = 300 persons / hect ;
Rate of water supply = 135 ℓpcd ; Intensity of rainfall = 20.32 mm/hv ;
Peak factor = 2.00.

Types of Surface	% Area	Runoff coefficient
Roof	50	0.95
Paved surface	30	0.80
Non paved surface	20	0.25

Assume 80% of the water supplied reaches the server. **(08 Marks)**

OR

2 a. Briefly explain different shapes of sewers and joints in sewers with neat sketch. **(08 Marks)**

b. Explain the House drainage with layout sketch connection. **(08 Marks)**

Module-2

3 a. Explain Oxygen sag curve and self purification of natural streams with factor affecting self purification. **(08 Marks)**

b. The main sewer was designed for an area of 50km^2. Density of population of the town is 200 persons/hector. The average flow is 250 ℓpcd. The peak discharge is 1.5 times more than average flow. Rainfall equivalent of 8mm/24 hours all of which are runoff.
i) What should be the flow in sewer?
ii) Find the min. velocity and gradient required to transport sewer containing coarse sand of 1mm diameter through a sewer of 35 cm diameter specific gravity of particle is 2.65 and values of K = 0.06 and f = 0.03 , n = 0.012. **(08 Marks)**

OR

4 a. What are Hydraulic elements for circular sewer for partial flow conditions? **(08 Marks)**

b. Discuss Sewage farming methods , Sewage forming and Sewage sickness. **(08 Marks)**

Module-3

5 a. Explain flow diagram of municipal waste water treatment plant. **(08 Marks)**

b. Explain the process of Screening and grit chamber, with a neat figure. **(08 Marks)**

OR

6 a. Explain Trickling filter with step by step process of Trickling filter with a neat sketch. **(08 Marks)**

b. Explain the process of Activated sludge process, with a flow diagram. **(08 Marks)**

Module-4

7 a. Explain Neutralization treatment process for high or too low pH of Industrial waste water. **(08 Marks)**

b. Discuss Equilisation and proportioning of Industrial waste water treatment. **(08 Marks)**

OR

8 a. Explain Volume reduction process of effluent treatment. **(08 Marks)**

b. Write note on Strength reduction process in Industrial waste water treatment. **(08 Marks)**

Module-5

9 a. With process flow diagram, explain the origin of waste from cane sugar mill. **(08 Marks)**

b. Explain process flow diagram of waste water from Textile industry and its treatment. **(08 Marks)**

OR

10 a. Explain the process of sewage treatment form dairy industry with process flow chart. **(08 Marks)**

b. Explain the process and treatment of Industrial water from Tanning industry, with the help of flow diagram. **(08 Marks)**

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