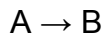


Name \_\_\_\_\_ KEY \_\_\_\_\_ Section \_\_\_\_\_ chm152 Quiz 3

Use the following data for questions 1 and 2. The following rate coefficients (k) were measured for the first-order reaction below. In all experiments, the concentration of reactant A was held constant.



$$\text{rate} = \frac{-\Delta[A]}{\Delta t} = k[A]$$

Experiment	k (s <sup>-1</sup> )
1	0.00548
2	0.0496
3	0.0957
4	0.642
5	0.021

1) (3 pts) Which experiment was conducted at the highest temperature?

**4**

2) (3 pts) What is the relationship between temperature and the rate coefficient (k) when the temperature of a reaction is raised?

**As the temperature of the reaction increases, the value of the rate coefficient increases**

3) (3 pts) Which of the following statements below about temperature and reaction rate are CORRECT?

- i) Reaction rates decrease as temperature increases
- ii) Reaction rates are not affected by temperature changes
- iii) Reactions proceed slower at higher temperatures
- iv) Reaction rates increase as temperature increases
- v) Rate coefficients (k) increase with increasing temperature

**iv and v**

4) (4 pts) The rate of loss of B in the following reaction was measured to be 0.325 M/s. What is the rate for the loss of A?



**1.39 x 10<sup>-1</sup> M/s**

5) (4 pts) A first-order reaction with an initial concentration of reactant A equal to 0.579 M and rate constant (k) equal to 1.04 x 10<sup>-2</sup> s<sup>-1</sup>, was run for 240 seconds. What is the concentration of A after this time? Note:  $\ln[A]_t = -kt + \ln[A]_0$

**0.047 M**

6) (3 pts) A given reaction has the following rate law, what is the order of the reaction?

$$\text{rate} = k[A]^3[B]^2[C]^0$$

**five**