1. For each example shown below, circle the electrophile that would react more rapidly in an $S_n2$ reaction: (4 pts, 3 minutes)

   ![Chemical Structures]

2. For each example shown below, circle the electrophile that would react more rapidly in an $S_n1$ reaction: (4 pts, 3 minutes)

   ![Chemical Structures]

3. For each example shown below, circle the nucleophile that would react more rapidly in an $S_n2$ reaction: (4 pts, 3 minutes)

   ![Chemical Structures]

4. (4 pts, 3 minutes)
   a. Which of the carbocations shown below is the most stable? 

      ![Chemical Structures] 
      A

   b. Which is the least stable? 

      ![Chemical Structures] 
      C

5. Which mechanism ($S_n1$, $S_n2$, E1 or E2) is favored in each of the following reactions? (10 pts, 5 minutes)

   a. 

      ![Chemical Structures] 

      $E_2$

   b. 

      ![Chemical Structures] 

      $S_n1$

   c. 

      ![Chemical Structures] 

      $E_1$
6. Show the **major** product or products in each of the following reactions. Do not show minor products. Be sure to show proper stereochemistry. (5 pts each, 4 minutes each)

a. ![Reaction a](image)

b. ![Reaction b](image)

c. ![Reaction c](image)

d. ![Reaction d](image)

e. ![Reaction e](image)

f. ![Reaction f](image)

one product; achiral

g. ![Reaction g](image)

h. ![Reaction h](image)

i. ![Reaction i](image)

j. ![Reaction j](image)
7. Show the mechanism (step by step with arrows) for the following reaction. (8 pts, 6 minutes)

8. Show the mechanism (step by step with arrows) for the following reaction. (8 pts, 6 minutes)

9. Show the mechanism (step by step with arrows) for the following reaction. (8 pts, 6 minutes)