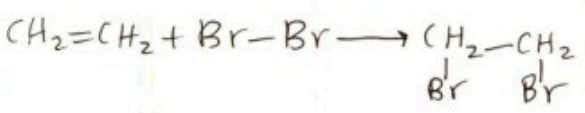
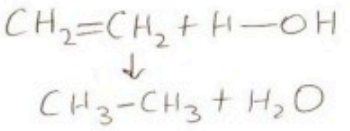
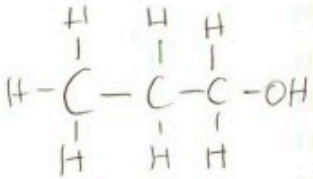

Cu
Cu

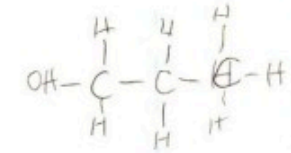


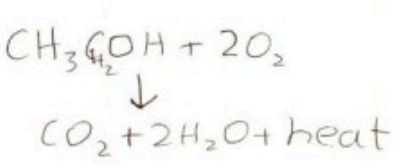






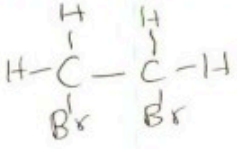


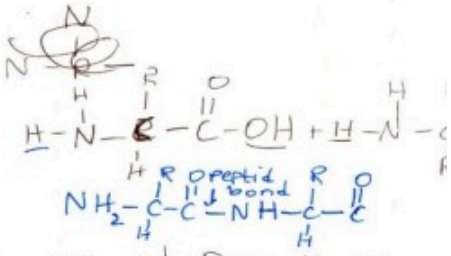


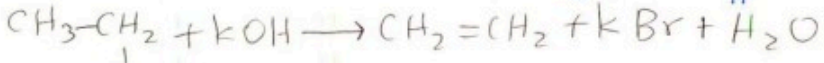


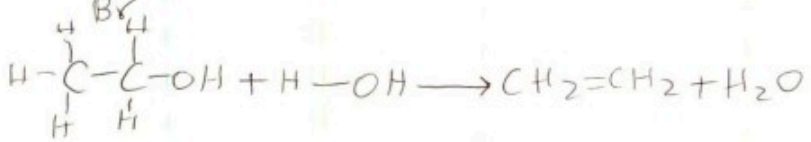
Ethene

Bromoethane





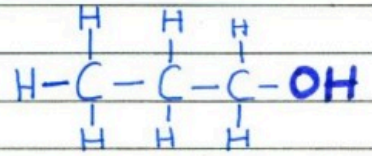




Use for rough work

Q. No. 2 Part (i) Write the displayed and.....

Displayed ~~Structural~~ formula:-



Since, propane contain 3 carbon atom by adding a OH group, makes it propan-1-ol.

~~Displayed formula:~~

Structural formula:-

$CH_3-CH_2-CH_2OH$

.....

Q. No. 2 Part (ii) Calculate the concentration.....

Given:

mass = 20g of NaOH

volume = $1 dm^3$ of solution

To calculate:

Strength = ?

Solution:

$$\text{Strength} = \frac{\text{moles of NaOH}}{\text{volume in } dm^3}$$

$$\text{Strength} = \frac{0.5}{1}$$

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

$$\text{moles of NaOH} = \frac{\text{mass in grams}}{\text{Molar mass of NaOH}}$$

$$\text{moles of NaOH} = \frac{20}{40}$$

moles of NaOH = 0.5 moles

Q. No. 2 Part (iii)

Observation:-

The aqeous bromine is reddish-brown in colour. When an unsaturated hydrocarbon reacts with aqeous bromine, the colour of the aqeous bromine changes from reddish-brown to **colourless**.

Equation:-

$$CH_2=CH_2 + Br-Br \xrightarrow{\text{aqeous}} \underset{\substack{| \\ Br}}{CH_2}-\underset{\substack{| \\ Br}}{CH_2}$$

The colour changes from colour to colourless.

Q. No. 2 Part (iv)

Following are the applications of electroplating:

i) Zinc plating (In this zinc is metal is used as anode).

ii) Chromium plating (In this chromium metal is used as anode).

iii) Tin plating (In this tin metal, is used as anode).

Q. No. 2 Part (v)

When a reactive metal reacts with a dilute acid, the formation of **Salt** with the liberation of **Hydrogen gas** occurs. It reacts explosively with the dilute acid.

Equation:-

Zn reacts with HCl to form salt and hydrogen gas.

$$Zn + 2HCl \longrightarrow ZnCl_2 + H_2$$

Q. No. 2 Part (vi)

The usual state of ionic compounds under normal conditions is **solids**. Following are the reasons:

i) The strong electrostatic force of attraction between the oppositely charged ions, holds these ions making them solid under RTP.

ii) The strong intermolecular forces holds these ions and also due to **the 3-dimensional lattice structure** in which these ions are arranged. This makes them solid at ~~RTR~~ RTP.

Q. No. 2 Part (vii)

Following are the advantages of Hydrogen-Oxygen fuel cell:

i) They emit water vapours instead of pollutants like gasoline or petrol.

ii) They are **renewable** energy source.

iii) They are more **energy efficient** than petrol and gasoline.

Q. No. 2 Part (viii)

Given:

Empirical formula = CH_2O

Molecular formula = ?

Molar mass = 180 g

Solution:

First we find empirical ~~formula~~ **Molecular** mass:

$CH_2O = 12 + 2 \times 1 + 16$

$= 12 + 2 + 16$

$CH_2O = 30$ g empirical molecular mass

Now,

$n = \frac{\text{Molar mass}}{\text{empirical molecular mass}}$

$n = \frac{180}{30}$

$n = 6$

Molecular formula:

$= n \times$ Empirical formula

$= 6 \times CH_2O$

$= C_6H_{12}O_6$

Q. No. 2 Part (ix)

Following are the reactions:

Reaction of unburnt hydrocarbons:

$$RC + [O] \longrightarrow RCO^*$$

Formation of peroxyacyl radicals:

RCO reacts with oxygen to form radicals.

$$RCO^* + O_2 \longrightarrow RCO(O_2)$$

Formation of PAN:

The peroxyacyl radicals react with nitrogen dioxide (NO_2) to form peroxyacylnitrate (PAN).

$$RCO(O_2) + NO_2 \longrightarrow RCO(O_2)NO_2$$

Q. No. 2 Part (x)

Following is the equation of complete combustion of alcohols:

Equation:

$$CH_3CH_2OH + 2O_2 \longrightarrow CO_2 + 2H_2O + heat$$

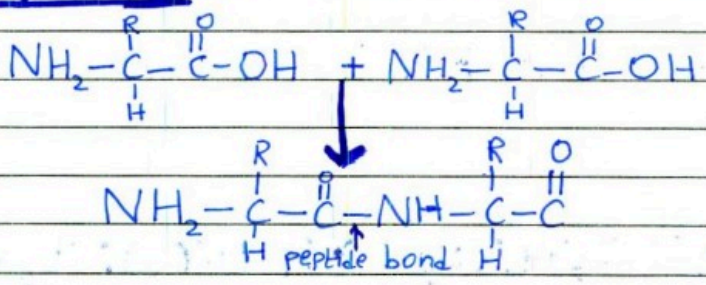
Alcohol is an inflammable fuel, so when ethanol reacts with the oxygen in the following products will be formed:

i) Carbon dioxide (CO_2)
ii) Water (H_2O)
ii) Heat will be released in combustion of alcohols.

Q. No. 2 Part (xi)

Many amino acids join together to form protein. Amino acids are considered the building block of protein. They are essential in the formation of protein.

Equation:-



Q. No. 3 (Page 1) Petroleum fractions

Petroleum fractions	Their uses
Bitumen	For paving roads, highways etc.
Petrol	Fuel for cars, bikes etc.
LPG (Liquified Petroleum Gas)	Gas for homes, cooking purposes etc.
~~Diset~~ Diesel	Fuel for buses, trucks etc.

Q. No. 3 (Page 2)

Q. No. 4 (Page 1) **Limiting Reactant, Mass....**

$$Zn + H_2SO_4 \longrightarrow 2ZnSO_4 + H_2$$

Given:

Mass of Zn = 150 g M.M of H_2SO_4 = 98 g

H_2SO_4 mass = 200 g

Molar mass of Zn = 63.5 $gmol^{-1}$

To find:

Limiting reactant = ?

Mass of H_2 = ?

Solution:

a)

Moles of Zn:

$$\text{Moles} = \frac{\text{mass}}{\text{Molar mass}}$$

$$\text{Moles of Zn} = \frac{150}{63.5}$$

Moles of Zn = 2.36 mol

Moles of H_2SO_4:

$$\text{Moles} = \frac{\text{mass}}{\text{Molar mass}}$$

~~Mas~~ Moles of $H_2SO_4 = \frac{200}{98}$

Moles of H_2SO_4 = 2.04 mol

Now,

Compare moles with 'H_2'

Zn : H_2

1 : 1

2.04 : x

Q. No. 4 (Page 2)

$x = 2.36$ moles of H_2

$H_2SO_4 : H_2$

$1 : 1$

$2.04 : x$

$x = 2.04$ moles of H_2

Limiting Reactant: H_2SO_4

Since, H_2SO_4 produces least amount of moles it is the limiting reactant.

b) Mass of H_2:

Molar mass of $H_2 = 2$ g

$$\text{number of moles} = \frac{\text{mass}}{\text{Molar mass}}$$

mass of H_2 = moles x molar mass

mass of $H_2 = 2.04 \times 2$

mass of $H_2 = 4.08$ g

Q. No. 5 (Page 1) Empirical and molecular....

Given:

C = 38.71%.
H = 9.68%.
O = 51.61%.
Molar mass = 62 g/mol

Required:

Empirical formula = ?
Molecular formula = ?

Solution:-

Convert the percentages into grams.

$C = \frac{38.71}{12} = 3.26\ g$

$H = \frac{9.68}{1} = 9.68\ g$ or $9.7\ g$

$O = \frac{51.61}{16} = 3.26\ g$

Take mole ratios:

C : H : O
3.26 : 9.7 : 3.26
Divide by smallest fraction

$\frac{3.26}{3.26} : \frac{9.7}{3.26} : \frac{3.26}{3.26}$

1 : 3 : 1

Q. No. 5 (Page 2)

Empirical formula: (CH_3O)

Now,

Empirical molecular mas $= 12+3\times1+16$

$= 12+3+16$

$= 31\ g$

$$n = \frac{\text{Molar mass}}{\text{Empirical molecular mass}}$$

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

$$n = 2$$

Molecular formula: $n \times$ Empirical formula

$= 2 \times (CH_3O)$

Molecular formula $= C_2H_6O_2$ Ans

Q. No. 6 (Page 1) **Electrolysis of copper sulphate...**

During the electrolysis of dilute copper sulphate the copper metal is oxidized at the anode. Instead of hydroxide ($\bar{O}H$) ions. The copper metal looses two electrons and becomes oxidized.

At the cathode, the copper ~~metal~~ in liquid state is reduced to give copper metal. Instead of hydrogen gas, copper in liquid state is reduced meaning gain electrons to produce copper metal.

Following are the equations of chemical reactions occuring at both electrodes:

At Anode:-

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

At Cathode:-

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

Q. No. 6 (Page 2)

Diagram:-

