

## 5.14: SOLUTIONS TO ADDITIONAL EXERCISES

### KINETICS AND THE RATE EQUATION

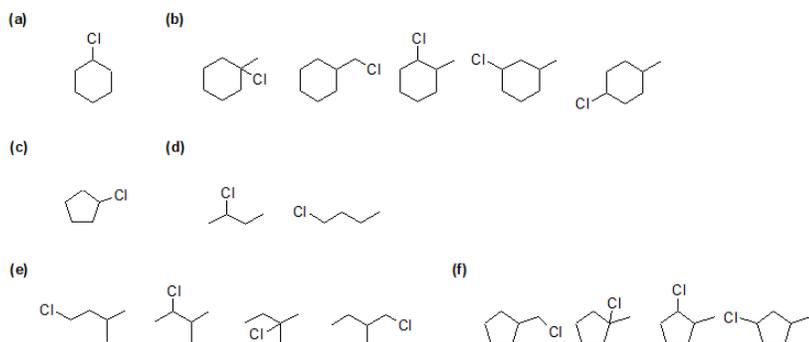
5-1 The rate equation is an experimentally derived equation that explains the relationship between the concentration of reactants and the rate of the reaction.

5-2 Rate =  $k [A]^m[B]^n$

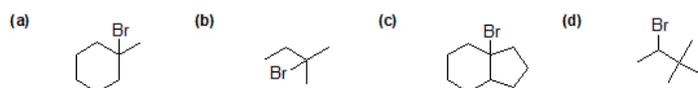
5-3 Overall order = 1.5

### HALOGENATION OF ALKANES

5-4



5-5



5-6 Radical bromination is more selective because of its slightly higher activation energy required to break a C-H bond during the propagation steps (when the bromine radical abstracts a proton from the substrate). Though the difference in activation energy is not huge (Cl =  $\sim 1$  kcal/mol and Br =  $\sim 3$  kcal/mol), it leads to a significant difference in selectivity.

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