

OBJECTIVE TYPE QUESTIONS

1. Sea water usually contains about:
(A) 1% of dissolved salts
(B) 4% of dissolved salts, of which NaCl is about 3.6%
(C) 10% of dissolved salts
(D) 1,000 ppm of dissolved salts
2. Extra-pure water can be obtained by using:
(A) lime-soda process
(B) permutit process
(C) electrodialysis
(D) deionization process
3. Water containing dissolved salts with a peculiar salty taste is called:
(A) soft water
(B) brackish water
(C) hard water
(D) desalinated water
4. The process of removing extra common salt from water is called:
(A) deionization
(B) softening
(C) desalination
(D) disinfection
5. The method of purifying sea water by passing direct electric current, using electrodes and thin rigid plastic membrane pair, is called:
(A) distillation
(B) deionization
(C) electrodialysis
(D) electero-osmosis
6. Which of the following methods employs ion-selective membranes?
(A) Reverse osmosis
(B) Electrodialysis
(C) Super-filtration
(D) Flash evaporator
7. Osmosis is a process in which:
(A) Solvent molecules move from a solution of higher concentration to lower concentration through a semi-permeable membrane
(B) solute molecules move from a solution of higher concentration to lower one through semipermeable membrane
(C) solvent molecules move from solution of lower concentration to higher one through semipermeable membrane
(D) solvent molecules move from a solution of higher concentration to lower concentration through semipermeable membrane
8. A semipermeable membrane allows the flow of:
(A) solvent molecules
(B) solute molecules
(C) both solute and solvent molecules
(D) neither solute nor solvent molecules
9. Swimming for a long time in salt water makes the skin of one's fingertips wrinkled. Which one of the following properties is responsible for this observation?
(A) Osmosis
(B) Dialysis
(C) Electrodialysis
(D) Coagulation
10. Hard water is water containing:
(A) Ca^{2+} , Mg^{2+} or Fe^{2+}
(B) NO_3^- and PO_4^{3-}
(C) Na^+ , K^+
(D) dissolved gases

11. Sterilization of water can be done by using :
 (A) oxygen (B) ozone (C) caustic potash (D) hydrogen peroxide
12. Hardness-producing salt, whose solubility in water *decreases* with rise of temperature, is:
 (A) $\text{Ca}(\text{HCO}_3)_2$ (B) CaCl_2 (C) CaSO_4 (D) MgSO_4
13. Which one of the following dissolved salts in water *does not* form hard scale?
 (A) CaSO_4 (B) Na_2SiO_3 (C) MgSiO_3 (D) MgCl_2
14. Which one of the following substances gets dissolved in high pressure boilers?
 (A) CaSO_4 (B) CaCO_3 (C) CaSiO_3 (D) MgCO_3
15. A chemical which can *simultaneously* acts as coagulant and softening agent is:
 (A) alum (B) soda (C) sodium aluminate (D) lime
16. Internal treatment of boiler-feed water involves:
 (A) to precipitate the scale forming substances in the form of sludge
 (B) to convert them into soluble substances
 (C) both of the above (D) none of the above
17. Hardness of water is due to the presence of Ca and Mg salts. Temporary hardness in water can be removed by:
 (A) filtration (B) boiling (C) sedimentation (D) none of these
18. Coagulants help in settling of:
 (A) suspended impurities only (B) fine suspended impurities only
 (C) colloidal particles only (D) both the suspended and colloidal particles
19. Potable water treatment *does not* involve:
 (A) sedimentation (B) coagulation (C) disinfection (D) demineralisation
20. Desalination is a process of removing:
 (A) oil (B) mineral acids (C) common salt (D) hardness from water
21. Calgon is:
 (A) NaH_2PO_4 (B) Na_3PO_4 (C) NaCl (D) $(\text{NaPO}_3)_6$
22. The flow of water through a membrane from saline water into fresh water takes place when the applied pressure on saline water is:
 (A) higher than osmotic pressure (B) lower than osmotic pressure
 (C) equal to osmotic pressure (D) zero
23. The coefficient of thermal expansion of boiler scales is:
 (A) higher than that of boiler plate (B) same as that of boiler plate
 (C) less than that of boiler plate (D) none above
24. Colloidal conditioning of boiler is done by using:
 (A) calgon (B) EDTA (C) ion-exchangers (D) lignin
25. Treatment of water during steaming inside the boiler is called:
 (A) external treatment (B) internal treatment (C) both above (D) no treatment
26. A sample of water contains sodium chloride. It is:
 (A) hard water (B) soft water (C) moderately hard (D) none

27. Potable water treatment *does not* involve:
 (A) sedimentation (B) coagulation (C) disinfection (D) softening
28. The most ideal disinfectant in water works is:
 (A) chlorine (B) bleaching powder (C) chloramine (D) all these
29. Chlorine is used in purification of drinking water for:
 (A) sterilization (B) coagulation (C) desalination (D) none of these
30. Ultraviolet rays are used in water treatment for:
 (A) illumination (B) sterilization (C) coagulation (D) sedimentation

Answers

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| 1. (B) | 2. (C) | 3. (B) | 4. (C) | 5. (C) | 6. (B) |
| 7. (C) | 8. (A) | 9. (A) | 10. (A) | 11. (B) | 12. (C) |
| 13. (D) | 14. (B) | 15. (C) | 16. (C) | 17. (B) | 18. (D) |
| 19. (D) | 20. (C) | 21. (D) | 22. (A) | 23. (C) | 24. (D) |
| 25. (B) | 26. (B) | 27. (D) | 28. (A) | 29. (A) | 30. (B). |