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10CV835

Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Industrial Waste Water Treatment

Time: 3 hrs.

Max. Marks:100

- Note:** 1. Answer FIVE full questions, selecting at least TWO full questions from each part.
2. Draw neat labeled diagram wherever necessary
3. Suitable data can be assumed.

PART - A

- 1 a. Write the effect of industrial waste water on municipal sewage treatment plants. (05 Marks)
b. Define stream sampling and explain in brief the factors to be considered during sampling. (05 Marks)
c. Briefly explain effluent and stream standards and legislation to control water pollution. (10 Marks)
- 2 a. Explain self purification of streams with oxygen sag curve. (10 Marks)
b. A waste water effluent of 570 l/s with a BOD = 55 mg/l, DO = 2.5 mg/l and temperature of 25°C enters a river where the flow is 30m³/sec and BOD = 4 mg/l. DO = 8.4 mg/l and temperature of 17°C. Deoxygenation constant for the waste is 0.10 per day at 20°C. The velocity of water in the river downstream is 0.15 m/s and depth of flow is 1.2m. Determine the following after mixing of waste water. i) Combined discharge; ii) BOD of mix; iii) D.O of mix and iv) Temperature of mix. (10 Marks)
- 3 a. Write short notes on: i) Strength reduction; ii) Neutralization. (10 Marks)
b. Equalization and proportioning is of much importance in industrial waste water. Justify with proper procedure. (10 Marks)
- 4 a. Write short notes on: i) Reverse osmosis; ii) Dialysis. (10 Marks)
b. Explain the methods for treatment and disposal of sludge solids. (10 Marks)

PART - B

- 5 a. Write the advantages of combined treatment of industrial waste water with domestic waste. (05 Marks)
b. Explain the stages of Tanning process. (05 Marks)
c. Write the procedure with suitable example for discharge of partially treated and completely treated wastes into streams. (10 Marks)
- 6 a. Describe the characteristics and treatment of waste water from a sugar industry. (10 Marks)
b. With a flow diagram explain treatment of cotton textile mill wastes. (10 Marks)
- 7 a. Explain the treatment methods to treat waste water generated from steel industry with a flow diagram and add a note on its waste water characterization. (10 Marks)
b. Write short notes on:
i) Reusing and recycling of waste water.
ii) Characteristics of Indian Tannery Industrial Waste Water. (10 Marks)
- 8 a. With a flow diagram, explain the treatment of combined antibiotics and chemical wastes. (10 Marks)
b. Write the characteristics of combined effluent of a pulp and paper mill and add its effects of wastes on sewers. (10 Marks)
