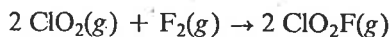


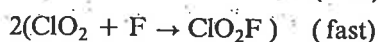
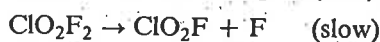
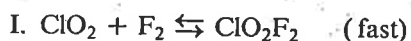
3.



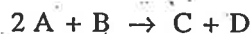
The following results were obtained when the reaction represented above was studied at 25°C.

Experiment	Initial $[\text{ClO}_2]$ , (mol L <sup>-1</sup> )	Initial $[\text{F}_2]$ , (mol L <sup>-1</sup> )	Initial Rate of Increase of $[\text{ClO}_2\text{F}]$ , (mol L <sup>-1</sup> sec <sup>-1</sup> )
1	0.010	0.10	$2.4 \times 10^{-3}$
2	0.010	0.40	$9.6 \times 10^{-3}$
3	0.020	0.20	$9.6 \times 10^{-3}$

- (a) Write the rate law expression for the reaction above.  
 (b) Calculate the numerical value of the rate constant and specify the units.  
 (c) In experiment 2, what is the initial rate of decrease of  $[\text{F}_2]$ ?  
 (d) Which of the following reaction mechanisms is consistent with the rate law developed in (a)? Justify your choice.



4.



The following results were obtained when the reaction represented above was studied at 25°C.

Experiment	Initial [A]	Initial [B]	Initial Rate of Formation of C (mol L <sup>-1</sup> min <sup>-1</sup> )
1	0.25	0.75	$4.3 \times 10^{-4}$
2	0.75	0.75	$1.3 \times 10^{-3}$
3	1.50	1.50	$5.3 \times 10^{-3}$
4	1.75	?	$8.0 \times 10^{-3}$

- (a) Determine the order of the reaction with respect to A and to B. Justify your answer.  
 (b) Write the rate law for the reaction. Calculate the value of the rate constant, specifying units.  
 (c) Determine the initial rate of change of [A] in Experiment 3.  
 (d) Determine the initial value of [B] in Experiment 4.  
 (e) Identify which of the reaction mechanisms represented below is consistent with the rate law developed in part (b). Justify your choice.

