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Question Paper Code	13930
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025**

Seventh Semester

**Civil Engineering**

**20CEEL701 - INDUSTRIAL WASTEWATER TREATMENT**

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (MCQ) (10 × 1 = 10 Marks)**

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. Which of the following industries produces the most organic waste in its effluent? (a) Textile industry (b) Sugar industry (c) Steel industry (d) Cement industry	1	K2	CO1
2. Which of the following best describes primary treatment? (a) Biological treatment of wastewater (b) Chemical treatment of wastewater (c) Physical removal of solids (d) Advanced treatment of wastewater	1	K1	CO1
3. The "Polluter Pays Principle" in India means: (a) Only government should clean pollution (b) Citizens must pay environmental tax (c) The industry causing pollution must bear the cost of cleanup (d) NGOs fund pollution control	1	K1	CO2
4. The primary purpose of equalization in industrial wastewater treatment is to: (a) Remove suspended solids (b) Adjust flow and load variations (c) Neutralize acidity (d) Kill pathogens	1	K1	CO2
5. In biological treatment, the microorganisms convert organic matter into: (a) Carbon dioxide and water (b) Nitrogen gas and oxygen (c) Ammonia and nitrate (d) Methane and sulphide	1	K1	CO3
6. The final solid waste from a ZLD plant is generally handled by: (a) Crystallization and sludge disposal (b) Discharging into nearby drains (c) Releasing into rivers (d) Burning	1	K1	CO3
7. The main objective of reject management in industries is to: (a) Increase freshwater use (b) Minimize or eliminate the disposal of concentrated effluent (c) Store wastewater indefinitely (d) Dilute the pollutants	1	K1	CO4
8. Stabilization of sludge is mainly done to: (a) Increase its volume (b) Reduce odor and pathogen content (c) Increase water content (d) Make it more corrosive	1	K1	CO4
9. The color of containers used for hazardous waste storage should be: (a) Green (b) Blue (c) Yellow or red (d) Transparent	1	K1	CO5
10. The treated effluent from an industrial wastewater treatment plant should comply with: (a) Company standards (b) Environmental Protection norms (c) Local municipal rules only (d) ISO quality standards	1	K1	CO6

**PART - B (12 × 2 = 24 Marks)**

Answer ALL Questions

11. What is Bioassay Test?	2	K1	CO1
12. What are the steps in waste minimization strategies?	2	K1	CO1
13. Write the need of the Equalization process in Physico-chemical treatment.	2	K2	CO2
14. What you meant by Activated Sludge Process?	2	K1	CO2

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*

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|---|---|----|-----|
| 15. Define Zero Liquid Discharge.                                 | 2 | K1 | CO3 |
| 16. How the R.O rejects are managed?                              | 2 | K1 | CO3 |
| 17. Write the advantages of reused wastewater in Industries.      | 2 | K1 | CO4 |
| 18. List out the types of sludge in industrial waste water.       | 2 | K1 | CO4 |
| 19. Define Secured Landfill.                                      | 2 | K1 | CO5 |
| 20. What are the major characteristics of Industrial Effluents?   | 2 | K1 | CO5 |
| 21. What are the various types of hazardous waste in Industry?    | 2 | K1 | CO6 |
| 22. What are the main changelings in treating tannery wastewater? | 2 | K1 | CO6 |

**PART - C (6 × 11 = 66 Marks)**

Answer ALL Questions

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|---|-----|----|-----|
| 23. a) Explain the industrial wastewater characteristics in detail.   | 11  | K1 | CO1 |
| <b>OR</b>   |     |    |     |
| b) Write short notes on Cost benefit analysis.  | 11  | K1 | CO1 |
| 24. a) Enumerate the aerobic and anaerobic biological treatment process with neat sketches.                           | 11x | K2 | CO2 |
| <b>OR</b>   |     |    |     |
| b) Discuss the Advanced oxidation process in detail.  | 11  | K2 | CO2 |
| 25. a) Explain about the various methods of wastewater reclamation and reuse.   | 11  | K2 | CO3 |
| <b>OR</b>   |     |    |     |
| b) Draw the Common Effluent Treatment Plant and explain in terms.   | 11  | K2 | CO3 |
| 26. a) Explain the mechanism of anaerobic and aerobic sludge digestion with their relative merits and demerits.       | 11  | K2 | CO4 |
| <b>OR</b>   |     |    |     |
| b) Explain in detail Hazardous waste management.  | 11  | K2 | CO4 |
| 27. a) State the different processes in a paper industry and indicate which of these processes produce liquid wastes. | 11  | K4 | CO5 |
| <b>OR</b>   |     |    |     |
| b) What kinds of wastes will origin from a typical dairy industry? Explain.   | 11  | K4 | CO5 |
| 28. a) What do you mean by hazardous wastes? Classify them based on their characteristics.                            | 11  | K2 | CO6 |
| <b>OR</b>   |     |    |     |
| b) Explain the methods available and limitations of land disposal of sewage.  | 11  | K2 | CO6 |