SI Session 3

Jan. 21, 2014

1. Write the formula for the Arrhenius equation. What happens as T increases?

2. A reaction is 10 times faster at 40 C than at 25 C. Find the Ea of the reaction? Note R is 8.314 J/mol K.

3. The rate constant at 25 C is 2E-2. Ea is 10 kj/mol. What is the rate constant at 35 C?

4. Why do catalyst increase the rate of reaction?

b. True or False: Transition state is higher energy than the reactant and product

5. Explain the difference between the kinetic product and the thermodynamic product. Which is most likely to be prevalent at low temperature in a short time period?

6. *cis*-butenedioic acid 🡪 *trans*-butenedioic acid. Predict the rate law.

7. Write the overall reaction equation using the elementary steps below. List the intermediates. Predict the rate law.

 NO2 + NO2 -> NO + NO3    (slow)

 NO3 + CO -> NO2 + CO2    (fast)

8. Write the overall reaction equation using the elementary steps below. List the intermediates. Predict the rate law.

2NO <----> N2O2 (fast step)

N2O2 + O2 ----> 2NO2 (slow step)