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17CV71

## Seventh Semester B.E. Degree Examination, July/August 2021 Municipal and Industrial Wastewater Engineering

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

- 1 a. Name different types of sewerage system with their advantages and disadvantages. (10 Marks)  
 b. List and explain factors affecting Dry Weather Flow (DWF). (10 Marks)
- 2 a. Define Sewer appurtenance and explain with neat sketch, construction and working of manhole. (10 Marks)  
 b. Explain the following with sketches Septic tank and Oxidation pond. (10 Marks)
- 3 a. What is Self purification of stream? With neat sketch, explain Oxygen Sag Curve. (10 Marks)  
 b. With neat sketch, explain Zones of purification. (10 Marks)
- 4 a. Disposal by dilution is adopted for a city which discharges  $100\text{m}^3/\text{sec}$  of sewage into a river which is fully saturated with oxygen and is flowing at the rate of  $1500\text{ m}^3/\text{sec}$  during its lean period with a velocity of  $10\text{m}/\text{min}$ . the  $\text{BOD}_5$  of the sewage is  $350\text{ mg}/\text{lit}$ . Find when and where the critical dissolved oxygen deficit will occur in the downstream and what is its amount? Assume self purification factor as 4.0 and deoxygenation constant as  $0.1/\text{day}$ . Assume saturation D.O at given temperature as  $9.2\text{mg}/\text{lit}$ . (10 Marks)  
 b. Write short notes on sewage sickness and sewage farming. (10 Marks)
- 5 a. Draw a flow diagram of municipal waste water treatment plant with their operation units. (10 Marks)  
 b. Briefly explain characteristic of Domestic waste water. (10 Marks)
- 6 a. Explain with neat sketch, the working principles of trickling filter. (10 Marks)  
 b. Design sludge digestion tank for one lakhs population. The sludge content per capita per day is  $0.07\text{kg}$ . The moisture of sludge is 94% to specific gravity of wet sludge is 1.02 and 3.5% of fresh sludge is being mixed with digested sludge. (10 Marks)
- 7 a. Mention the difference between Domestic waste water and Industrial waste water. (10 Marks)  
 b. Write a note on Volume reduction and Strength reduction. (10 Marks)
- 8 a. Explain the methods used for neutralizing of acidic and alkaline water. (10 Marks)  
 b. What are the merits and demerits of Municipal and Industrial waste water combined treatment methods? (10 Marks)
- 9 a. Explain with flow diagram, treatment option for sugar mills. (10 Marks)  
 b. With the help of flow chart, mention sources and characteristics of waste water from cotton textile mill. (10 Marks)
- 10 a. With process flow diagram, explain the origin of wastes from Distilleries plant. (10 Marks)  
 b. Enumerate the effects of discharging paper and pulp industrial wastes into water bodies or sewers. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg.  $42+8=50$ , will be treated as malpractice.