Sample exam 2: Chapters 3 and 4
Answer all questions. Closed book, open notes, handouts, exercises, homeworks; no collaboration. Please turn in all appropriate exercises and homeworks with the exam. 50 minutes

1. Cite one reference that you will be using for your plastics talk. That is, give the author or sponsoring organization, URL or book or journal article title, and publication or last update date.

2. Give the IUPAC name for the following compounds:

![Chemical structures](image)

3. Which of the following is not an electrophile? Please justify your answer.

   BF₃  CH₂=CH₂

4. Add curved arrows to show how the electrons moved in the following reaction:

   CH₃CH=CHCH₃ + H—Br → CH₃CH₂CHCH₃ + Br⁻
5. Draw a reaction coordinate diagram that shows an exergonic reaction that has two transition states. How many intermediates does this reaction have?

6. Order the following from most stable carbocation to the least stable. Justify your order.

7. What is the major product of the acid-catalyzed hydration of 2-methyl-2-pentene? You may either state the IUPAC name or draw the line-bond structure.

8. What is the major product of the following reaction?
9. Show the **propagating steps** in the addition of HBr to 1-pentene in the presence of a peroxide. Hint: This means that you should start with a radical, and end with a radical.

10. Draw the **step-wise mechanism** for the reaction:

![Mechanism Diagram]

Hint: When you draw a mechanism, there should be a curved arrow associated with each bond you make or break.