

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023**(2020 SCHEME)****Course Code : 20CHT394****Course Name: Advanced Wastewater Treatment Techniques****Max. Marks : 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. Explain briefly the purpose of advanced wastewater treatment plants.
2. Write the physical, chemical, and biological properties of wastewater.
3. Write a short note on the trickling filter.
4. Explain the anaerobic filter process.
5. Compare the MF-UF-NF process.
6. Define the reverse osmosis process.
7. Explain the Fenton oxidation process.
8. List the factors affecting the electro-floatation.
9. Explain cleaner technology for wastewater treatment.
10. Identify the different characteristics of textile mill effluent.

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

11. a) Explain the need of advanced wastewater treatment plants. (7)
- b) Explain the major pollutants in wastewater effluent. (7)

OR

12. a) Write the classification of wastewater treatment methods and regularity requirement of disposal of wastewater. (9)
- b) Explain environmental legislation in India. (5)

MODULE II

13. a) Differentiate the grit chamber and sedimentation tank and explain the design criteria for the primary sedimentation tank. (9)
- b) Explain the aerobic process in wastewater treatment process. (5)

OR

14. a) Explain activated sludge process with a neat sketch. (9)
b) Explain the denitrification process in secondary wastewater treatment. (5)

MODULE III

15. a) Explain in detail the principle and chemical reaction of the ion exchange process. (7)
b) Explain in detail about types of membrane modules. (7)

OR

16. a) Explain in detail the multiple effects and forced circulation evaporator. (8)
b) Discuss in detail various membrane separation processes for wastewater treatment. (6)

MODULE IV

17. a) Discuss in detail the electrocoagulation process. (6)
b) Explain with a neat sketch about the electro-floatation process. (8)

OR

18. a) Explain the advanced oxidation process of ozone and non-ozone-based process. (7)
b) Discuss the solar photocatalytic treatment method. (7)

MODULE V

19. a) Explain the characteristic, methodology, and process for the treatment of tannery industrial wastewater. (10)
b) Discuss the physical and chemical properties of sugar industry effluent. (4)

OR

20. a) Explain sources, characteristics, and treatment methods for municipal wastewater. (8)
b) Explain the common operational problems in treatment plants. (6)
