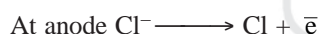
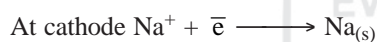


MOCK TEST PAPER (SOLVED)

Subject : CHEMISTRY (Paper-2)

Class : X (ICSE)

SECTION - I



Products are sodium at cathode and $\text{Cl}_{2(g)}$ at anode.

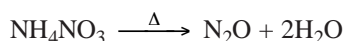
(ii) Gas produced is NO_2 (Nitrogen dioxide)



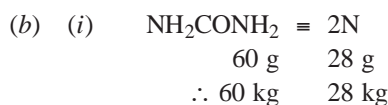
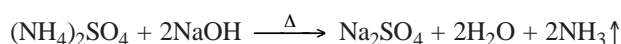
(iii) Gas produced is SO_2 (Sulphur dioxide)



(iv) Gas produced is N_2O (Nitrous oxide)



(v) Gas produced is NH_3 (Ammonia)



Thus, 60 kg of urea contains nitrogen = 28 kg

$$\therefore 5 \text{ kg of urea contains nitrogen} = \frac{28}{60} \times 5 = 2.33 \text{ kg}$$

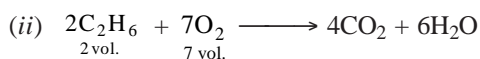
\therefore Nitrogen supplied to the soil = 2.33 kg

(ii) Gram mol. mass of SO_2 = 64 g

\therefore 64 g of SO_2 at S.T.P. occupies volume = 22.4 L

\therefore 8 g of SO_2 at S.T.P. occupies volume = $\frac{22.4}{64} \times 8 = 2.8 \text{ L}$

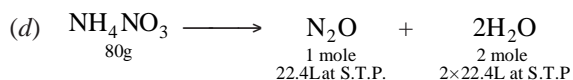
(c) (i) Gay Lussac's Law of gaseous volumes.



2 vol. of ethane requires 7 vol. of O_2

\therefore 100 L of ethane requires = $\frac{7}{2} \times 100 = 350 \text{ L}$

(iii) 1 - B; 2 - E; 3 - D; 4 - A; 5 - C.



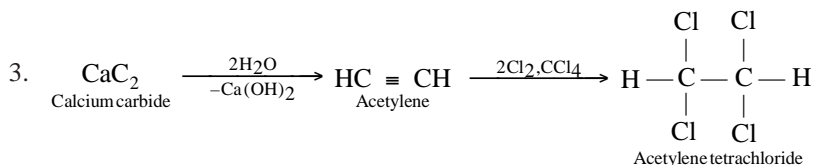
(i) $2 \times 22.4 \text{ L}$ of steam is produced at the same time as 22.4 L of N_2O .

$$\therefore 8.96 \text{ L of steam is produced at the same time as } 22.4 \text{ L of } \text{N}_2\text{O} = \frac{22.4}{2 \times 22.4} \times 8.96$$

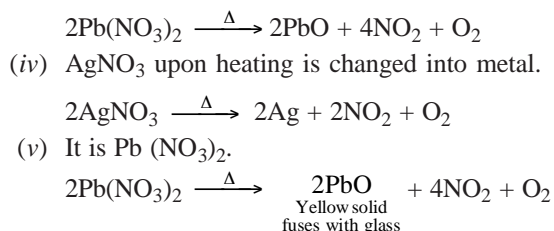
$$= 4.48 \text{ L of } \text{N}_2\text{O}$$

(ii) $2 \times 22.4 \text{ L}$ of steam is produced from NH_4NO_3 = 80 g

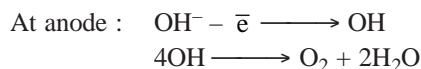
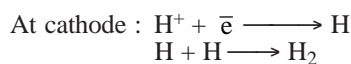
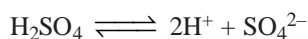
$$\therefore 8.96 \text{ L of steam is produced from } \text{NH}_4\text{NO}_3 = \frac{80}{2 \times 22.4} \times 8.96 = \frac{80 \times 10 \times 896}{2 \times 224 \times 100} = 16 \text{ g}$$



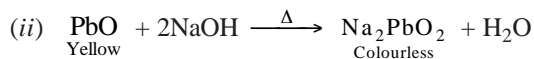
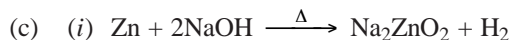
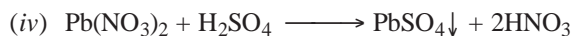
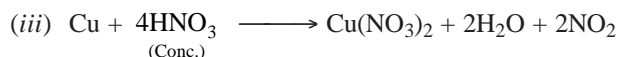
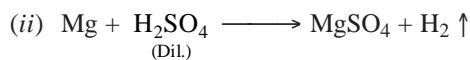
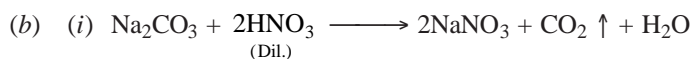
- Ans. 3.** (a) (i) NaNO_3 does not give NO_2 on heating.
 $2\text{NaNO}_3 \longrightarrow 2\text{NaNO}_2 + \text{O}_2$
(ii) NH_4NO_3 leaves behind no residue on heating.
 $\text{NH}_4\text{NO}_3(\text{s}) \xrightarrow{\Delta} \text{N}_2\text{O}(\text{g}) + 2\text{H}_2\text{O}(\text{g})$
(iii) $\text{Pb}(\text{NO}_3)_2$ upon heating changes into metal oxides.



- (b) (i) Conc. H_2SO_4
(ii) Hydrogenation
(iii) Nickel
(iv) $\text{CaC}_2 + 2\text{H}_2\text{O} \longrightarrow \text{C}_2\text{H}_2 + \text{Ca}(\text{OH})_2$
(c) $\text{H}_2\text{O} \rightleftharpoons \text{H}^+ + \text{OH}^-$



- Ans. 4.** (a) (i) $\text{Mg}_3\text{N}_2 + 6\text{H}_2\text{O} \longrightarrow 3\text{Mg}(\text{OH})_2 + 2\text{NH}_3$
(ii) NH_3 is collected by downward displacement of water.
(iii) NH_3 is not collected over water because it is extremely soluble in water.
(iv) NH_3 gas is dried by passing through a drying tower packed with lumps of quick lime (CaO).



- Ans. 5.** (a) Percentage of oxygen $100 - (41.37 + 5.75 + 16.09) = 36.79\%$

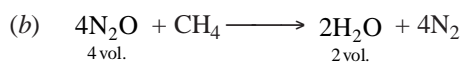
Element	Percentage	At. mass	Relative no. of atom	Simplest atomic ratio	Simplest whole no. ratio
C	41.37	12	$\frac{41.37}{12} = 3.45$	$\frac{3.45}{1.15} = 3$	3
H	5.75	1	$\frac{5.75}{1} = 5.75$	$\frac{5.75}{1.15} = 5$	5
N	16.09	14	$\frac{16.09}{14} = 1.15$	$\frac{1.15}{1.15} = 1$	1
O	36.79	16	$\frac{36.79}{16} = 2.30$	$\frac{2.30}{1.15} = 2$	2



$$\begin{aligned} \therefore \text{Empirical Formula of the compound} &= \text{C}_3\text{H}_5\text{NO}_2 \\ \text{Empirical Formula mass of the compound} &= 3 \times 12 + 5 \times 1 + 14 + 2 \times 16 \\ &= 36 + 5 + 14 + 32 = 87 \\ \text{Molecular mass of compound} &= 2 \times \text{V. D.} \\ &= 2 \times 43.3 = 86.6 \approx 87 \end{aligned}$$

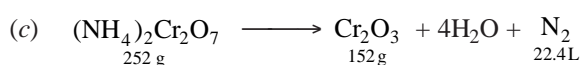
$$\therefore n = \frac{\text{Molecular Mass}}{\text{Empirical Formula Mass}} = \frac{87}{87} = 1$$

$$\begin{aligned} \therefore \text{Molecular formula} &= (\text{Empirical Formula})_n \\ &= (\text{C}_3\text{H}_5\text{NO}_2)_1 = \text{C}_3\text{H}_5\text{NO}_2 \end{aligned}$$



2 vol. steam is obtained from 4 vol. N_2O .

$$\therefore 150 \text{ cm}^3 \text{ steam is obtained from} = \frac{4}{2} \times 150 = 300 \text{ cm}^3$$

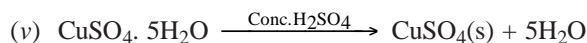
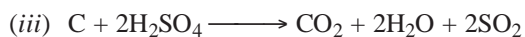
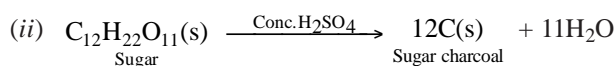
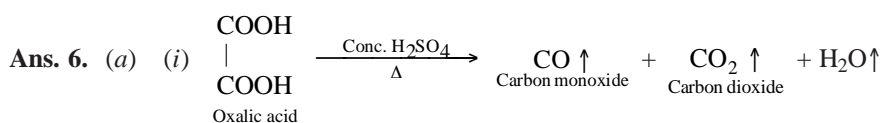


(i) 252 g of $\text{NH}_4\text{Cr}_2\text{O}_7$ gives $\text{N}_2 = 22.4 \text{ L}$ at S.T.P.

$$\therefore 63 \text{ g of } \text{NH}_4\text{Cr}_2\text{O}_7 \text{ gives } \text{N}_2 = \frac{22.4}{252} \times 63 = 5.6 \text{ L at S.T.P.}$$

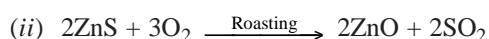
(ii) 252 g of $\text{NH}_4\text{Cr}_2\text{O}_7$ gives $\text{Cr}_2\text{O}_3 = 152 \text{ g}$

$$\therefore 63 \text{ g of } \text{NH}_4\text{Cr}_2\text{O}_7 \text{ gives } \text{Cr}_2\text{O}_3 = \frac{152}{252} \times 63 = 38 \text{ g}$$



(b) 1 - A; 2 - E; 3 - F; 4 - B; 5 - G

Ans. 7. (a) (i) ZnS

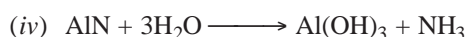
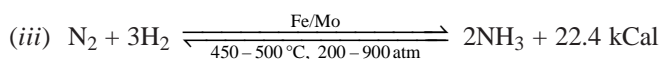
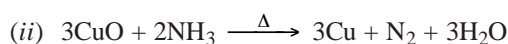


(iii) It is used for reduction of ZnO formed by roasting.

(iv) Coke.

(v) The zinc vapours are condensed by liquifying in earthen pots.

(b) CaO calcium oxide



(v) Haematite (Fe_2O_3).