

# YAKEEN NEET 2.0

**2026**

**Some Basic Concept of Chemistry**

**MPQ Solution - 09**

**Physical Chemistry**

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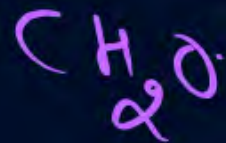
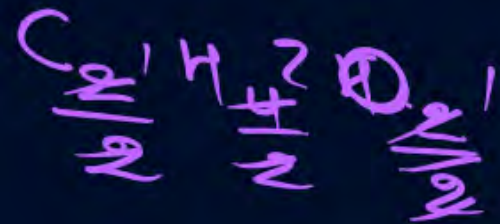
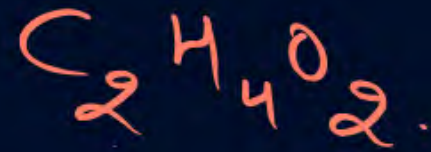
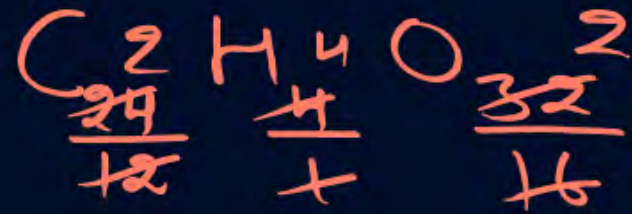


## Magarmach Practice Questions ( MPQ )



# QUESTION – (AIIMS 1999)

60 g of organic compound on analysis gave following results C = 24 g, H = 4 g and O = 32 g. The empirical formula of compound is:



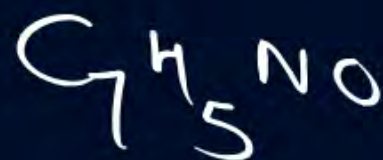


Determine the empirical formula of Kevlar, used in making bullet proof vests, is 70.6% C, 4.2% H, 11.8% N and 13.4% O:



$$\begin{array}{cccc} \text{C} & \text{H} & \text{N} & \text{O} \\ \frac{70.6}{12} & \frac{4.2}{1} & \frac{11.8}{14} & \frac{13.4}{16} \end{array}$$

$$\begin{array}{cccc} \text{C} & \text{H} & \text{N} & \text{O} \\ \frac{5.88}{0.84} & \frac{4.2}{0.84} & \frac{0.84}{0.84} & \frac{0.84}{0.84} \end{array}$$





An organic compound has 42.1% carbon, 6.4% hydrogen and remainder is oxygen. If its molecular weight is 342, then its molecular formula is :



$$\begin{array}{ccc} C & H & O \\ \frac{42.1}{12} & \frac{6.4}{1} & \frac{51.5}{16} \end{array}$$

$$M.F. = (E.F.)_x$$

$$\begin{array}{r} 132 \\ 22 \\ 178 \\ \hline 332 \end{array}$$



$$\begin{array}{ccc} C & H & O \\ 3.5 & 6.4 & 3.2 \end{array}$$

$$x = \frac{342}{332} \approx 1$$



$$\begin{array}{ccc} C & H & O \\ \frac{3.5}{3.2} & \frac{6.4}{3.2} & \frac{3.2}{3.2} \\ 1.1 & 2 & 1 \end{array}$$



$$M.F. = C_{11}H_{22}O_{11} = E.F.$$



## Question



Two oxides of metal contain 27.6% & 30% of oxygen. If the formula of first oxide is  $M_3O_4$ . Find formula of second oxide.

$$\begin{array}{r} 27.6\% \text{ ox.} \\ 73.4\% \text{ metal} \\ \hline M_3O_4 \end{array}$$

$$27.6\% \text{ ox} = 4 \text{ at.}$$

$$30\% \text{ — } = \frac{4 \times 30}{27.6}$$

$$= \frac{120}{27.6} = 4.34$$

$$73.4\% \text{ metal} = 3 \text{ atoms}$$

$$70\% \text{ — } = \frac{3 \times 70}{73.4}$$

$$= 2.9$$

$$\begin{array}{r} 30\% \text{ ox.} \\ 70\% \text{ metal} \\ \hline M_xO_y \end{array}$$

$$\begin{array}{r} M \quad O \quad 3 \\ \hline 2.9 \quad 4.34 \\ \hline 1.45 \quad 1.45 \end{array}$$



Number of hydrogen atoms per molecule of a hydrocarbon A having 85.8% carbon is 12 (Given : Molar mass of A =  $84 \text{ g mol}^{-1}$ )

$$\text{mass of C} = \frac{85.8}{100} \times 84 = 72 \text{ g}$$

$$\longrightarrow \text{H} = 84 - 72 = 12 \text{ g}$$

$$\text{C}_{\frac{72}{12}} \text{H}_{\frac{12}{1}} = 12 \text{ atoms of H}$$



Compound A contains 8.7% Hydrogen 74% Carbon and 17.3% Nitrogen. The molecular formula of the compound is,

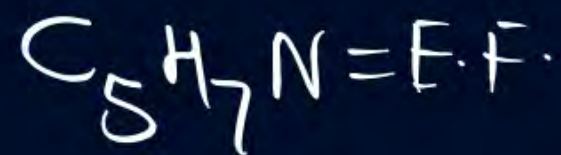
Given : Atomic masses of C, H and N are 12, 1 and 14 amu respectively.

The molar mass of the compound A is  $162 \text{ g mol}^{-1}$ .



$$\begin{array}{ccc} \text{C} & \text{H} & \text{N} \\ \frac{74}{12} & \frac{8.7}{1} & \frac{17.3}{14} \end{array}$$

$$\begin{array}{ccc} \text{C} & \text{H} & \text{N} \\ \frac{5}{6.16} & \frac{7}{8.7} & \frac{1}{1.24} \\ \hline 1.24 & 1.24 & 1.24 \end{array}$$



$$\begin{aligned} \text{M.F.} &= (\text{E.F.})_x \\ &= (\text{C}_5\text{H}_7\text{N})_2 \\ &= \text{C}_{10}\text{H}_{14}\text{N}_2 \end{aligned} \quad \left| \quad \begin{aligned} x &= \frac{162}{5 \times 12 + 7 \times 1 + 1 \times 14} \\ &= \frac{162}{81} = 2 \end{aligned} \right.$$



A metal chloride contains 55.0% of chlorine by weight. 100 mL vapours of the metal chloride at STP weight 0.57 g. The molecular formula of the metal chloride is (Given : Atomic mass of chlorine is 35.5 u)

- ☒ **A**  $\text{MCl}_2$
- ☐ **B**  $\text{MCl}_4$
- ☐ **C**  $\text{MCl}_3$
- ☐ **D**  $\text{MCl}$
- $M_x \text{Cl}_y$   
 $\downarrow \quad \downarrow$   
 $45\% \quad 55\%$
- $V = 100 \text{ mL}$   
 STP  
 $T = 273 \text{ K}$   
 $P = 1 \text{ atm}$   
 $\text{mass} = 0.57 \text{ g}$

$$\text{Cl mass} = \frac{55}{100} \times 127.8$$

$$9 \frac{7+2}{35.5} \approx 71 \text{ g}$$

$$PV = nRT$$

$$1 \times \frac{100}{1000} = \frac{0.57}{M} \times 0.0821 \times 273$$

$$M = 5.7 \times 0.0821 \times 273$$

$$M = 127.8 \text{ g}$$



**THANK**  
**YOU**