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Hydrogen about Worksheet الملف

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Hydrogen

Choose the best answer

- Which of the following statements about hydrogen is incorrect ? (NEET - 2016)
  - Hydrogen ion,  $H_3O^+$  exists freely in solution.
  - Dihydrogen acts as a reducing agent.
  - Hydrogen has three isotopes of which tritium is the most common.
  - Hydrogen never acts as cation in ionic salts.
- Water gas is
  - $H_2O(g)$
  - $CO + H_2O$
  - $CO + H_2$
  - $CO + N_2$
- Which one of the following statements is incorrect with regard to ortho and para dihydrogen ?
  - They are nuclear spin isomers
  - Ortho isomer has zero nuclear spin whereas the para isomer has one nuclear spin
  - The para isomer is favoured at low temperatures
  - The thermal conductivity of the para isomer is 50% greater than that of the ortho isomer.
- Ionic hydrides are formed by
  - halogens
  - chalcogens
  - inert gases
  - group one elements
- Tritium nucleus contains
  - $1p + 0n$
  - $2p + 1n$
  - $1p + 2n$
  - none of these
- Non-stoichiometric hydrides are formed by
  - palladium, vanadium
  - carbon, nickel
  - manganese, lithium
  - nitrogen, chlorine

7. 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
8. 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
9. The hardness of water can be determined by volumetrically using the reagent  
a) sodium thio sulphate                      b) potassium permanganate  
c) hydrogen peroxide                      d) EDTA
10. The cause of permanent hardness of water is due to  
a)  $\text{Ca}(\text{HCO}_3)_2$                       b)  $\text{Mg}(\text{HCO}_3)_2$                       c)  $\text{CaCl}_2$                       d)  $\text{MgCO}_3$
11. 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
12. A commercial sample of hydrogen peroxide marked as 100 volume  $\text{H}_2\text{O}_2$ , it means that  
a) 1 ml of  $\text{H}_2\text{O}_2$  will give 100 ml  $\text{O}_2$  at STP  
b) 1 L of  $\text{H}_2\text{O}_2$  will give 100 ml  $\text{O}_2$  at STP  
c) 1 L of  $\text{H}_2\text{O}_2$  will give 22.4 L  $\text{O}_2$   
d) 1 ml of  $\text{H}_2\text{O}_2$  will give 1 mole of  $\text{O}_2$  at STP

13. 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)  $\text{Cr}_2\text{O}_3$                       b)  $\text{CrO}_4^{2-}$                       c)  $\text{CrO}(\text{O}_2)_2$                       d) none of these
14. For decolourisation of 1 mole of acidified  $\text{KMnO}_4$ , the moles of  $\text{H}_2\text{O}_2$  required is
- a)  $\frac{1}{2}$                       b)  $\frac{3}{2}$                       c)  $\frac{5}{2}$                       d)  $\frac{7}{2}$
15. Volume strength of 1.5 N  $\text{H}_2\text{O}_2$  is
- a) 1.5                      b) 4.5                      c) 16.8                      d) 8.4
16. The hybridisation of oxygen atom in  $\text{H}_2\text{O}$  and  $\text{H}_2\text{O}_2$  are, respectively
- a) sp and  $\text{sp}^3$                       b) sp and sp                      c) sp and  $\text{sp}^2$                       d)  $\text{sp}^3$  and  $\text{sp}^3$
17. The reaction  $\text{H}_3\text{PO}_2 + \text{D}_2\text{O} \rightarrow \text{H}_2\text{DPO}_2 + \text{HDO}$  indicates that hypo-phosphorus acid is
- a) tribasic acid                      b) dibasic acid                      c) mono basic acid                      d) none of these
18. 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
19. 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
20. Heavy water is used as
- a) moderator in nuclear reactions                      b) coolant in nuclear reactions
- c) both (a) and (b)                      d) none of these
21. Water is a
- a) basic oxide                      b) acidic oxide
- c) amphoteric oxide                      d) none of these