

CLASS : XIIth

DATE :

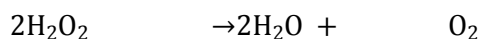
SOLUTION

SUBJECT : CHEMISTRY

DPP NO. : 8

Topic :-HYDROGEN

1 (d)

10 volume = 1 volume of H₂O₂ gives 10 volume of O₂ at NTP.

$$2(2 + 32) = 68 \text{ g} \qquad 22400 \text{ mL at NTP}$$

At NTP

∴ 22400 mL of O₂ is obtained from

$$= 68 \text{ g H}_2\text{O}_2$$

∴ 10 mL of O₂ is obtained from

$$= \frac{68 \times 10}{22400} = 0.03035 \text{ g H}_2\text{O}_2$$

1 mL of H₂O₂ solution contains

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

100 mL of H₂O₂ solution contains

$$= 0.03035 \times 100$$

$$= 3.035 \text{ g H}_2\text{O}_2$$

∴ Strength of 10 volume H₂O₂

$$= 3.035 \times 10$$

$$= 30.35 \text{ g/L}$$

2 (a)

Bond formation is exothermic.

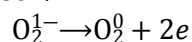
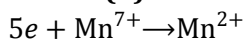
3 (a)

Ortho-hydrogen is more stable and para form always try to convert in ortho form.

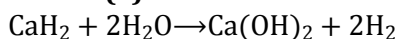
4 (a)

These are facts.

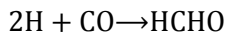
5 (d)



6 (a)



7 (b)

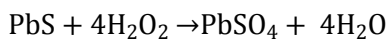


8 (a)

It is a fact.

9 (c)

Hydrogen peroxide oxidise lead sulphide into lead sulphate which is a solid.



10 (b)

H_2O_2 has open book structure.

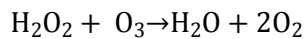
11 (d)

Na_2SO_3 is oxidised by H_2O_2 to Na_2SO_4

PbS is oxidised by H_2O_2 to PbSO_4

KI is oxidised by H_2O_2 to I_2

O_3 cannot be oxidised by H_2O_2 but it is reduced to O_2 by H_2O_2



12 (b)

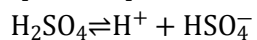
It is one of the uses of H_2O_2 .

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13 (c)

Industrial preparation of H_2O_2 :

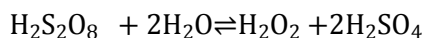
(A) **By the electrolysis of 50 % H_2SO_4 :** 50 % H_2SO_4 solution is electrolyzed at 0°C between Pt electrodes. The perdisulphuric acid is formed.



At Anode ; $2\text{HSO}_4^- \rightarrow \text{H}_2\text{S}_2\text{O}_8 + 2e^-$

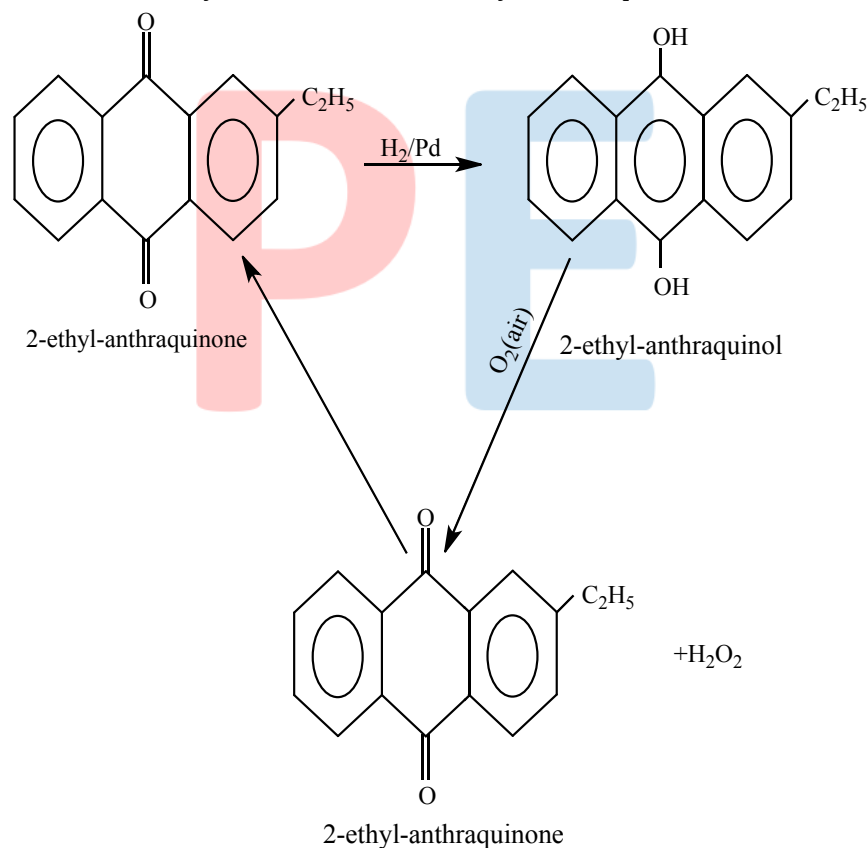
At Cathode ; $2\text{H}^+ + 2e^- \rightarrow \text{H}_2$

The obtained perdisulphuric acid gives H_2O_2 on hydrolysis.



This H_2O_2 is separated by distillation at reduced pressure and thus, 30 % solution of H_2O_2 is obtained.

(B) **By the auto-oxidation of 2-ethyl-anthraquinol (Modern method) :** Anthraquinol, in a mixture of benzene and *n*-heptanol on treatment with air gives H_2O_2 and 2-ethyl-anthraquinone. This 2-ethyl-anthraquinone on hydrogenation gives 2-ethyl-anthraquinol in presence of Pd catalyst. It is a cyclic process and in it only H_2 is consumed, 2-ethyl-anthraquinone is reobtained



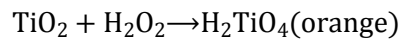
during reaction.

15 (b)

30 mL O_2 is obtained by $\frac{34 \times 30}{11200}$ g $\text{H}_2\text{O}_2/\text{mL}$

$$\therefore M = \frac{34 \times 30 \times 100}{11200 \times 34} = 2.68 \text{ M}$$

16 (d)



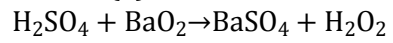
17 **(a)**

Tritium (${}_1\text{H}^3$) is a heavy isotope of hydrogen which is obtained by nuclear reactions.

18 **(b)**

It is a fact.

19 **(a)**



20 **(b)**

The formula of heavy water is D_2O .

PE

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

PE