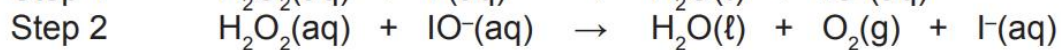
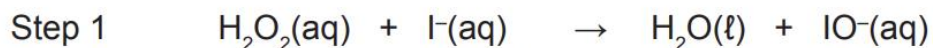


13. Consider the following reaction sequence.



At the same temperature, Step 1 consumes $\text{H}_2\text{O}_2(\text{aq})$ at a rate of 4.55×10^{22} molecules per second and Step 2 consumes $\text{H}_2\text{O}_2(\text{aq})$ at a rate of 3.67×10^{24} molecules per second.

The only source of $\text{IO}^-(\text{aq})$ for Step 2 comes from the reaction in Step 1.

Which one of the following statements identifies, with justification, the rate-determining step?

- (a) Step 1, because it is the first step in the sequence.
- (b) Step 2, because it is the last step in the sequence.
- (c) Step 1, because it is the slower step in the sequence.
- (d) Step 2, because it is the faster step in the sequence.