## EUDIOMETRY

1. The formula of a gaseous hydrocarbon which requires 6 times of its own volume of $\mathrm{O}_{2}$ for complete oxidation and produces 4 times its own volume of $\mathrm{CO}_{2}$ is $\mathrm{C}_{\mathrm{x}} \mathrm{H}_{\mathrm{y}}$. The value of y is
$\qquad$ .
2. Complete combustion of 1.80 g of an oxygen containing compound $\left(\mathrm{C}_{\mathrm{x}} \mathrm{H}_{\mathrm{y}} \mathrm{O}_{\mathrm{z}}\right)$ gave 2.64 g of $\mathrm{CO}_{2}$ and 1.08 g of $\mathrm{H}_{2} \mathrm{O}$. The percentage of oxygen in the organic compound is:
(1) 51.63
(2) 63.53
(3) 53.33
(4) 50.33

## SOLUTION

1. Official Ans. by NTA (8)

Sol. Combustion $\mathrm{rx}^{\mathrm{n}}$ :

$$
\mathrm{C}_{\mathrm{x}} \mathrm{H}_{\mathrm{y}(\mathrm{~g})}+\left(\mathrm{x}+\frac{\mathrm{y}}{4}\right) \mathrm{O}_{2}(\mathrm{~g}) \rightarrow \mathrm{xCO}_{2}(\mathrm{~g})+\frac{\mathrm{y}}{2} \mathrm{H}_{2} \mathrm{O}(\ell)
$$

V 6 V

$$
\begin{aligned}
& \mathrm{Vx}=4 \mathrm{~V} \\
& \Rightarrow \mathrm{x}=4
\end{aligned}
$$

Sinc: (I) $\mathrm{Vo}_{2}=6 \times \mathrm{V}_{\mathrm{C}_{\mathrm{x}} \mathrm{H}_{y}}$
$\Rightarrow \mathrm{V}\left(\mathrm{x}+\frac{\mathrm{y}}{4}\right)=6 \mathrm{~V}$
$\Rightarrow\left(x+\frac{y}{4}\right)=6 \Rightarrow 4+\frac{\mathrm{y}}{4}=6$
$\Rightarrow \mathrm{y}=8$
2. Official Ans. by NTA (3)

Sol. $\mathrm{n}_{\mathrm{c}}=\mathrm{n}_{\mathrm{CO}_{2}}=\frac{2.64}{44}=0.06$
$\mathrm{n}_{\mathrm{H}}=2 \times \mathrm{n}_{\mathrm{H}_{2} \mathrm{O}}=\frac{1.08}{18} \times 2=0.12$
$\mathrm{m}_{0}=1.80-12 \times \frac{2.64}{44}-\frac{1.08}{18} \times 2$
$=1.80-0.72-0.12=0.96 \mathrm{gm}$
$\% 0=\frac{0.96}{1.80} \times 100=53.33 \%$
Hence answer is (3)

