



# CBCS SCHEME

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## Seventh Semester B.E. Degree Examination, June/July 2019 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. Any missing data can be assumed.*

### Module-1

- 1 a. Define sanitation. Mention advantages and disadvantages of different methods of sewage disposal. (08 Marks)  
b. Name different types of sewage system with their advantages and disadvantages. (08 Marks)

OR

- 2 a. With sketch explain shapes of sewers. (08 Marks)  
b. Draw a neat plan showing house drainage connections with labeling parts. (08 Marks)

### Module-2

- 3 a. What is self purification of stream? With sketch, explain oxygen sag curve. (08 Marks)  
b. With sketch explain zones of purification. (08 Marks)

OR

- 4 a. What is sewage sickness? Mention methods used to prevention of sewage sickness? (08 Marks)  
b. A wastewater effluent of 560 l/sec with BOD = 50 mg/l, dissolved oxygen = 3.0 mg/l and temperature of 23°C enters a river where the flow is 28 m<sup>3</sup>/sec and BOD = 4.0 mg/l, D.O = 8.2 mg/l and temperature is 17°C. K<sub>1</sub> of the waste is 0.1 per day at 20°C. The velocity of water in the river downstream is 0.18 meter/sec and depth of 1.20 mts. Determine following after mixing of waste water with the river (i) Combined discharge (ii) BOD (iii) D.O (iv) Temperature. (08 Marks)

### Module-3

- 5 a. Draw a flow diagram of municipal waste water treatment plant with their operation units. (08 Marks)  
b. Briefly explain characteristics of domestic waste water. (08 Marks)

OR

- 6 a. List the difference between activated sludge process and trickling filters. (08 Marks)  
b. With sketch explain grit chamber and skimming tank. (08 Marks)

### Module-4

- 7 a. Mention the differences between domestic waste water and industrial waste water. (08 Marks)  
b. Write note on:  
i) Volume reduction  
ii) Strength reduction  
iii) Neutralization  
iv) Equalization (08 Marks)

OR

- 8 a. What are the merits and demerits of municipal and industrial waste water combined treatment methods. (08 Marks)
- b. Briefly explain methods used to removal of organic and inorganic salts from waste water. (08 Marks)

**Module-5**

- 9 a. Explain with flow diagram, treatment option for distilleries plant. (08 Marks)
- b. With the help of flow chart, mention sources and characteristics of waste water from tannery. (08 Marks)

OR

- 10 a. Explain with flow diagram, treatment option for sugar mills. (08 Marks)
- b. With the help of flow chart, mention sources and characteristics of waste water from pharmaceutical industry. (08 Marks)

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