DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth
DATE :

SOLUTION

SUBJECT : CHEMISTRY
DPP NO. : 10

Topic :-HYDROGEN

1 **(d)**

Permanent hardness in the name because this type of hardness is not removed by only boiling the water.

2 **(a)**

$Fe^{2+} \longrightarrow Fe^{3+} + e$

$O_2^{1-} + 2e \longrightarrow 2O^{2-}$

3 **(b)**

Heavy water is formed by the combination of heavier isotope $\left({}_1H^2 \text{ or } D\right)$ with oxygen.

$2D_2 + O_2 \rightarrow \quad 2D_2O$

heavy water

4 **(d)**

Industrially, hydrogen is prepared from water gas which is a mixture of carbon monoxide and hydrogen, by removing carbon monoxide by Bosch process or by liquefaction.

$$CO + H_2O \rightarrow CO_2 + H_2$$

5 **(d)**

It is a fact.

6 **(d)**

$PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$

from the above equation

$\because$ 1 mole of PbS required 4 moles of H_2O_2

0.01 moles of PbS required 0.04 mole of H_2O_2

Weight of 0.04 mole $H_2O_2 = 1.36$ g

10 volume of H_2O_2 means,

1mL of such solution of H_2O_2 on decomposition by heat produces 10mL of oxygen at NTP.

H_2O_2 decomposes as,

$$2H_2O_2 \rightarrow 2H_2O + O_2$$

Thus 1mL of 10 volume H_2O_2 solution contains

$$= \frac{68}{22400} \times 10 \text{ g of } H_2O_2$$

$$= 0.030.35 \text{ g of } H_2O_2$$

$\because$ 0.03035 g of H_2O_2 is present in 1 mL of 10 volume H_2O_2.

$\therefore$ 1.36 g of H_2O_2 present in $\frac{1}{0.03035} \times 1.36$ mL of 10 volume of $H_2O_2 = 44.81$ mL

7 **(c)**

$$\overset{+7}{2K}MnO_4 + 3H_2SO_4 + 5H_2O_2$$

$$\overset{+2}{\quad} \qquad \overset{0}{\quad}$$

$$\rightarrow 2MnSO_4 + 8H_2O + 5O_2$$

In this reaction hydrogen peroxide acts as a reducing agent and it reduces $KMnO_4$ to Mn^{2+} ions.

8 **(d)**

Water is oxidised to oxygen by fluorine as

$$2F_2 + 2H_2O \rightarrow O_2 + 4HF$$

9 **(c)**

Hydrogen forms about 75% of the mass (total amount) of the universe. It has been estimated that more than 90% of all atoms in the universe are H-atoms. While most of the remaining atoms are of He.

The order of abundance of given elements in the universe is

$$H > O > C > N$$

10 **(a)**

It is a fact.

11 **(c)**

Protium is $_1H^1$.

12 **(d)**

H_2O_2 is weak di-basic acid.

13 **(d)**

These are characteristics of perhydrol .

14 **(c)**

Both halogen (ns^2np^5) and hydrogen $1s^1$ have one electron short to attain configuration of nearest noble gas.

15 **(c)**

Calgon is sodium hexa meta – phosphate $(NaPO_3)_6$ or $Na_2[Na_4(PO_3)_6]$.

16 **(c)**

It is one of the uses of H_2O_2.

17 **(b)**

Covalent molecules occupy solid structure due to increasing van der Waals' forces.

18 **(a)**

PbO_2 dose not contain —O—O— bond. It is lead dioxide.

20 **(d)**

It is a fact.

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	D	A	B	D	D	D	C	D	C	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	C	D	D	C	C	C	B	A	D	D