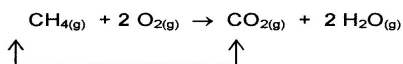


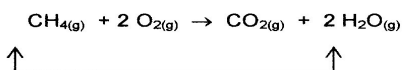
(c) Rate of production of CO<sub>2</sub>



The rate of production of CO<sub>2</sub> is the same as compared to the rate of consumption of CH<sub>4</sub> is

$$1 \times 1.25 \text{ mol / L}\cdot\text{s} = 1.25 \text{ mol / L}\cdot\text{s}$$

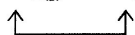
(d) Rate of production of H<sub>2</sub>O



The rate of production of H<sub>2</sub>O is 2 times as fast as compared to the rate of consumption of CH<sub>4</sub> is

$$2 \times 1.25 \text{ mol / L}\cdot\text{s} = 2.50 \text{ mol / L}\cdot\text{s}$$

9. (a)  $4 \text{HI}_{(g)} + \text{O}_{2(g)} \rightarrow 2 \text{I}_{2(g)} + 2 \text{H}_2\text{O}_{(g)}$



The rate of formation of I<sub>2</sub> is 2 times as fast as compared to the rate of consumption of O<sub>2</sub>.

$$= 2 \times 0.0042 \text{ mol / L}\cdot\text{s} = 0.0084 \text{ mol / L}\cdot\text{s}$$

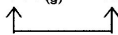
(b)  $4 \text{HI}_{(g)} + \text{O}_{2(g)} \rightarrow 2 \text{I}_{2(g)} + 2 \text{H}_2\text{O}_{(g)}$



The rate of formation of H<sub>2</sub>O is 2 times as fast as compared to the rate of consumption of O<sub>2</sub>.

$$= 2 \times 0.0042 \text{ mol / L}\cdot\text{s} = 0.0084 \text{ mol / L}\cdot\text{s}$$

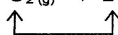
(c)  $4 \text{HI}_{(g)} + \text{O}_{2(g)} \rightarrow 2 \text{I}_{2(g)} + 2 \text{H}_2\text{O}_{(g)}$



The rate of consumption of HI is 4 times as fast as compared to the rate of consumption of O<sub>2</sub>.

$$= 4 \times 0.0042 \text{ mol / L}\cdot\text{s} = 0.0168 \text{ mol / L}\cdot\text{s}$$

10. (a)  $4 \text{NO}_{2(g)} + \text{O}_{2(g)} \rightarrow 2 \text{N}_2\text{O}_5$



The rate of formation of N<sub>2</sub>O<sub>5</sub> is 2 times as fast as compared to the rate of consumption of O<sub>2</sub>.

$$= 2 \times 0.024 \text{ mol / L}\cdot\text{s} = 0.048 \text{ mol / L}\cdot\text{s}$$