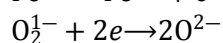
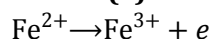


## Topic :-HYDROGEN

1 (d)

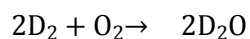
Permanent hardness in the name because this type of hardness is not removed by only boiling the water.

2 (a)



3 (b)

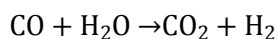
Heavy water is formed by the combination of heavier isotope ( ${}_1\text{H}^2$  or D) with oxygen.



heavy water

4 (d)

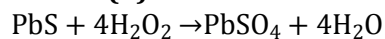
Industrially, hydrogen is prepared from water gas which is a mixture of carbon monoxide and hydrogen, by removing carbon monoxide by Bosch process or by liquefaction.



5 (d)

It is a fact.

6 (d)



from the above equation

∴ 1 mole of PbS required 4 moles of  $\text{H}_2\text{O}_2$

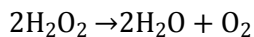
0.01 moles of PbS required 0.04 mole of  $\text{H}_2\text{O}_2$

Weight of 0.04 mole  $\text{H}_2\text{O}_2 = 1.36 \text{ g}$

10 volume of  $\text{H}_2\text{O}_2$  means,

1mL of such solution of  $\text{H}_2\text{O}_2$  on decomposition by heat produces 10mL of oxygen at NTP.

$\text{H}_2\text{O}_2$  decomposes as,



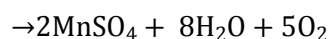
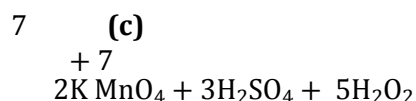
Thus 1 mL of 10 volume  $\text{H}_2\text{O}_2$  solution contains

$$= \frac{68}{22400} \times 10 \text{ g of } \text{H}_2\text{O}_2$$

$$= 0.03035 \text{ g of } \text{H}_2\text{O}_2$$

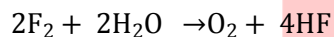
$\therefore$  0.03035 g of  $\text{H}_2\text{O}_2$  is present in 1 mL of 10 volume  $\text{H}_2\text{O}_2$ .

$\therefore$  1.36 g of  $\text{H}_2\text{O}_2$  present in  $\frac{1}{0.03035} \times 1.36$  mL of 10 volume of  $\text{H}_2\text{O}_2 = 44.81$  mL



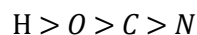
In this reaction hydrogen peroxide acts as a reducing agent and it reduces  $\text{KMnO}_4$  to  $\text{Mn}^{2+}$  ions.

8      **(d)**  
 Water is oxidised to oxygen by fluorine as



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



10      **(a)**

It is a fact.

11      **(c)**

Protium is  ${}_1\text{H}^1$ .

12      **(d)**

$\text{H}_2\text{O}_2$  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  $(\text{NaPO}_3)_6$  or  $\text{Na}_2[\text{Na}_4(\text{PO}_3)_6]$ .

16 (c)

It is one of the uses of  $\text{H}_2\text{O}_2$ .

17 (b)

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

18 (a)

$\text{PbO}_2$  does not contain  $\text{—O—O—}$  bond. It is lead dioxide.

20 (d)

It is a fact.

PE

<b>ANSWER-KEY</b>										
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

PE