

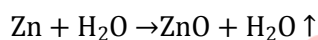
Topic :-HYDROGEN

1 (c)

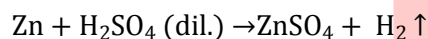
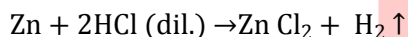
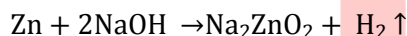
It resembles with alkali metals as it forms H^+ ion by losing its outer electron and resembles with halogen as it forms H^- ion by gaining one electron.

2 (a)

Zinc, does not react with cold water.



steam



3 (a)

The $H - O - H$ angle in water molecule is about 105° (due to two lone pairs of electrons)

4 (c)

Some transition metals such as Pt, Ni, Pd, Os, Cr, Mn, Fe, etc., adsorb relatively large amount of hydrogen gas, which is called occluded hydrogen.

5 (d)

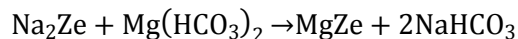
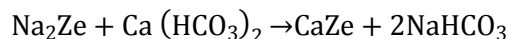
Chlorine has lone pair which it can donate to form coordinate bond while hydrogen cannot

6 (b)

Metals in finely divided state possess larger surface area and are more reactive.

7 (d)

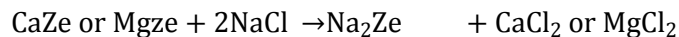
During the softening process the reaction takes place as :



After sometime, the zeolite is completely converted into calcium and magnesium zeolites.

Eventually, the bed ceases to soften water *i.e.*, it gets exhausted. At this stage, the supply of hard

water is stopped and the exhausted zeolite is reclaimed by treating the bed with a 10% NaCl solution (Brine soln.) when the following reaction takes place



Reclaimed zeolite

8 (b)

Volume strength = $5.6 \times \text{normality}$

$$= 5.6 \times 1.5 = 8.4 \text{ L}$$

9 (a)

Follow reactive nature of nascent hydrogen.

10 (a)

It is a fact.

11 (d)

These are characteristic properties of H_2O_2 .

12 (a)

HClO_4 does not give H_2O_2 on hydrolysis. Rest all contains O—O bond and gives H_2O_2 on heating.

13 (d)

${}_1\text{H}^1$ has no neutron, *i.e.*, $n = 0$, $p = 1$, $\frac{n}{p} = \frac{0}{1} = 0$

14 (a)

34 g H_2O_2 has 2 g H

$$\therefore 100 \text{ g } \text{H}_2\text{O}_2 \text{ has } \frac{2 \times 100}{34} = 5.88 \text{ g H}$$

15 (a)

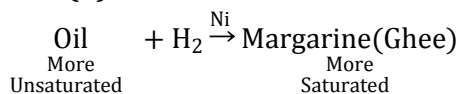
Permutit or zeolite is the aluminosilicate of sodium. It is used to remove hardness of water. It converts insoluble salts of Ca^{2+} and Mg^{2+} into soluble zeolites. It exchange these ions with Na^+ and water becomes soft.

Thus, exhausted permutit does not contain Na^+ ions.

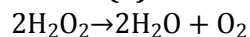
16 (d)

$$M_{\text{H}_2\text{O}} = \frac{1000}{18 \times 1} = 55.6$$

17 (d)



18 (b)



$$2 \times 34 \text{ g} \qquad 22400 \text{ mL}$$

$\therefore 68 \text{ g of } \text{H}_2\text{O}_2 \text{ liberates } 22400 \text{ mL } \text{O}_2$

$$\begin{aligned}\therefore 0.68 \text{ g of H}_2\text{O}_2 \text{ liberates} &= \frac{0.68 \times 22400}{68} \\ &= 224 \text{ mL O}_2\end{aligned}$$

20 (c)

H₂O₂ reduces potassium ferricyanide (alk. Solution) K₃Fe(CN)₆ to potassium ferrocyanide.

PE

ANSWER-KEY

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

PE