

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIFTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2024****CHEMICAL ENGINEERING****(2020 SCHEME)****Course Code : 20CHT303****Course Name: Environmental Engineering****Max. Marks : 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. The BOD<sub>3</sub> of a wastewater sample is 75 mg/l and the reaction rate constant (k) is 0.345 per day. Calculate BOD<sub>10</sub> of the wastewater.
2. What are the objectives of boiler feed water treatment?
3. Why is it important to remove grit from influent wastewater during the pretreatment stage? List the factors that must be taken into consideration while selecting a grit removal process?
4. Explain coagulation as a wastewater treatment method. What are the different mechanisms of coagulation?
5. Explain the importance of sludge treatment during wastewater treatment process.
6. What are hazardous wastes? Explain the characteristics exhibited by hazardous wastes.
7. What is particulate matter in air pollution? Explain PM<sub>2.5</sub> and PM<sub>10</sub>
8. Explain the two types of temperature inversion.
9. Give three examples for gaseous contaminants. Suggest any four methods used to control gaseous emissions.
10. What are catalytic converters used for? How are the catalysts used in converters classified?

**PART B*****(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. a) Explain the goals and methods of sampling, preservation and analysis of wastewater. (10)
- b) What are the various regulations and legislations pertaining to water in India. (4)

**OR**

12. a) Explain the procedure for laboratory determination of (i) BOD and (ii) COD (10)
- b) With a neat sketch explain how electro dialysis is used for desalination of wastewater? (4)

**MODULE II**

13. a) With neat sketches explain the working of any two processes used for grit removal during wastewater treatment. (10)  
b) Compare aerobic and anaerobic methods in secondary wastewater treatment. (4)

**OR**

14. a) With neat sketches explain the working of any two types of sedimentation tanks used in the primary treatment of wastewater. (10)  
b) What is breakpoint chlorination? Explain. (4)

**MODULE III**

15. a) With neat sketches explain the working of any two types of sludge thickening units. (10)  
b) Explain the wastewater treatment method adopted in a textile industry. (4)

**OR**

16. a) With neat sketches explain the working of any two types of sludge dewatering units. (10)  
b) What are the methods of disposal of solid waste? (4)

**MODULE IV**

17. a) Describe four methods used for collection of gaseous air pollutants from ambient air. (10)  
b) What are the meteorological factors affecting air pollution? Explain. (4)

**OR**

18. a) Explain with neat sketches the plume behaviour. (10)  
b) Explain any global effects of air pollution. (4)

**MODULE V**

19. a) With a neat sketch explain the working of fabric filters. Mention its advantages and disadvantages. (10)  
b) What are the different methods used for automobile emission control? Explain. (4)

**OR**

20. a) What are wet collectors? Explain the working of any two types of wet collectors used for the removal of particulate matter from gas stream. (10)  
b) What are the sources and effects of noise pollution? (4)

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