DIHYDROGEN

1. The sum number of neutrons and protons in one of the isotopes of hydrogen is :-

(A) 3 (B) 4 (C) 5 (D) 6

2. The catalyst used in Bosch process of manufacture of H_2 is :-

(A) Finely divided Ni (B) V_2O_5 (C) Pb (D) $Fe_2O_3 + Cr_2O_3$

3. The most abundant isotope of hydrogen is :-

(A) Tritium (B) Deuterium (C) Protium (D) Para hydrogen

4. The n/p ratio for $_1H^1$ is :-

(A) 1 (B) 2 (C) 3 (D) Zero

5. Ordinary hydrogen at high temperature is a mixture of :-

(A) 75% o-Hydrogen + 25% p-Hydrogen

(B) 25% o-Hydrogen + 75% p-Hydrogen

(C) 50% o-Hydrogen + 50% p-Hydrogen

(D) 1% o-Hydrogen + 99% p-Hydrogen

6. Hydrogen is behave as :-

(A) Electropositive

(B) Electronegative

(C) Both electropositive as well as elecctro-negative

(D) Neither electropositive nor electronegative

7. At high temperature Para hydrogen is :-

(A) Less stable than ortho hydrogen

(B) More stable than ortho hydrogen

(C) As stable as ortho hydrogen

(D) None of these

8. When the same amount of zinc is treated separately with excess of sulphuric acid and excess of sodium hydroxide, the ratio of volumes of hydrogen evolved is :-

(A) 1 : 1 (B) 1 : 2 (C) 2 : 1 (D) 9 : 4

9. The lightest gas is :-

(A) Nitrogen (B) Helium (C) Oxygen (D) Hydrogen

10. The ratio of electron, proton and neutron in tritium is :-

(A) 1 : 1 : 1 (B) 1 : 1 : 2 (C) 2 : 1 : 1 (D) 1 : 2 : 1

11. The nuclei of tritium (H^3) atom would contain neutrons :-

(A) 1 (B) 2 (C) 3 (D) 4

12. The adsorption of hydrogen by metals is called :-

(A) Dehydrogenation (B) Hydrogenation (C) Occlusion (D) Adsorption

13. At absolute zero :-

(A) Only para hydrogen exists (B) Only ortho hydrogen exists

(C) Both para and ortho hydrogen exist (D) None

WATER (H_2O)

14. Only temporary hardness in water is removed by :-

(A) Boiling (B) Filtration (C) Calgon's process (D) None of these

15. Both temporary and permanent hardness is removed on boiling water with :-

(A) $Ca(OH)_2$ (B) Na_2CO_3 (C) $CaCO_3$ (D) CaO

16. Temporary hardness is caused due to the presence of :-

(A) $CaSO_4$ (B) $CaCl_2$ (C) $CaCO_3$ (D) $Ca(HCO_3)_2$

17. High boiling point of water is due to :-

(A) Its high specific heat (B) Hydrogen bonding

(C) High dielectric constant (D) Low dissociation constant

18. Calgon is an industrial name given to :-

(A) Normal sodium phosphate (B) Sodium meta-aluminate

(C) Sodium hexametaphosphate (D) Hydrated sodium aluminium silicate

19. Permutit is :-

(A) Hydrated sodium aluminium silicate (B) Sodium hexametaphosphate

(C) Sodium silicate (D) Sodium meta-aluminate

20. Heavy water has found application in atomic reactor as :-

(A) Coolant (B) Moderator

(C) Both coolant and moderator (D) Neither coolant nor moderator

21. Calgon (a water softener) is :-

(A) $Na_2[Na_4(PO_3)_6]$ (B) $Na_4[Na_2(PO_3)]_6$ (C) $Na_2[Na_4(PO_4)]_6$ (D) $Na_4[Na_2(PO_4)_6]$

22. The hardness of water is due to.....metal ions

(A) Ca^{2+} and Na^+ (B) Mg^{2+} and K^+ (C) Ca^{2+} and Mg^{2+} (D) Zn^{2+} and Ba^{2+}

23. The formula of heavy water is :-

(A) H_2O^{18} (B) D_2O (C) T_2O (D) H_2O^{17}

24. Pure de-mineralised water can be obtained by -

(A) Na^+ cation exchanger and Cl^- anion exchanger

(B) H^+ cation exchanger only

(C) H^+ cation exchanger and OH^- anion exchanger

(D) Na^+ cation exchanger only

HYDROGEN PEROXIDE (H_2O_2)

25. The bleaching properties of H_2O_2 are due to its :-

(A) Reducing properties (B) Oxidising properties

(C) Unstable nature (D) Acidic nature

26. Hydrogen peroxide has a :-

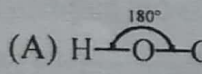
(A) Linear structure (B) Pyramidal structure

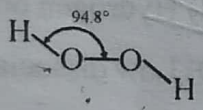
(C) Closed book type structure (D) Half open book type structure

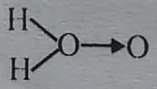
27. Hydrogen peroxide is a :-

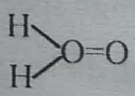
(A) Liquid (B) Gas (C) Solid (D) Semi-solid

28. Which of the following is a true structure of H_2O_2

(A) 

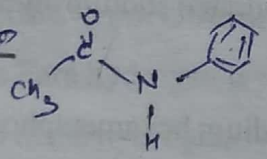
(B) 

(C) 

(D) 

29. Decomposition of H_2O_2 is retarded by :-

$2H_2O_2(\ell) \rightarrow 2H_2O(\ell) + O_2(g)$

(A) Acetanilide 

(B) MnO_2

(C) Zinc

(D) Finely divided metals

30. H_2O_2 is :-

(A) An oxiding agent

(B) Both oxidising and reducing agent

(C) Reducing agent

(D) None of the above

31. H_2O_2 is always stored in black bottles because :-

(A) It is highly unstable

(B) Its enthalpy of decomposition is high

(C) It undergoes auto-oxidation on prolonged standing

(D) None of these

32. Acidified solution of $K_2Cr_2O_7$ on treatment with H_2O_2 yields :-

(A) $CrO_3 + H_2O + O_2$ (B) $Cr_2O_2 + H_2O + O_2$

(C) $CrO_5 + H_2O + K_2SO_4$ (D) $H_2Cr_2O_7 + H_2O + O_2$