

1. Define following terms:
  - a) Sullage
  - b) Industrial sewage
  - c) Storm water
  - d) Dry Weather Flow
  - e) Sewerage
2. Why it is necessary to treat the waste water?
3. Explain different water carriage system.
4. Write a note on various physical properties of waste water
5. Describe briefly various chemical characteristics of waste water.
6. Explain detailed procedure to determine BOD of the wastewater sample.
7. Differentiate between BOD and COD.
8. Explain briefly Activated Sludge Process with following points:
  - a) Working Operation
  - b) Merits and Demerits.
9. What do you mean by Trickling Filter? Explain with the help of neat sketch.
10. Explain the principle of stabilization pond.
11. Discuss various Preliminary Treatment of Wastewater.
12. Briefly Discuss Purpose of Wastewater Treatment and Draw a neat sketch of layout of sewage treatment plant.
13. Briefly discuss wastewater, its types and Sources.
14. Design a grit chamber for following data:
  - A. Population = 3.5 lakh
  - B. Rate of water supply = 135 Lpcd
  - C. Grit size = 0.2 mm
  - D. Sp. Gr. = 2.65
  - E. Peak factor = 2
  - F. Detention period = 60 secTemperature of wastewater = 20°C
15. Explain DO Sag Curve.
16. Explain the principle of stabilization pond.
17. Explain actions involved in self-purification of stream process.
18. Describe the design steps of septic tank by rational method.

19. Explain the different methods of disposal of waste water.
20. Explain the concept of sewage recycling.
21. Design a facultative oxidation pond for following data:
  - A. Location – 20o N
  - B. Elevation above MSL = 500 m.
  - C. Mean monthly temperature= 30o C Max and 10o C min
  - D. Population to be served = 10,000
  - E. Sewage flow = 150 lpcd
  - F. Desired effluent BOD5 = 30 mg/Lit
  - G. Pond removal rate constant = 0.1 /day at 20o C (Base 10)
  - H. Sky is clear 20% of the day
  - I. BOD of raw sewage = 300 mg/Lit
  - J. Assume BOD loading = 250 kg/ha/day

**Note:** Apply correction factor for elevation and sky clearance.

22. Explain working of following with neat sketch:
  - a. Oxidation ditch
  - b. Aerated lagoons
  - c. Aerobic oxidation pond
  - d. Facultative oxidation pond
  - e. Septic tank
23. Compare domestic sewage and industrial sewage.
24. What are the physical characteristics considered for Industrial waste water?
25. Write down the chemical parameters of Industrial waste water with their permissible values.
26. Discuss in brief various treatment processes adopted for treating industrial waste water.
27. Explain effect of industrial waste discharge on water bodies.
28. Explain working of Equalization tank. Also classify it
29. Explain oil separation by floatation in industrial wastewater.
30. What is the preventive measure to control industrial pollution?
31. Explain processes of neutralization of i) Acidic industrial wastewater ii) Alkaline industrial wastewater.
32. Differentiate between Nitrification and Denitrification of wastewater
33. What do you understand by advanced waste water treatment? How it is different from conventional treatment?
34. Describe in detail the method of adsorption by activated carbon.

35. Discuss in brief the biological and chemical methods of removal of phosphorous from wastewater.
36. Describe membrane separation process. Write down its application.
37. 'Small scale industries should go for common effluent treatment plant'. Defend this statement.
38. What do you mean by common effluent treatment plant? What is the need of CETP?
39. Consider following data:
40. Propose a suitable heavy metal removal technology for secondary treated waste of above industry.
  - a) Describe: Ultrafiltration
  - b) Air stripping
41. Explain Life cycle of Mosquito. Also examine mosquito control with respect to different stages of life cycle.
42. Explain Life cycle of house fly. Also examine fly control with respect to different stages of life cycle
43. What is the rodent borne diseases and how it affects public health?
44. Categorize Air borne diseases. Explain any one in detail.
45. What do you mean by communicable diseases? What are the various methods to control it?
46. Outline facts about covid 19 disease with respect to infectious agent, reservoir, treatment and prevention and control in detail.
47. Categorize Vector transmitted diseases. Explain any one in detail.
48. Discuss in brief essentials of rural sanitation.
49. Explain how do you collect and dispose of a. dry refuse b. sullage and excretal waste in rural area.
50. Outline main features and provisions under Swachh Bharat Abhiyan (Clean India Mission).
51. Explain water quality criteria prescribed by Central Pollution Control Board (CPCB).
52. Evaluate suitability of Eco-San toilet.
53. Examine suitability of septic tanks in environmental sanitation with help of neat sketch.
54. Write short notes on the following:
  - a) Bore hole privy
  - b) Aqua privy

**Note:** This question bank is only for reference.

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