

# Answers

## Organic Chemistry I

Jasperse Some Chapter 7 Quiz-Like Practice, But NOT REQUIRED. Answer key available:

1. How many elements of unsaturation are present for a molecule with formula  $C_5H_5NO_2$ ?

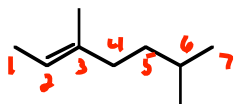
- a. 0
- b. 1
- c. 2
- d. 3
- e. 4**
- f. 5

Theory:  
Actual

based on C's      based on N

$$12 + 1 = 13$$
$$\frac{5}{8H \text{ short}} = 4 EU$$

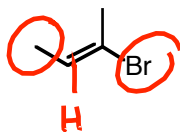
2. Provide the proper IUPAC name for the alkene shown below.



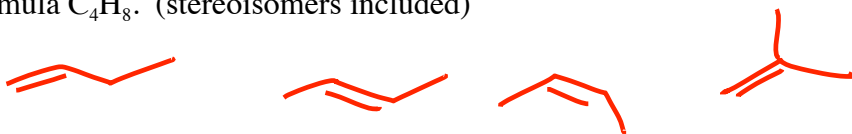
(E)-3,6-dimethylhept-2-ene

3. Which of the following is correct for the geometry of the double bond shown below?

- a. E**
- b. Z
- c. Neither E nor Z

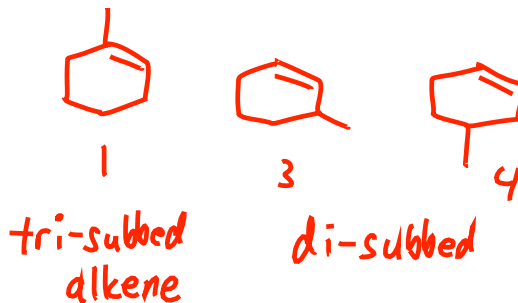


4. Draw and all structural and stereoisomeric alkenes (no alkanes or cyclic compounds) with the formula  $C_4H_8$ . (stereoisomers included)



5. Choose the most stable alkene among the following. (may help to draw each of them out first...)

- a. 1-methylcyclohexene**
- b. 3-methylcyclohexene
- c. 4-methylcyclohexene
- d. They are all of equal stability

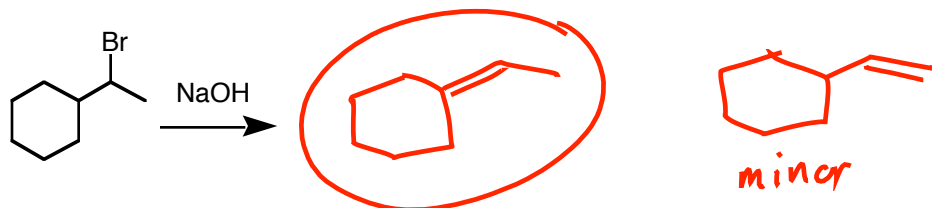


6. a) Draw and circle the major alkene product that would result from the following reaction.

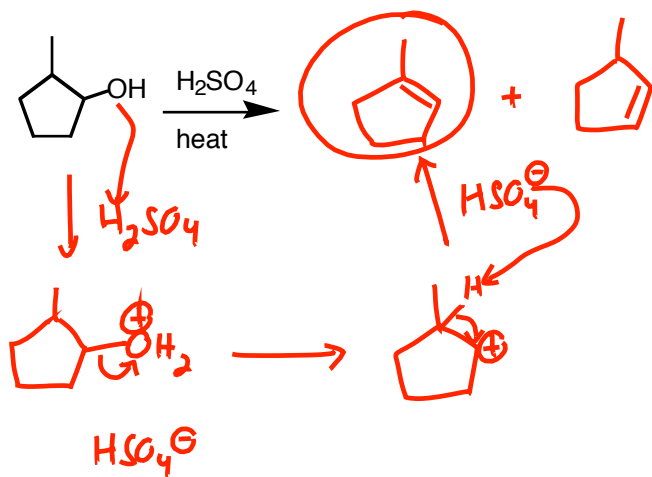
b) In addition, draw any other minor isomers that would form, but don't draw the same isomer twice.



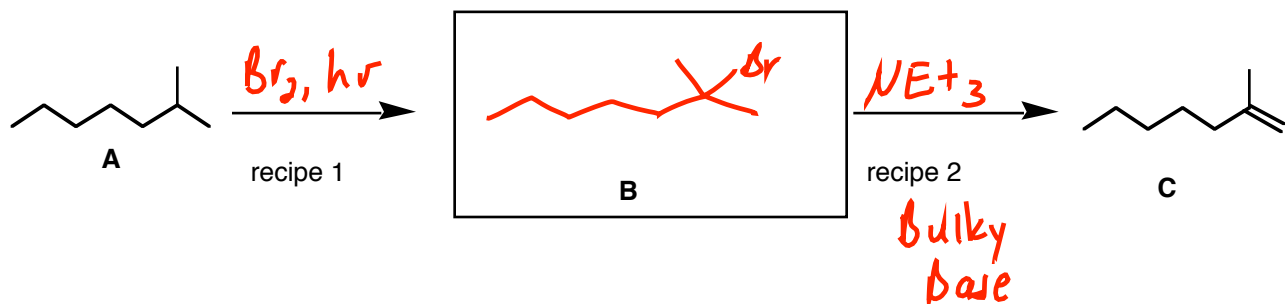
7. a) Draw and circle the major alkene product for the following reaction. (There may be a lot of  $S_N2$  product that forms as well, but you need not draw that.)  
 b) In addition, draw any other minor isomers that would form, but don't draw the same isomer twice.



8. a) Draw and circle the major alkene product for the reaction shown. (There may be some  $S_N1$  product that forms as well, but you need not draw that.)  
 b) In addition, draw any other minor isomers that would form, but don't draw the same isomer twice.  
 c) Draw a detailed, step-by-step mechanism for the pathway to the major product.



9. Provide the chemicals necessary for transforming 2-methylheptane (A) into 2-methyl-1-heptene (C), and draw the structure for the chemical B which you can make from A and which serves as a precursor to C. Above the arrows write in recipes for the  $A \rightarrow B$  transformation and for the  $B \rightarrow C$  transformation.





Draw the arrow(s) for each of these steps.

