

$$\textcircled{1} \text{ a) } K_{eq} = \frac{[SO_3]^2}{[SO_2]^2 [O_2]}$$

$$\text{b) } K_{eq} = \frac{[CH_4][H_2O]}{[CO][H_2]^3}$$

$$\text{c) } K_{eq} = \frac{[H_2][CO_2]}{[H_2O][CO]}$$

$$\text{d) } K_{eq} = \frac{[H_2O]^2}{[H_2]^2 [O_2]}$$

$$\text{e) } K_{eq} = \frac{[NOBr]^2}{[NO]^2 [Br_2]}$$

$$\text{f) } K_{eq} = [H_2O]^2 [N_2O]$$

$$\text{g) } K_{eq} = [CO_2]$$

$$\text{h) } K_{eq} = \frac{[CS_2]}{[S]^2}$$

$$\text{i) } K_{eq} = \frac{[CO_2]^2}{[CO]^2}$$

$$\text{j) } K_{eq} = \frac{[CO]^2}{[CO_2]}$$

$$\textcircled{2} \quad Q = \frac{[N_2O_4]}{[N_2O]}^2 = \frac{(0.3)}{(0.15)^2}$$

$$Q = 13.\bar{3}$$

$$\textcircled{3} \quad Q = \frac{[HI]^2}{[H_2][I_2]} = \frac{(0.95)^2}{(0.15)(0.175)}$$

$$Q = 34.4$$

$Q < K$ \therefore moves right (forward)

$$\textcircled{4} \quad Q = [CO_2] = 0.0004$$

$Q < K$ \therefore moves right (forward)

$$\textcircled{5} \quad Q = \frac{[H_2][CO_2]}{[CO][H_2O]} = \frac{(0.42)(0.37)}{(0.15)(0.25)}$$

$$Q = 4.144$$

$Q < K$ \therefore moves right (forward)