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Department of Civil Engineering

Question Bank

Subject - **BTCVC402 Environmental Engineering**

1. What is design period in designing water supply schemes? What do you understand by the term per capita demand?
2. How the population of town is forecast? Explain the various methods of population forecasting.
3. What would be the average water demand for university campus? If the design population be 10,000 estimate maximum hourly, maximum daily and maximum monthly water demand.
4. Define Turbidity. Explain Jackson's Turbidity meter with neat labelled diagram.
5. Explain Bayli's Turbidity meter with neat labelled diagram
6. What are intakes? what points should be kept in mind while selecting a site for intake works?
7. The population of town as per census record were as follows. Find the population in the year 2011, 2031, 2051, using Geometrical Increase Method.

Year	1951	1961	1971	1981
Population	40,185	44,522	60,395	75,614

8. What are the common impurities mostly found in natural water? Explain their effect on the quality of water.
9. Define Hardness. Compare carbonate hardness and non-carbonate hardness.
10. In a town, it has been decided to supply 200 lpcd in the 21st century. Estimate the domestic water requirements of this town in the year 2000 by projecting the population of the town by Increment Increase Method.

Year	1940	1950	1960	1970	1980
Population	23798624	46978325	54786437	63467823	69077421

11. How can we determine Colour and Odour of the given water sample? Explain procedure with diagram.
12. What do you understand by the biological examination of water? Why it is necessary and how it is done?
13. Explain various chemical characteristics of water? What are the various methods of determining the chemical characteristics?
14. Explain various physical characteristics of water? What are the various methods of determining the physical characteristics?
15. Define the following terms:
 - a. Palatable Water
 - b. Potable Water
 - c. Polluted Water
 - d. Contaminated Water
 - e. Wholesome Water
16. Give the permissible limits for the physical, chemical and biological characteristics of water.

1. What are the main objects of treating water?
 2. What are various processes required to remove the various types of impurities?
Give a neat sketch showing the various processes required in treating a river water, starting from the source of water.
 3. Write a short note on
 - a. Mixing devices
 - b. Flocculation
 - c. Surface overflow rate
 4. What is the main process involved in plain sedimentation? What is the necessity of using coagulants in sedimentation?
 5. What are the various chemical coagulants which are commonly used in coagulation process? How they remove suspended impurities?
 6. On what factors the dose of coagulants depends? How the optimum coagulants dose is determined?
 7. Explain clearly how does a rapid gravity filter differ in its action from a slow sand filter?
 8. With the help of neat sketch describe a pressure filter.
 9. Write a short note on
 - a. Break point chlorination
 - b. Free available chlorine
 - c. Chlorine demand
 10. What are the various methods of disinfecting the water? Explain the theory of disinfection by chlorine.
 11. Explain with reaction, disinfection of the water by: a. bleaching powder
b. chloramines
 12. What are the various methods of conveyance of water?
 13. Why the softening of water is necessary? Describe the procedure of lime soda process for water softening.
 14. What is meant by hardness of water? How it is expressed? Describe the method of softening by zeolite process.
 15. Write briefly carbonate and non-carbonate hardness in water.
 16. Write down the application of aeration and describe various types of aeration methods with neat labelled diagram.
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1. What are the requirements of good distribution systems? Describe in brief various types of distribution systems.
 2. Describe briefly the layout of distribution system which are commonly used in India.
 3. What do you understand by continuous and intermittent supply system of water? Compare both in respect to their merits and demerits.
 4. Explain briefly dead end or tree system with their advantages and disadvantages.
 5. Explain briefly Grid Iron system with their advantages and disadvantages.
 6. Write a short note on Storage and distribution reservoir.
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1. Define the term: a. Sanitary Sewage b. Industrial Sewage c. Sullage d. Runoff or Storm water e. Aerobic Bacteria f. Anaerobic bacteria g. Facultative bacteria
 2. Define sewerage system. Explain the various types of sewerage system.
 3. Explain various physical characteristics of wastewater?
 4. Explain various chemical characteristics of wastewater?
 5. What do you mean by preliminary treatment of waste water? Explain the various processes comes under it.
 6. What do you mean by primary treatment of waste water? Explain the various processes comes under it.
 7. What do you mean by Secondary treatment of waste water? Explain the various processes comes under it.

8. Differentiate between BOD and COD.
 9. In a BOD test, 1.0 ml of raw sewage was diluted to 100 ml and the dissolved oxygen concentration of diluted sample at the beginning was 6 ppm and it was 4 ppm at the end of 5-day incubation at 20°C. Find out the BOD of raw sewage.
 10. 5 ml of waste water sample is taken to form 100 ml of diluted sample. Given that $D_{oi} = 5 \text{ mg/l}$, $D_{Of} = 2 \text{ mg/l}$. Find BOD.
 11. Explain detailed procedure to determine BOD of the wastewater sample.
 12. Develop a Flowsheet for sewage treatment plant. Tabulate Function of each unit shown.
 13. Justify provision of following units in sewage treatment plant
 - i. Screen chamber and Grit chamber
 - iii. Skimming tank
 14. Define solid waste. Why it is necessary to manage solid waste.
 15. What are the effects of improper solid waste management?
 16. Explain various classification of solid waste based on source generation.
 17. Explain various classification of solid waste based on characteristics.
 18. Define hazardous waste. Write down the classification of hazardous waste with examples.
 19. Explain any disastrous accident caused because of Hazardous waste.
 20. Explain the various disposal methods of solid waste.
 21. Explain the types of waste generated from hospital & suggest disposal methods for it.
 22. Explain the various stages in solid waste management.
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1. Classify air pollutants into different categories, indicating their sources
 2. Distinguish between Primary air pollutants and Secondary air pollutants. Give their examples.
 3. List out the meteorological factors influencing air pollution
 4. Explain the following atmospheric condition:
 - a. Super adiabatic and Sub adiabatic
 - b. Neutral & Inversion
 How do they influence the dispersion of pollutants in the atmosphere?
 5. Explain with suitable diagram: Plume Behaviour
 6. Explain the terms: A) Environmental Lapse Rate B) Adiabatic Lapse Rate
 7. What are the harmful effects of polluted air on human beings?
 8. Explain the following terms with respect to leaf damage due to air pollution:
 - a. Necrosis and Chlorosis
 - b. Abscission and Epinasty
 9. Explain with examples how air pollution affects building materials.
 10. Describe briefly: Electrostatic Precipitator
 11. How we can control air pollutants in atmosphere in natural & engineered systems.
 12. With neat sketches, explain the following:
 - a. Spray tower
 - b. Cyclone collector
 - c. Gravitational settling Chamber
 - d. Fabric filters
 - e. Venturi Scrubber

Note: This question bank is for reference only.

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