

Reg. No.

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B. E / B. TECH.DEGREE EXAMINATION, MAY 2023

Sixth Semester

CH18006 – WASTEWATER TREATMENT*(Chemical Engineering)***(Regulation 2018)****TIME:3 HOURS****MAX. MARKS: 100**

- CO1** Evaluate the various regulations related to wastewater treatment
CO2 Identify the reactors used in wastewater treatment
CO3 Compare unit processes in wastewater treatment
CO4 Discuss biological treatment methods of wastewater
CO5 Determine the advanced technologies in wastewater treatment

PART- A(10x2=20Marks)

(Answer all Questions)

	CO	RBT LEVEL
1. List the physical characteristics of waste water.	1	2
2. Identify the limitations in the BOD test	1	3
3. Differentiate ideal flow and non ideal flow.	2	4
4. Explain mass balance analysis.	2	2
5. Mention the significance of Zeta potential.	3	2
6. Contrast coagulant and flocculent.	3	4
7. Identify design criteria for RBC pertaining to domestic waste water treatment.	4	3
8. Infer the importance of exponential growth phase in bacterial growth curve?	4	4
9. Classify the ion exchange resins.	5	3
10. List out the advantages of membrane filtration.	5	2

PART- B (5x 14=70Marks)

	Marks	CO	RBT LEVEL
11. (a) Classify the industrial waste water and evaluate their health and environmental concerns.	(14)	1	4
(OR)			
(b) Explain different physical chemical and biological characteristics of waste water and discuss their environmental significance.	(14)	1	4
12. (a) Explore the factors involved in the waste water treatment process selection.	(14)	2	4

(OR)

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|----------------|---|-------------|----------|----------|
| (b) | Demonstrate the modeling of Non ideal and ideal flow in reactors. | (14) | 2 | 4 |
| 13. (a) | Explain the role unit operations and unit processes in waste water treatment | (14) | 3 | 5 |
| (OR) | | | | |
| (b) | List the various concepts involved in chemical oxidation reaction? Explain any three of them in detail. | (14) | 3 | 4 |
| 14. (a) | Elaborate the difference between attached growth process and suspended growth process. | (14) | 4 | 3 |
| (OR) | | | | |
| (b) | Discuss about microbial metabolism and nutrient requirements in biological waste water treatment process. | (14) | 4 | 3 |
| 15. (a) | Survey the application of membrane filtration in tertiary treatment of domestic waste water for industrial reuse. | (14) | 5 | 4 |
| (OR) | | | | |
| (b) | Explain how colloidal and suspended particles are removed from waste water. Describe the methods of adsorption by activated carbon. | (14) | 5 | 4 |

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

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LEVEL |
|------------|---|--------------|-----------|----------------------|
| 16. | Discuss in detail about trickling filter with a neat sketch. List their advantages and disadvantages. | (10) | 2 | 5 |
