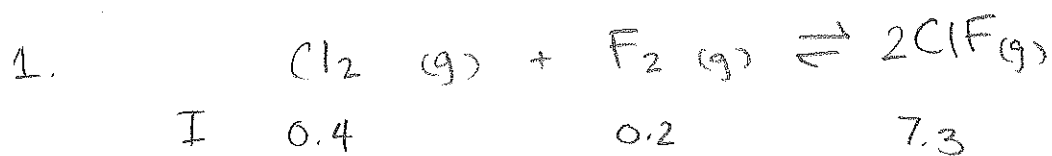


Reaction Quotient

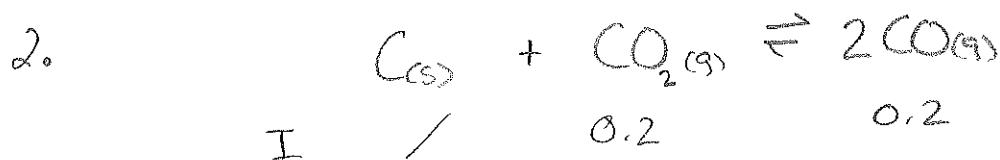


$$Q = \frac{[\text{ClF}]^2}{[\text{Cl}_2][\text{F}_2]}$$

$$= \frac{(7.3)^2}{(0.4)(0.2)}$$

$Q > K$
 \therefore shift left to achieve eq'm

$$Q = 91.3$$

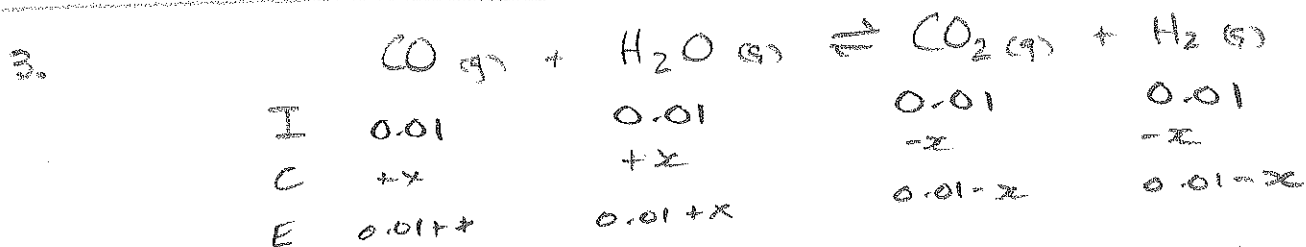


$$Q = \frac{[\text{CO}]^2}{[\text{CO}_2]}$$

$$= \frac{(0.2)^2}{0.2}$$

$$= 0.2$$

$Q > K_c$
 \therefore shift left to achieve eq'm



$$Q = \frac{[\text{CO}_2][\text{H}_2]}{[\text{CO}][\text{H}_2\text{O}]}$$

$$= \frac{(0.01)(0.01)}{(0.01)(0.01)}$$

$$= 1$$

$Q > K_c$
 \therefore shift left to achieve eq'm

$$[\text{CO}]_{\text{eq'm}} = [\text{H}_2\text{O}]_{\text{eq'm}}$$

$$= 0.01 + 0.0023$$

$$= 0.0123 \text{ mol/L}$$

$$[\text{CO}_2]_{\text{eq'm}} = [\text{H}_2]_{\text{eq'm}} = 7.7 \times 10^{-3} \text{ mol/L}$$

$$K_c = \frac{[\text{CO}_2][\text{H}_2]}{[\text{CO}][\text{H}_2\text{O}]}$$

$$0.4 = \frac{(0.01-x)(0.01-x)}{(0.01+x)(0.01+x)}$$

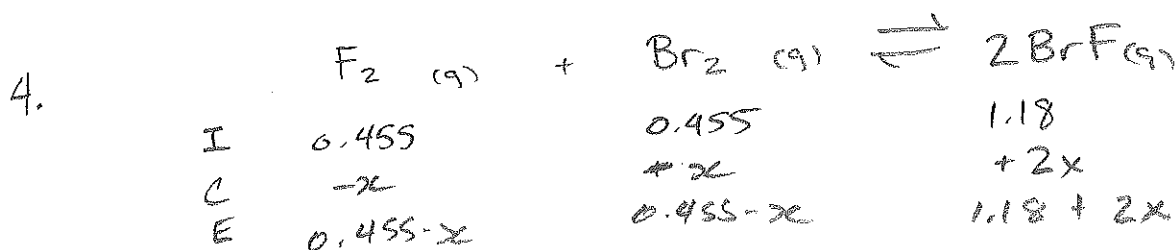
$$0.632 = \frac{0.01-x}{0.01+x}$$

$$x = 2.3 \times 10^{-3}$$

$$0.00632 + 0.632x = 0.01 - x$$

$$1.632x = 0.003675$$

$$x =$$



$$Q = \frac{[BrF]^2}{[F_2][Br_2]}$$
$$= \frac{(1.18)^2}{(0.455)(0.455)}$$
$$= 5.11$$

$$K_c = \frac{[BrF]^2}{[F_2][Br_2]}$$

$$55 = \frac{(1.18 + 2x)^2}{(0.455 - x)(0.455 - x)}$$

$Q < K$
 \therefore shift right

$$55 = \frac{1.18 + 2x}{0.455 - x}$$

$$55(0.455 - x) = 1.18 + 2x$$

$$25.03 - 55x = 1.18 + 2x$$

$$23.845 = 57x$$

$$x = 0.418$$

$$[F_2]_{eq'm} = [Br_2]_{eq'm} = 0.455 - 0.418$$
$$= 0.037 \text{ mol/L}$$

$$[BrF]_{eq'm} = 1.18 + 2(0.418)$$
$$= 2.02 \text{ mol/L}$$