Daily Tutorial Sheet-15	Level-3

159.(A) $3O_2 \xrightarrow{\text{electric spark}} 2O_3$

Initial 1L

Final $(1-x)L$ $\frac{2}{3}xL$

$1-x+\frac{2}{3}x=0.8 \quad \Rightarrow \quad 1-\frac{1}{3}x=0.8 \quad \Rightarrow \quad 0.2\times 3=x \quad \Rightarrow \quad 0.6=x$

Mole fraction of ozone $=\frac{\frac{2}{3}x}{1-\frac{1}{3}x}=\frac{\frac{2}{3}\times 0.6}{1-\left(\frac{1}{3}\times 0.6\right)}=\frac{0.4}{0.8}=0.5$

160.(B) On treatment with turpentine oil, ozone gets absorbed by it.

$\therefore$ Volume of ozone in 100 mL = 60 mL

Volume of oxygen in 100 mL = 40 mL

On heating, $2O_3(g) \longrightarrow 3O_2(g)$

60 mL of ozone will give $\frac{3}{2}\times 60=90\,mL$ of O_2

$\therefore$ Total volume of oxygen = 130 mL

Increase in volume $=130-100=30mL$

161.(A) Let there be x mL of NH_3 in the mixture

$\therefore$ Volume of H_2 in the mixture $=(50-x)mL$

$2NH_3 \xrightarrow[\text{spark}]{\text{electric}} N_2+3H_2$

x mL will be give $\frac{x}{2}mL\,N_2$ and $\frac{3}{2}x\,mL\,H_2$

Total volume of $H_2=\frac{3}{2}x+50-x=50+\frac{x}{2}$

When 40 mL of oxygen was added and the mixture was sparked again, volume of O_2 used $=(40-6)mL=34\,mL$

$2H_2+O_2 \longrightarrow 2H_2O$

34 mL O_2 will react with 68 mL H_2

$\therefore \quad 50+\frac{x}{2}=68 \quad \Rightarrow \quad x=36$

% of $\frac{36}{50}\times 100=72\%$

162.(A) Real gases show negative deviation $(Z<1)$ from ideal behaviour due to the intermolecular attractive forces.

163.(B) On increasing the temperature, the distribution curve flattens and the peak of the curve decreases.

164.(D) Dalton's law of partial pressures is valid only in case of a mixture of un-reacting gases.