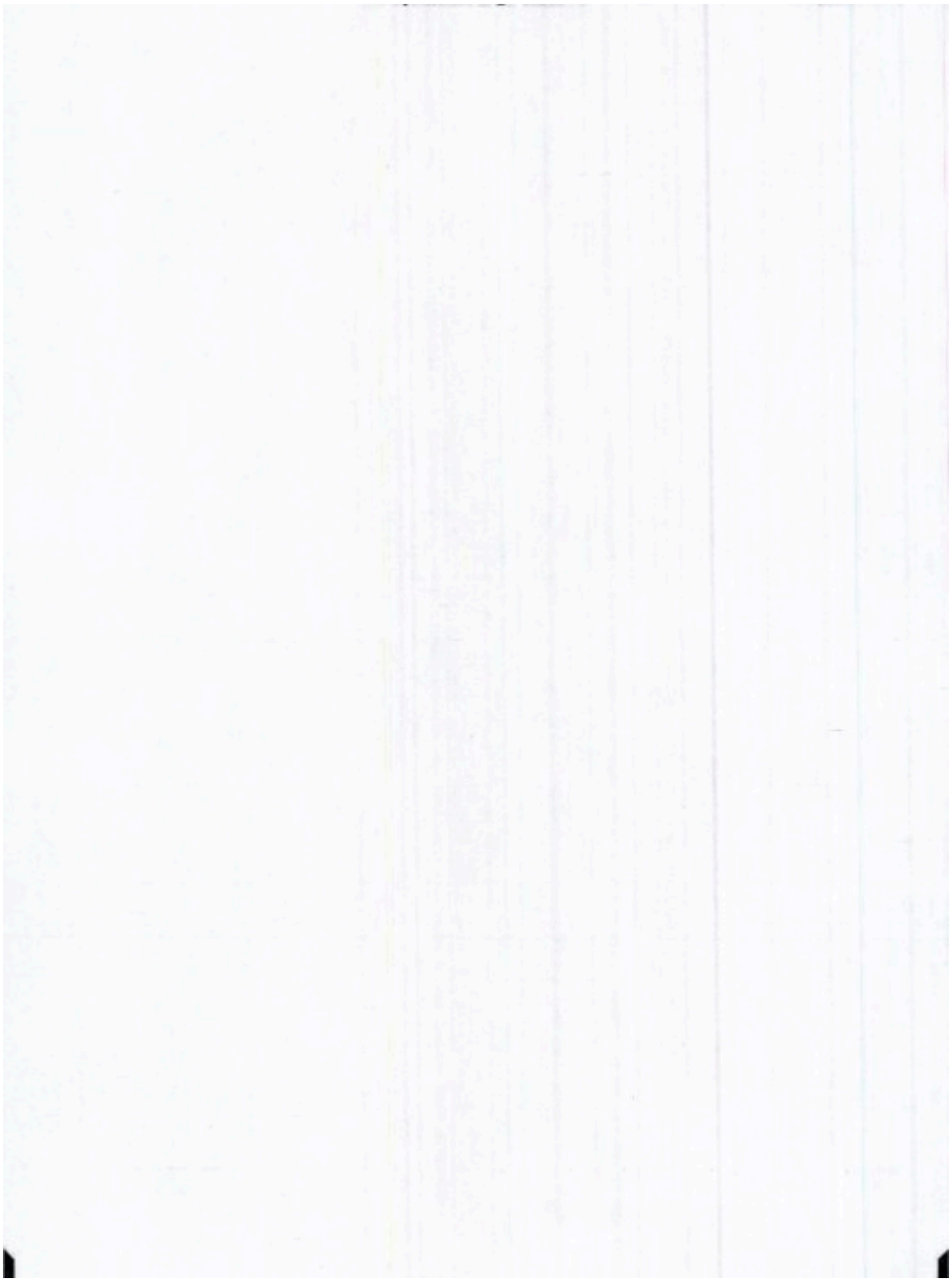
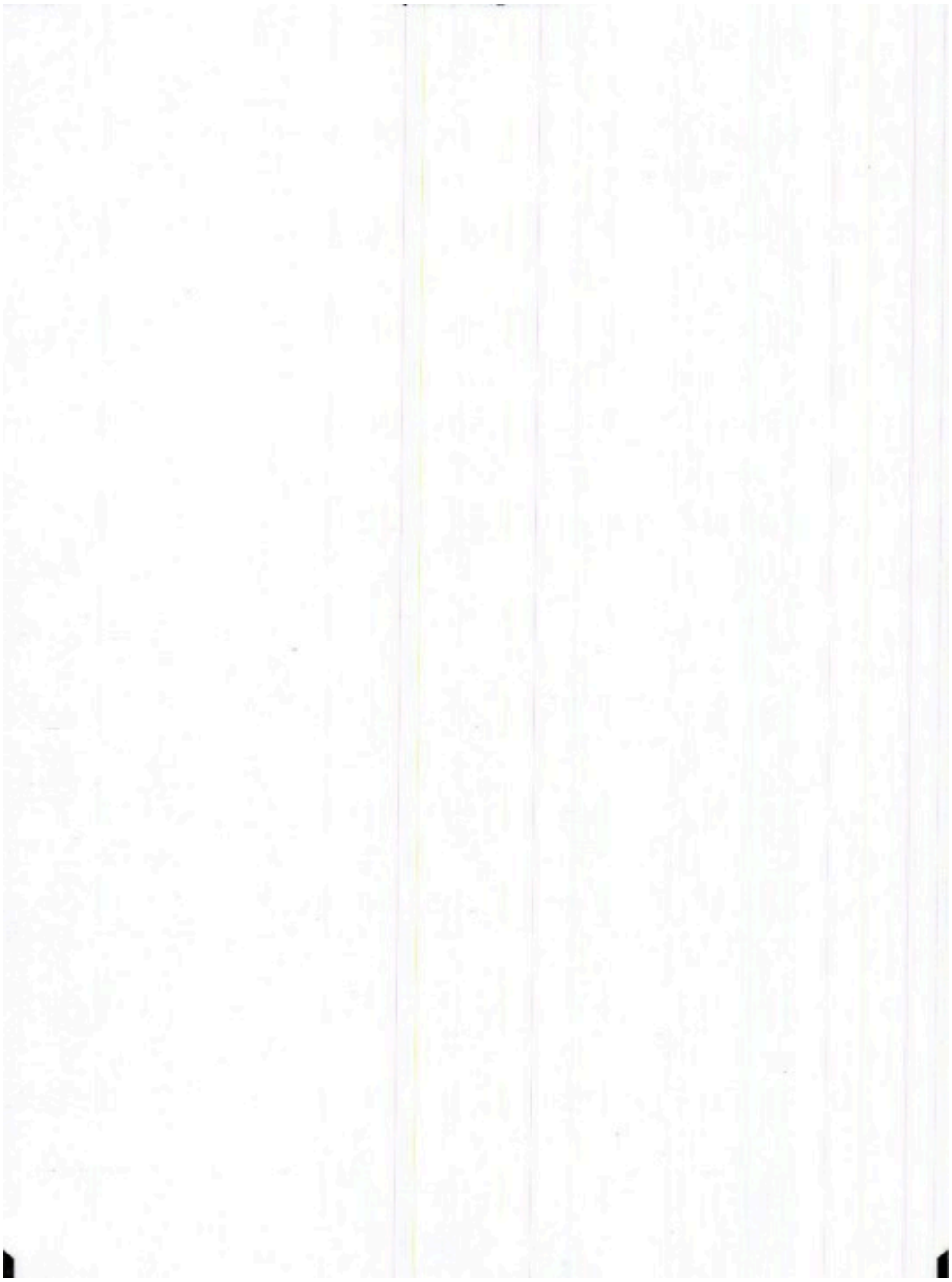




Use for rough work

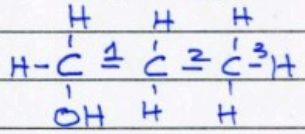
Q. No. 2 Part (i) Structural and displayed formula of Propan-1-ol:-

~~$CH_3-CH_2-CH_2OH$ (structural Formula)~~

~~Dis~~ OR

C_3H_7OH (Structural Formula)

Displayed structural Formula:-



Propan-1-ol

$CH_2-CH_2-CH_3$

OH (condensed structural formula)

Q. No. 2 Part (ii) **Numerical:-**

Given Data:-

mass in gram = 20g

molar mass = 40 g/mol

dm^3 of solution = 1 dm^3

Applied Formula:-

Molar volume = $\frac{\text{mole}}{dm^3 \text{ of solution}}$

Solution:-

mole = $\frac{\text{mass in gram}}{\text{molar mass}}$

$= \frac{20g}{40 g/mol}$

mole = 0.5 mol

molar volume = $\frac{\text{mol}}{dm^3 \text{ of solu}}$

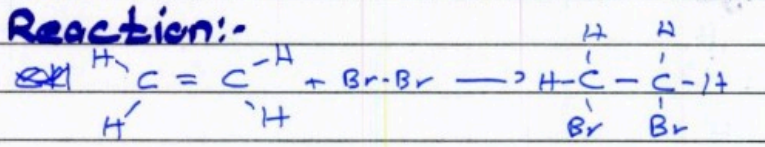
$= \frac{0.5}{1 dm^3}$

$= 0.5 \text{ mol}/dm^3$

Q. No. 2 Part (iii) **Observation:-**

Bromine is a reddish-brown liquid and its product is colourless. When it comes into contact with ethene it loses its colour. It is used to detect unsaturation. It combine with the two carbon atom breaking double bond.

Reaction:-



Alkyne also give this reaction.

Q. No. 2 Part (iv) **Application of Electroplating:-**

1) Zinc Plating:-

Zinc plating on steel is done by using zinc as an anode. A solution of potassium zinc cyanide ($K_2Zn(CN)_4$) is used as an electrolyte.

2) Tin Plating:-

Food cans are generally tin-plated. It is done by using tin as an anode. A solution of stannous sulphate ($SnSO_4$) as an electrolyte. Dilute is used to prevent hydrolysis.

3) Chromium Plating:-

Steel is first plated with platinum and nickel and then with chromium. A solution of Chromium sulphate $Cr_2(SO_4)_3$ as an electrolyte.

Q. No. 2 Part (v) **Reaction with dilute acids:-**

When a metal reacts with dilute acid it produces salt and hydrogen gas.

Example:-

$$Mg + 2HCl \longrightarrow MgCl_2 + H_2$$

Metals like magnesium and sodium react explosively.

Q. No. 2 Part (vi) **Esterification:-**

When carboxylic acid is heated with alcohol in the presence of dilute sulphuric acid as a catalyst ester is formed and this process is called esterification.

Example:-

$$\underset{\text{ethanoic acid}}{CH_3COOH} + \underset{\text{Methanol}}{CH_3OH} \longrightarrow \underset{\text{Methyl Ethanoate}}{CH_3\overset{O}{\overset{\|}{C}}-OCH_3}$$

It gets its name from methyl group of methyl alcohol and ethanoate is obtained by replacing "oic" with "ate".

Q. No. 2 Part (vii) **Advantages of hydrogen-oxygen fuel cell:-**

i) It is highly reliable as it converts fuel directly into electricity with very little waste.

ii) It is highly efficient as it has less moving parts therefore requiring little maintenance.

iii) They are obtained from renewable energy source.

Q. No. 2 Part (viii) **Finding molecular formula:**

Given Data:-

CH_2O; molar mass = 180

To find:-

molar mass of CH_2O = ?

Solution:-

molar mass = 12+2+16

= 30

Dividing = $\frac{180}{30}$ = 6

Multiply it with CH_2O

6 [CH_2O]

$C_6H_{12}O_6$ (glucose)

Q. No. 2 Part (ix) **Numerical:-**

Given Data:-

mol = 0.25 mol

molar mass = 19+14+48 = 81 g/mol

dm^3 of solution = $1 dm^3$

To find:-

concentration in g/dm^3 = ?

Solution:-

mass in gram = mole × molar mass

= 0.25 × 81

= 20.25 g

concentration = $\frac{20.25\ g}{1\ dm^3}$

= 20.25 g/dm^3

Q. No. 2 Part (x) **Sources and function of Vitamin A:-**

Sources:-

Carrots, diary products, Brocolli, sprouts etc.

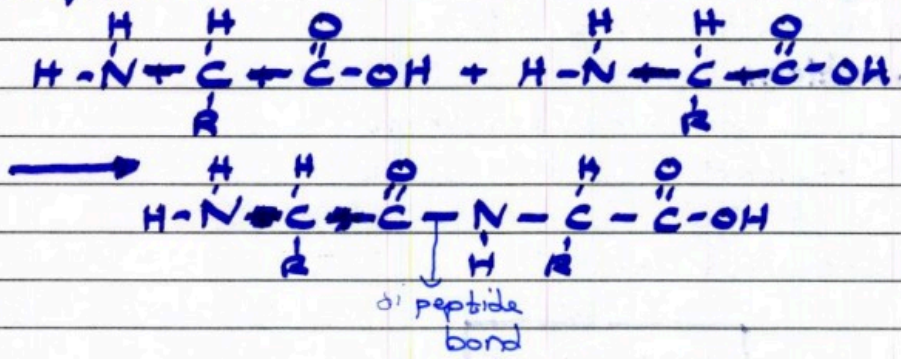
Function:-

It improves vision, immune function and support skin health.

Q. No. 2 Part (xi) **Amino acids role in making protein:-**

Amino acids are the basic building blocks of protein. When they join together they form a dipeptide bond which forms protein.

Equation:-



Q. No. 3 (Page 1)

Reactions of metal:-

1) Steam:-

When metal react with steam they form metal oxide and hydrogen gas.

Chemical equations.

$3Fe + 4H_2O \longrightarrow Fe_3O_4 + 4H_2$

=> Metals like sodium, ~~potassium~~ magnesium are not treated with it due to their violent reaction.

=> Metals like zinc, iron react steadily with steam.

=> Metals like gold, copper and silver are not generally treated with steam.

2) Oxygen:-

Metals react with oxygen to form metal oxide.

Chemical Equation:-

$2Mg + O_2 \longrightarrow 2MgO$

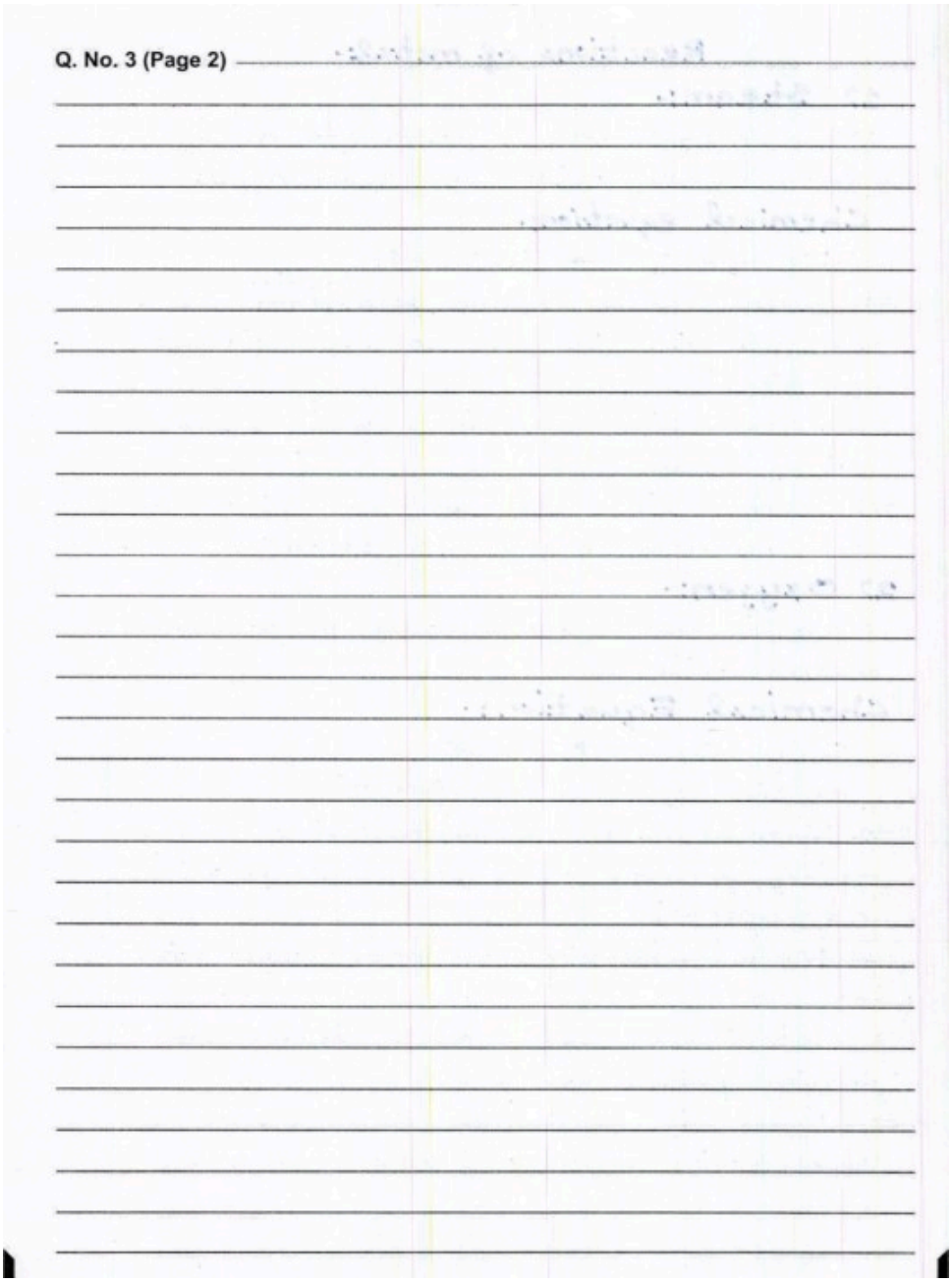
magnesium oxygen magnesium oxide

=> Metals like sodium, magnesium react rapidly, forming oxides sometimes peroxide and superoxide.

~~=> Metal like zinc, iron donot react with it~~

=> Metal like copper react slowly, often forming patina over time.

=> Metal like zinc, iron form a protective layer which prevents further reaction.


Q. No. 3 (Page 2)

Q. No. 4 (Page 1) **Determing Limiting reactant and mass:-**

Given Data:-

mass of zinc = 150g

mass of dill (CH_2SO_4) = 200g

To find:-

mole of zinc = ?

mole of H_2SO_4 = ?

Limiting reactant = ?

mass of H_2 produced = ?

Solutions:-

mole of zinc = $\frac{150g}{63.5g/mol}$ = 2.4 mol

mole of dill = $\frac{200}{98}$ = 2.04 mol

Comparing

Zn : H_2	H_2SO_4 : H_2
1 : 1	1 : 1
2.4 : x	2.04 : x
x = 2.4 mol	x = 2.04 mol

Limiting reactant = dill = 2.04 mol

mass of H_2 :

mole x molar mass

2.04 x 2

mass of H_2 = 4.08 g

Q. No. 4 (Page 2)

Q. No. 5 (Page 1) **Calculating empirical and molecular formula:-**

C = 38.7% H = 9.68% O = 51.61%.

Dividing by their molar mass

$C = \frac{38.7}{12}$; $H = \frac{9.68}{1}$ $O = \frac{51.61}{16}$

3.225 : 9.68 : 3.225

Dividing by smallest

$\frac{3.225}{3.225} : \frac{9.68}{3.225} : \frac{3.225}{3.225}$

Empirical Formula:- 1 : 3 : 1

CH_3O

molar mass = 12+3+16

= 31 g/mol

Determining the number to be multiplied inorder to find molecular formula

$\frac{62}{31} = 2$

$2(CH_3O)$

$C_2H_6O_2$ **(molecular formula)**

Q. No. 5 (Page 2)

Q. No. 6 (Page 1) **Electrolysis of dilute sulphuric acid using copper electrode:-**

If you use copper electrode instead of platinum electrode cathode reaction remain the same but anode reaction differ. Cu goes into solution as Cu^{2+} and delivers electron to anode. These electrons travel from anode to cathode by a power source.

At anode:-

$$Cu^{2+} \longrightarrow Cu^{2+} + 2e$$

At cathode:-

$$Cu^{2+} + 2e \longrightarrow Cu_{(s)}$$

Copper anode is consumed gradually while copper cathode gain mass due to deposition of pure copper on it.

Copper obtained from its ores is usually impure and contains impurities e.g gold, copper etc. These impurities are removed by a process called electrolysis. Impure copper bar act as an anode and pure copper bar act as a cathode. $CuSO_4$ a solution containing a little sulphate ions is used as an electrolyte.

On passing electricity copper anode dissolves forming Cu^{2+} ions. Copper cathode is reduced forming Cu^{2+} ions therefore pure copper is deposited on the surface of cathode while impurities such as gold, copper falls to the bottom of the cell.

Q. No. 6 (Page 2)

At anode:-

$Cu \longrightarrow Cu^{2+} + 2e$

At cathode:-

$Cu^{2+} + 2e \longrightarrow Cu$