

**SINGLE CORRECT OPTION TYPE**

- Which of the following is/are radioactive isotopes of hydrogen?  
(A) protium and deuterium (B) tritium only  
(C) deuterium and tritium (D) deuterium only
- Which of the following hydride conduct electricity?  
(A)  $\text{SiH}_4$  (B)  $\text{C}_3\text{H}_8$  (C)  $\text{B}_2\text{H}_6$  (D) KH
- 2 g of Zn is treated separately with dil  $\text{H}_2\text{SO}_4$  and excess of NaOH solution. The ratio of volume of  $\text{H}_2$  evolved under similar conditions of pressure and temperature?  
(A) 1:1 (B) 2:3 (C) 2:1 (D) 1:2
- Match List-I with List-II and select correct answer.

	List-I		List-II
(1)	Heavy water	(A)	Bicarbonates of Ca and Mg in water
(2)	Temporary harness	(B)	No foreign ions in water
(3)	Soft water	(C)	$\text{D}_2\text{O}$
(4)	Permanent harness	(D)	Sulphates and chlorides of Ca and Mg in water

(A) 1-C,2-D,3-B,4-A (B) 1-B,2-A,3-C,4-D  
(C) 1-B,2-D,3-C,4-A (D) 1-C,2-A,3-B,4-D
- What is the degree of harness of a sample of water containing 24 mg of  $\text{MgSO}_4$  (molar mass 120) per kg of water  
(A) 10 ppm (B) 15 ppm (C) 25 ppm (D) 20 ppm
- In which of the following reactions,  $\text{H}_2\text{O}_2$  acts as a reducing agent?  
(A)  $\text{PbO}_2 + \text{H}_2\text{O}_2 \rightarrow \text{PbO} + \text{H}_2\text{O} + \text{O}_2$  (B)  $\text{Na}_2\text{SO}_3 + \text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$   
(C)  $2\text{KI} + \text{H}_2\text{O}_2 \rightarrow 2\text{KOH} + \text{I}_2$  (D)  $\text{KNO}_2 + \text{H}_2\text{O}_2 \rightarrow \text{KNO}_3 + \text{H}_2\text{O}_2$
- When  $\text{H}_2\text{O}_2$  is added to ice-cold solution of acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  in ether and the contents are shaken and allowed to stand.  
(A) a blue colour is obtained due to formation of  $\text{Cr}_2(\text{SO}_4)_3$   
(B) a blue colour is obtained due to formation of  $\text{CrO}_3$   
(C) chromyl chloride is formed  
(D) a blue colour is obtained due to the formation of  $\text{CrO}_5$
- The volume strength of 10 N  $\text{H}_2\text{O}_2$  is  
(A) 112 (B) 11.2 (C) 0.112 (D) 56
- In which of the following reaction;  $\text{H}_2\text{O}_2$  neither acts as oxidizing agent nor as a reducing agent?  
(A)  $\text{PbS} + \text{H}_2\text{O}_2 \rightarrow$  (B)  $\text{SO}_3^{-2} + \text{H}_2\text{O}_2 \rightarrow$  (C)  $\text{PbO}_2 + \text{H}_2\text{O}_2 \rightarrow$  (D)  $\text{Na}_2\text{CO}_3 + \text{H}_2\text{O}_2 \rightarrow$
- The hybrid state and oxidation state of two oxygen atoms in  $\text{H}_2\text{O}_2$  respectively  
(A)  $\text{sp}^2, -1$  (B)  $\text{sp}^3, +1$  (C)  $\text{sp}^3, -1$  (D)  $\text{sp}^2, -2$
- Gases evolve when water reacts with  $\text{Mg}_3\text{N}_2$ ,  $\text{CaC}_2$  and  $\text{Ca}_3\text{P}_2$  respectively are  
(A)  $\text{HNO}_3, \text{CO}_2, \text{P}_2\text{O}_5$  (B)  $\text{NH}_3, \text{C}_2\text{H}_2, \text{PH}_3$  (C)  $\text{NH}_3, \text{C}_2\text{H}_4, \text{H}_3\text{PO}_3$  (D)  $\text{HNO}_3, \text{C}_2\text{H}_2, \text{PH}_3$

12. Syn gas is  
(A)  $\text{CO} + \text{H}_2$  (B)  $\text{CO}_2 + \text{H}_2$  (C)  $\text{CO} + \text{H}_2\text{O}$  (D)  $\text{CO} + \text{O}_2$
13. Hydrogen has three isotopes, the number of positive diatomic molecules  
(A) 3 (B) 6 (C) 9 (D) 12
14. Calgon is an industrial name given to  
(A) sodium phosphate (B) sodium meta alluminate  
(C) sodium hexametaphosphate (D) sodium aluminium silicate
15. The species which do not contain peroxide ion  
(A)  $\text{PbO}_2$  (B)  $\text{Na}_2\text{O}_2$  (C)  $\text{SrO}_2$  (D)  $\text{BaO}_2$
16. Which of the following is electron precise hydride?  
(A)  $\text{NH}_3$  (B)  $\text{B}_2\text{H}_6$  (C)  $\text{H}_2\text{O}$  (D)  $\text{CH}_4$
17. In alkaline medium,  $\text{H}_2\text{O}_2$  reacts with  $\text{Fe}^{+3}$  and  $\text{Mn}^{+2}$  ions separately to give  
(A)  $\text{Fe}^{+4}$ ,  $\text{Mn}^{+4}$  (B)  $\text{Fe}^{+2}$ ,  $\text{Mn}^{+4}$  (C)  $\text{Fe}^{+2}$ ,  $\text{Mn}^{+3}$  (D)  $\text{Fe}^{+4}$ ,  $\text{Mn}^{+3}$
18. Which of the following is correct.  
(A)  $\text{NaH} > \text{LiH} > \text{KH} > \text{RbH} > \text{CsH}$  (B)  $\text{LiH} > \text{NaH} > \text{KH} > \text{RbH} > \text{CsH}$   
(C)  $\text{CsH} > \text{RbH} > \text{KH} > \text{NaH} > \text{LiH}$  (D)  $\text{KH} > \text{NaH} > \text{LiH} > \text{CsH} > \text{RbH}$
19.  $\text{CO} + 2\text{H}_2 \xrightarrow[\text{catalyst(x)}]{300^\circ/300\text{atm}} \text{CH}_3\text{OH}$ . The catalyst 'x' is  
(A) Fe (B)  $\text{Cr}_2\text{O}_3/\text{ZnO}$  (C)  $\text{V}_2\text{O}_5$  (D)  $\text{Al}_2\text{O}_3$
20. Which of the following can convert hard water into soft water:  
(A)  $\text{H}_2\text{O}_2$  (B)  $\text{Na}_2\text{CO}_3$   
(C)  $\text{Pb}(\text{NO}_3)_2$  (D) sodium palmitate ( $\text{C}_{15}\text{H}_{31}\text{COONa}$ )

#### INTEGER TYPE

21. Number of H-bonds formed by a water molecules is \_\_\_\_\_.
22. For the decolourization of one mole of acidified  $\text{KMnO}_4$ , the number of moles of  $\text{H}_2\text{O}_2$  required \_\_\_\_\_.
23. The H–O–O bond angle in  $\text{H}_2\text{O}_2$  \_\_\_\_\_.
24. The sum of total hybrid orbitals in  $\text{H}_2\text{O}_2$  and  $\text{H}_2\text{O}$  is \_\_\_\_\_.
25. The total number of oxidation states exhibits by hydrogen atom \_\_\_\_\_.

#### KEY

1.	B	2.	D	3.	A	4.	D	5.	D
6.	A	7.	D	8.	D	9.	D	10.	B
11.	B	12.	A	13.	B	14.	C	15.	A
16.	D	17.	B	18.	B	19.	B	20.	B
21.	4	22.	5	23.	97	24.	12	25.	3

*\* Wish You all the Best \**