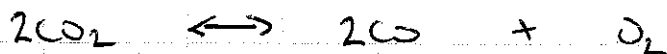


$$\textcircled{1} \quad [\text{CO}_2]_{\text{initial}} = \frac{2 \text{ mol}}{5 \text{ L}} = 0.4 \text{ mol/L}$$

$$[\text{CO}_2]_{\text{eq}} = 0.39 \text{ mol/L}$$



I	0.4	0	0
C	-2x	+2x	+x
E	0.4-2x	2x	x

$$\text{Since } [\text{CO}_2]_{\text{eq}} = 0.39 \text{ mol/L}$$

$$0.4 - 2x = 0.39$$

$$0.4 - 0.39 = 2x$$

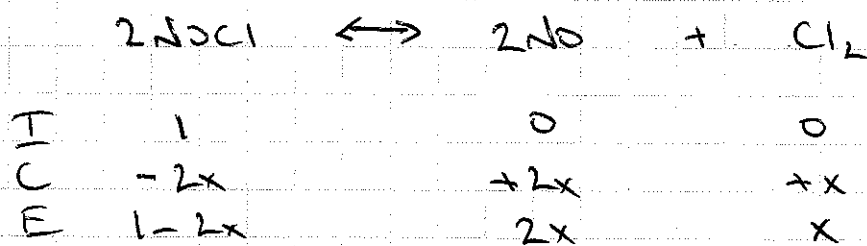
$$0.01 = 2x$$

$$x = 0.005$$

$$\begin{aligned} [\text{CO}]_{\text{eq}} &= 2x \\ &= 2(0.005) \\ &= 0.01 \text{ mol/L} \end{aligned}$$

$$\begin{aligned} [\text{O}_2]_{\text{eq}} &= x \\ &= 0.005 \text{ mol/L} \end{aligned}$$

$$\textcircled{2} \quad [\text{NOCl}]_{\text{initial}} = \frac{2 \text{ mol}}{2 \text{ L}} = 1 \text{ mol/L}$$



Since $[\text{NO}]_{\text{eq}} = 0.032 \text{ mol/L}$

$$2x = 0.032$$

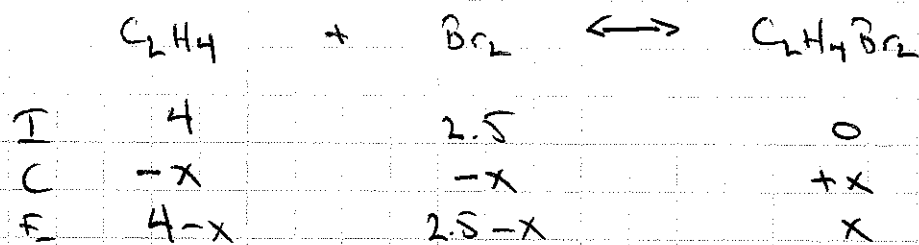
$$x = 0.016$$

$$[\text{NOCl}]_{\text{eq}} = 1 - 2x = 1 - 2(0.016) = 0.968 \text{ mol/L}$$

$$[\text{Cl}_2]_{\text{eq}} = x = 0.016 \text{ mol/L}$$

$$\textcircled{3} \quad [\text{C}_2\text{H}_4]_{\text{initial}} = \frac{4 \text{ mol}}{1 \text{ L}} = 4 \text{ mol/L}$$

$$[\text{Br}_2]_{\text{initial}} = \frac{2.5 \text{ mol}}{1 \text{ L}} = 2.5 \text{ mol/L}$$



Since $[\text{C}_2\text{H}_4]_{\text{eq}} = 2.5 \text{ mol/L}$

$$4 - x = 2.5$$

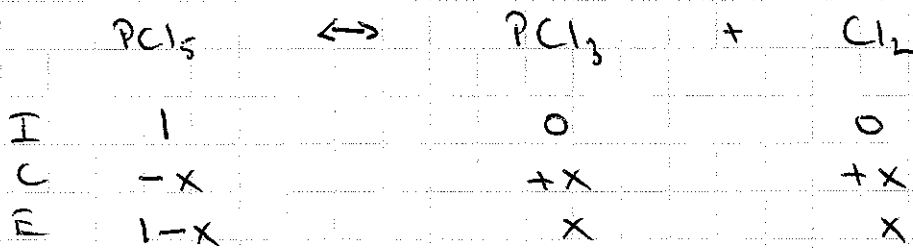
$$4 - 2.5 = x$$

$$x = 1.5$$

$$[\text{Br}_2]_{\text{eq}} = 2.5 - x = 2.5 - 1.5 = 1.0 \text{ mol/L}$$

$$[\text{C}_2\text{H}_4\text{Br}_2]_{\text{eq}} = x = 1.5 \text{ mol/L}$$

$$\textcircled{4} \quad [\text{PCl}_5]_{\text{initial}} = \frac{2 \text{ mol}}{2 \text{ L}} = 1 \text{ mol/L}$$



$$[\text{PCl}_3]_{\text{eq}} = \frac{0.2 \text{ mol}}{2 \text{ L}} = 0.1 \text{ mol/L}$$

$$x = 0.1$$

$$[\text{PCl}_5]_{\text{eq}} = 1 - x$$

$$= 1 - 0.1$$

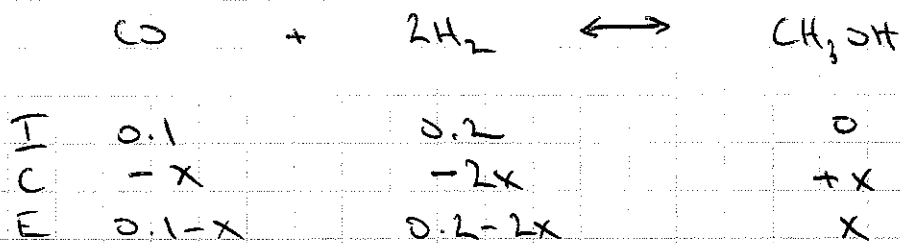
$$= 0.9 \text{ mol/L}$$

$$[\text{Cl}_2]_{\text{eq}} = x$$

$$= 0.1 \text{ mol/L}$$

$$\textcircled{5} \quad [\text{CO}]_{\text{initial}} = \frac{0.1 \text{ mol}}{1 \text{ L}} = 0.1 \text{ mol/L}$$

$$[\text{H}_2]_{\text{initial}} = \frac{0.2 \text{ mol}}{1 \text{ L}} = 0.2 \text{ mol/L}$$



$$[\text{H}_2]_{\text{eq}} = \frac{0.12 \text{ mol}}{1 \text{ L}} = 0.12 \text{ mol/L}$$

$$0.2 - 2x = 0.12$$

$$0.2 - 0.12 = 2x$$

$$0.08 = 2x$$

$$x = 0.04$$

$$[\text{CO}]_{\text{eq}} = 0.1 - x$$

$$= 0.1 - 0.04$$

$$= 0.06 \text{ mol/L}$$

$$[\text{CH}_3\text{OH}] = x$$

$$= 0.04 \text{ mol/L}$$