

Paper Set : SET-I(HT)

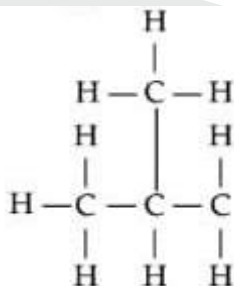
SUBJECT : Chemistry

ICSE Board - Sample Paper - 1 Solutions

SECTION - 1

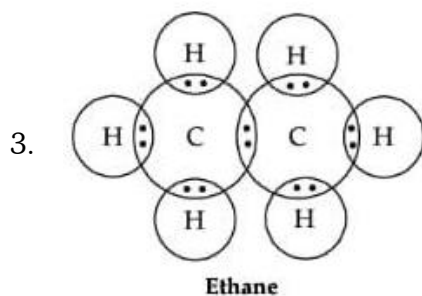
Answer 1

- (a) 1. 0
 2. oxidised
 3. Salts
 4. concentrated sulphuric acid
 5. 14
- (b) 1. (A) Nitrogen dioxide
 2. (B) C_nH_{2n+1}
 3. (C) Low ionisation potential
 4. (D) Turns red litmus blue
 5. (D) Turns red litmus blue
 6. (B) Calcium nitrate
- (c) **Identify the substance underlined, in each of the following cases :**
1. Na_2O
 2. Cathode
 3. SiO_2
 4. Ethyne or Acetylene
 5. CO_2
- (d) 1. $NaNO_3 + H_2SO_4$ (conc.) $\rightarrow NaHSO_4 + HNO_3$
 2. $NaHSO_3 + HCl$ (dilute) $\rightarrow NaCl + H_2O + SO_2$
 3. $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$
 4. $C_2H_5OH + H_2SO_4$ (conc.) $\rightarrow C_2H_4 + [H_2O.H_2SO_4]$
 5. $NH_3 + 3Cl_2 \rightarrow NCl_3 + 3HCl$
- (e) 1. Ethyne burns with brilliant white flame when the supply of air is in excess.
 2. A colourless gas having rotten egg smell is evolved.
 3. White precipitate appears which remains insoluble in excess of ammonium hydroxide.
 4. Reddish brown precipitate appears which is insoluble in excess of ammonium hydroxide.
 5. A white precipitate is formed appears which is insoluble in excess of sodium hydroxide solution.
- (f) 1. i. An isomer of n-butane : 2 methylpropane



ii.. But-2-yne

iii. Acetone



- (b) i. Acidified nickel sulphate solution. ii. The article to be electroplated.
 iii. Pure nickel. iv. $\text{Ni}^{2+} + 2e^- \rightarrow \text{Ni}$
 v. $\text{Ni} - 2e^- \rightarrow \text{Ni}^{2+}$.

Answer 4

- (a) 1. i. Colourless and odourless gas evolves which turns lime water milky.
 ii. The starch iodide paper turns blue black.
 2. i. Nitrogen and hydrogen are the reactants which are taken in the ratio of 1 : 3 by volume.
 ii. $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3 + \text{heat}$
 iii. Catalyst-Finely divided iron
 Promoter-Molybdenum.
 (b) i. $\text{CuSO}_4 \cdot 5\text{H}_2\text{O} + \text{H}_2\text{SO}_4(\text{conc.}) \rightarrow \text{CuSO}_4 + [5\text{H}_2\text{O} \cdot \text{H}_2\text{SO}_4]$
 ii. $\text{C} + 2\text{H}_2\text{SO}_4(\text{conc.}) \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} + 2\text{SO}_2$
 iii. $2\text{H}_2\text{S} + \text{SO}_2 \rightarrow 2\text{H}_2\text{O} + 3\text{S}$
 (c) i. Non-volatile acid
 ii. Dilute acid (Typical acid properties)

Answer 5

(a)

Element	Percentage Composition by mass	Atomic Mass	Relative number of atoms	Simplest ratio
Carbon	12.67	12	1.05	1
Hydrogen	2.13	1	2.13	2
Bromine	85.11	80	1.06	1

- i. Empirical formula – CH_2Br
 ii. Vapour density = 94
 Molecular weight = $2 \times \text{Vapour density}$
 = $2 \times 94 = 188$
 Empirical weight = $(1 \times 12 + 2 \times 1 + 80)$
 = 94

$$n = \frac{\text{Molecular weight}}{\text{Empirical weight}}$$

$$= \frac{188}{94}$$

$$= 2$$

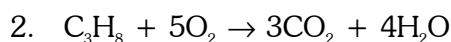
$$\begin{aligned}\text{Molecular formula} &= (\text{Empirical formula})_n \\ &= (\text{CH}_2\text{Br})_2 \\ &= \text{C}_2\text{H}_4\text{Br}_2\end{aligned}$$

(b) 1. Number of moles of sulphur = $\frac{\text{Mass of the compound}}{\text{Molecular weight of the compound}}$

$$= \frac{3.2}{32} = 0.1 \text{ mole}$$

0.1 mole of calcium will contain the same number of atoms

So, 0.1 mole of Ca = $0.1 \times 40 = 4 \text{ g}$ of calcium



$$\begin{aligned}\text{Molecular mass of propane} &= (12 \times 3) + (1 \times 8) \\ &= 36 + 8 \\ &= 44 \text{ g}\end{aligned}$$

As per the reaction,

Volume of oxygen produced by complete burning of 44 g propane
= 5×22.4 litres of oxygen

Volume of oxygen produced by complete burning of 8.8 g propane

$$= 5 \times 22.4 \times \frac{8.8}{44} \text{ litres of oxygen}$$

- (c) 1. Barium chloride solution
2. Hydrogen

Answer 6

- (a) 1. $\text{KNO}_3 + \text{H}_2\text{SO}_4(\text{conc.}) \rightarrow \text{KHSO}_4 + \text{HNO}_3$ (below 200°C)
2. $4\text{NO}_2 + 2\text{H}_2\text{O} + \text{O}_2 \rightarrow 4\text{HNO}_3$.
3. Dilute nitric acid acts as an oxidising agent when it reacts with metals to produce oxides of nitrogen and not hydrogen.
4. It turns brown in colour.

- (b) 1. $\text{C}_2\text{H}_5\text{COONa} + \text{NaOH}(\text{aq}) \rightarrow \text{C}_2\text{H}_6 + \text{Na}_2\text{CO}_3$
2. $\text{C}_2\text{H}_5\text{Cl} + \text{KOH}(\text{aq}) \rightarrow \text{C}_2\text{H}_5\text{OH} + \text{KCl}$
3. $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$
4. $\text{C}_2\text{H}_4 + \text{H}_2\text{O} \rightarrow \text{C}_2\text{H}_5\text{OH}$

- (c) 1. Ethene decolourises bromine solution.
2. A white precipitate is formed.

Answer 7

- (a) 1. Haemetite, Fe_2O_3
2. i. $\text{Fe}_2\text{O}_3 + x\text{H}_2\text{O} \rightarrow \text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
ii. $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$
iii. Iron is used in the manufacture of shutters, raining grills etc.

- (b) 1. Cathode-Hydrogen.
Anode-Oxygen.
2. Cathode-Sodium metal
Anode-Chlorine gas