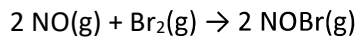


AP Chemistry Exam Review
Free Response Practice #5



1. The following results were obtained in experiments designed to study the rate of the reaction above.

| Experiment | Initial Concentration (mol/L) | | Initial Rate of Appearance of NOBr (M/sec) |
|------------|-------------------------------|--------------------|--|
| | [NO] | [Br ₂] | |
| 1 | 0.02 | 0.02 | 9.6×10^{-2} |
| 2 | 0.04 | 0.02 | 3.8×10^{-1} |
| 3 | 0.02 | 0.04 | 1.9×10^{-1} |

- a. Write the rate law for the reaction. Justify. [3 points]
- b. Calculate the value of the rate constant, k , for the reaction. Include units. [2 points]
- c. Determine the initial rate of the reaction in experiment 1. [1 point]
- d. Which of the following reaction mechanisms is consistent with the rate law established in (a)? Explain your choice. [2 points]

