



CBCS SCHEME

18CV55

Fifth Semester B.E. Degree Examination, June/July 2024 Municipal Waste Water Engineering

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain methods of sewage disposal and systems of disposal. (10 Marks)
b. Define Dry and Wet weather flow and discuss the factors affecting dry and wet weather flow. (10 Marks)

OR

- 2 a. Explain man hole with sketch. (10 Marks)
b. With the neat sketch, explain the basic principles of house drainage works. (10 Marks)

Module-2

- 3 a. Explain Self cleaning, Non – scouring and regime velocity in sewage flow. (10 Marks)
b. The main sewer was designed for an area of 50km². Density of population of town is 200 persons/hectare. The average flow is 250 lpcd. The peak discharge is 1.5 times more than average flow. Rainfall equivalent of 8mm in 24 hours, all of which are runoff. Determine i) The capacity of sewer ii) Min. velocity and gradient required to transport sewage containing coarse sand of 1mm dia. through a sewer of 35cm dia, sp. Gr of particle is 2.65 and value of K = 0.06, f = 0.03. (10 Marks)

OR

- 4 a. Explain the municipal waste water treatment process with flow diagram. (10 Marks)
b. What are the physical, chemical and biological characteristics of sewage? (10 Marks)

Module-3

- 5 a. Explain the importance of screens and types of screens in the sewage treatment process. (10 Marks)
b. Explain the i) Sewage forming ii) Grit chamber. (10 Marks)

OR

- 6 a. Explain Oxygen sag curve and zones of purification. (10 Marks)
b. Sewage flow of 100 cumec from a city is discharged in a perennial river which is fully saturated with oxygen and flows at a min rate of 1250 cumec with a min velocity of 0.15m/sec in the 5 day BOD of the sewage is 260mg/l. Find out where the critical DO will occur in the river. Assume coefficient of purification of river as 4.0, coefficient of DO as 0.11, the ultimate BOD as 125% of the 5 day BOD of the mixture of sewage and river water, temp of 20°C for which DO is 9.17mg/l and DO of effluent as zero. (10 Marks)

Module-4

- 7 a. Explain Activated Sludge processes. (10 Marks)
b. Design a set of two circular sedimentation tanks to treat 5 Mltrs of sewage per day. Assume detention period of 2 hours. (10 Marks)

OR

- 8 a. Explain sludge digestion areas with a neat sketch. (10 Marks)
b. Design a low rate filter to treat 6.00 MLD of sewage of BOD of 210 mg/ℓ. The final effluent should be 30mg/ℓ and organic loading rate is 320g/m³/d. Assume 30% of BOD load removed in primary sedimentation. (10 Marks)

Module-5

- 9 a. Explain how cost treatment process of sewage. (10 Marks)
b. Explain principle and design of septic tank. (10 Marks)

OR

- 10 a. Explain Eco toilets and its process. (10 Marks)
b. Explain Soak pit with neat sketch. (10 Marks)
