QB365 Question Bank Software Study Materials

Hydrogen 50 Important 1 Marks Questions With Answers (Book Back and Creative)

11th Standard

Chemistry

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

1) Which of the following statements about hydrogen is incorrect?

(a) Hydrogen ion, H_3O^+ exists freely in solution. (b) Dihydrogen acts as a reducing agent.

(c) Hydrogen has three isotopes of which tritium is the most common. (d) Hydrogen never acts as cation in ionic salts.

2) Water gas is _____.

(a) $H_2O_{(g)}$ (b) $CO + H_2O$ **(c) $CO + H_2$** (d) $CO + N_2$

3) Which one of the following statements is incorrect with regard to ortho and para dihydrogen ?

(a) They are nuclear spin isomers **(b) Ortho isomer has zero nuclear spin whereas the para isomer has one nuclear spin**

(c) The para isomer is favoured at low temperatures

(d) The thermal conductivity of the para isomer is 50% greater than that of the ortho isomer

4) Ionic hydrides are formed by _____

(a) halogens (b) chalogens (c) inert gases **(d) group one elements**

5) Tritium nucleus contains _____

(a) 1 p+0 n (b) 2 p+1 n **(c) 1 p + 2 n** (d) none of these

6) Non-stoichiometric hydrides are formed by _____

(a) palladium, vanadium (b) carbon, nickel (c) manganese, lithium (d) nitrogen, chlorine

7) If a body of a fish contains 1.2 g hydrogen in its total body mass, if all the hydrogen is replaced with deuterium then the increase in body weight of the fish will be _____

(a) 1.2 g (b) 2.4 g (c) 3.6 g (d) $\sqrt{4.8}$g

8) The hardness of water can be determined by volumetrically using the reagent _____

(a) sodium thio sulphate (b) potassium permanganate (c) hydrogen peroxide **(d) EDTA**

9) The cause of permanent hardness of water is due to _____

(a) $Ca(HCO_3)_2$ (b) $Mg(HCO_3)_2$ **(c) $CaCl_2$** (d) $MgCO_3$

10) Zeolite used to soften hardness of water is hydrated _____

(a) Sodium aluminium silicate (b) Calcium aluminium silicate (c) Zinc aluminium borate

(d) Lithium aluminium hydride

11) A commercial sample of hydrogen peroxide marked as 100 volume H_2O_2, it means that _____

(a) 1 ml of H_2O_2 will give 100 ml O_2 at STP (b) 1 L of H_2O_2 will give 100 ml O_2 at STP

(c) 1 L of H_2O_2 will give 22.4 L O_2 (d) 1 ml of H_2O_2 will give 1 mole of O_2 at STP

12) When hydrogen peroxide is shaken with an acidified solution of potassium dichromate in presence of ether, the ethereal layer turns blue due to the formation of _____

(a) Cr_2O_3 (b) CrO_4^{2-} **(c) $CrO(O_2)_2$** (d) none of these

13) For decolorisation of 1 mole of acidified $KMnO_4$, the moles of H_2O_2 required is _____

(a) $\frac{1}{2}$ (b) $\frac{3}{2}$ **(c)** $\frac{5}{2}$ (d) $\frac{7}{2}$

14) Volume strength of 1.5 N H_2O_2 is _____

(a) 1.5 (b) 4.5 (c) 16.8 **(d) 8.4**

15) The hybridisation of oxygen atom is H_2O and H_2O_2 are, respectively _____

(a) sp and Sp^3 (b) sp and sp (c) Sp and Sp^2 **(d) $Sp^3$and Sp^3**

16) The reaction $H_3PO_2 + D_2O \rightarrow H_2DPO_2 + HDO$ indicates that hypo-phosphorus acid is _____

(a) tribasic acid (b) dibasic acid **(c) mono basic acid** (d) none of these

17) In solid ice, oxygen atom is surrounded _____

(a) tetrahedrally by 4 hydrogen atoms (b) octahedrally by 2 oxygen and 4 hydrogen atoms

(c) tetrahedrally by 2 hydrogen and 2 oxygen atoms (d) octahedrally by 6 hydrogen atoms

18) The type of H-bonding present in ortho nitro phenol and p-nitro phenol are respectively _____

(a) inter molecular H-bonding and intra molecular H-bonding

(b) intra molecular H-bonding and inter molecular H-bonding (c) intra molecular H - bonding and no H - bonding

(d) intra molecular H - bonding and intra molecular H - bonding

19) Heavy water is used as _____

(a) moderator in nuclear reactions (b) coolant in nuclear reactions **(c) both (a) and (b)** (d) none of these

20) Water is a _____

(a) basic oxide (b) acidic oxide **(c) amphoteric oxide** (d) none of these

21) Assertion: Permanent hardness of water is removed by treatment with washing soda.
Reason: Washing soda reacts with soluble calcium and magnesium chlorides and sulphates in hard water to form insoluble carbonates

(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false (d) Both assertion and reason are false

22) The most abundant element in the universe is _____.

(a) aluminium (b) mica **(c) dihydrogen** (d) nitrogen

23) The radioactive isotope of hydrogen is _____

(a) protium (b) deuterium **(c) tritium** (d) nascent hydrogen

24) The ionisation energy of hydrogen is higher than alkali metals. Pick out the correct reason for the above statement.

(a) Because of smaller size of H. (b) Presence of 1e- in outermost shell (c) Presence of one proton in its nucleus

(d) Absence of neutrons.

25) Hydrogen acts as a reducing agent and thus resembles _____

(a) halogens (b) chalogens (c) inert gases **(d) alkali metals**

26) The velocity of neutrons in nuclear reactor is slowed down by _____

(a) H_2O **(b) D_2O** (c) Zinc rods (d) Copper rods

27) LiH is an example of _____ hydride.

(a) ionic (b) saline (c) covalent **(d) both a and b**

28) HF has _____ hydrogen bond.

(a) intramolecular **(b) intermolecular** (c) intrastellar (d) interstellar

29) Choose the incorrect statement:

(a) The boiling points of both deuterium and tritium are higher than that of protium.

(b) The inter nuclear distances between the two bonded atoms are different in all the isotopes.

(c) Enthalpy of dissociation is high in tritium (d) both (b) and (c)

30) Hydrogen resembles halogens in many respects for which several factors are responsible of the following factors which one is most important in this respect _____

(a) Its tendency to lose an electron and form a cation.

(b) Its tendency to gain an electron in its valence shell to attain stable electronic configuration.

(c) Its low electron gain enthalpy. (d) Its small size

31) Which of the following reactions increases the production of di-hydrogen from synthesis gas?

(a) $CH_4(g) + H_2O(g) \xrightarrow[Ni]{1270k} CO(g) + 3H_2(g)$ (b) $C(s) + H_2O(g) \xrightarrow{1270k} CO(g) + H_2(g)$

(c) $CO(g) + H_2O(g) \xrightarrow[catalyst]{673k} CO(s) + H_2(g)$ (d) $C_2H_6(g) + 2H_2O(g) \xrightarrow[Ni]{1270k} 2CO(g) + 5H_2(g)$

32) Bond angles in H -O-Hand H -O-Oin water and H_2O_2 respectively are _____

(a) 104° 5',104° 5' (b) 94.8°, 94.8° **(c) 104° 5', 94.8°** (d) 94.8°,104.5°

33) Hydrogen combines with carbon monoxide in the presence of copper catalyst will synthesise _____

(a) Ethanol (b) Methane **(c) Methanol** (d) Methanal

34) At the temperature conditions of the earth (300K) the OPR of H_2O is _____

(a) 2.5 **(b) 3** (c) 1 (d) zero

35) Consider the following statements.

(i) H_2O_2 is a powerful oxidising agent.

(ii) H_2O_2 is stored in dark coloured bottles.

(iii) H_2O_2 is used as moderator in nuclear reactors.

Which of the above statements is/are not correct

(a) (i) only (b) (i) and (ii) **(c) (iii) only** (d) (i), (ii) and (iii)

36) Which one of the following is an electron deficient hydride?

(a) C_2H_6 **(b) B_2H_6** (c) GeH_4 (d) CH_4

37) Consider the following statements.

(i) In ice, each oxygen atom is surrounded by hydrogen atoms tetrahedrally to four water molecules.

(ii) Acetic acid exists as dimer due to intra molecular hydrogen bonding.

(iii) Strong hydrogen bonds lead to an increase in the melting and boiling points.

Which of the above statements is/are not correct?

(a) (ii) only (b) (i) and (iii) (c) (i), (ii) and (iii) (d) (i) only

38) Which isotope of hydrogen is radioactive?

(a) Protium (b) Deuterium **(c) Tritium** (d) $^{2}_{1}H$

39) Which of the following is named as perhydrol and used as an antiseptic?

(a) D_2O **(b) H_2O_2** (c) NaH (d) B_2H_6

40) The higher density of water than that of ice is due to _____

(a) dipole-dipole interaction (b) dipole-induced dipole interaction **(c) hydrogen bonding** (d) all of these

41) Which of the following will not produce dihydrogen gas?

(a) Cu + dil (HCl) (b) $CH_{4(g)} + H_2O_{(g)}$ (c) Zn + dil. HCl (d) $C_{(s)} + H_2O_{(g)}$

42) Hydrogen is used as reducing agent in metallurgy for the reduction of _____ oxide.

(a) zinc **(b) iron** (c) molybdenu (d) aluminium

43) Deutrium also known as _____.

(a) Normal hydrogen **(b) Heavy hydrogen** (c) H_2O_2 (d) H_2O_3

44) Syn gas contains _____.

(a) only CO (b) only H_2 **(c) both CO & H_2** (d) neither CO

45) In clark's method, the substance used for the removal of temporary hardness of water is _____.

(a) NaOH (b) $CaCO_3$ **(c) $Ca(OH)_2$** (d) $Ca(HCO_3)_2$

46) De ionised water is prepared by the following method _____

(a) Clark's **(b) Ion exchange** (c) permutit (d) Calgon

47) The electrolyte in the preparation of D_2O by electrolysis method is _____.

(a) 50% H_2SO_4 **(b) N / 2 NaOH** (c) pure water (d) con. NaOH

48) Chemically soap is _____.

(a) Sodium stearate (b) Calcium stearate (c) Magnesium stearate (d) Ferric stearate

49) H_2O_2 solutions are stored in _____.

(a) glass bottle **(b) plastic bottle** (c) wood (d) container

50) Heavy water is

(a) $^{1}H_2O^{16}$ **(b)** $^{2}H_2O^{16}$ (c) $^{3}H_2O^{16}$ (d) $^{3}H_2O^{18}$