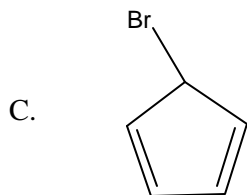
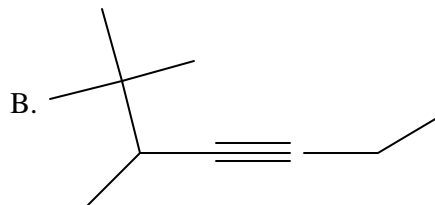


### Chem 231: Problem Set #3 (on Chapter 3)

1. Name or draw structures for the following:

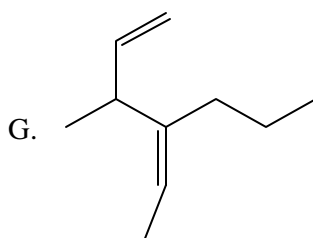
A. 4-ethyl-2-isopropyl-1,3,5-hexatriene



D. ethylene

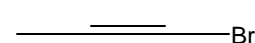
E. vinyl bromide

F. 4-allylcyclohexene



H. 

I. chloroethene

J. 

K. *cis*-3-hexene

L. *trans*-5-methyl-2-hexene

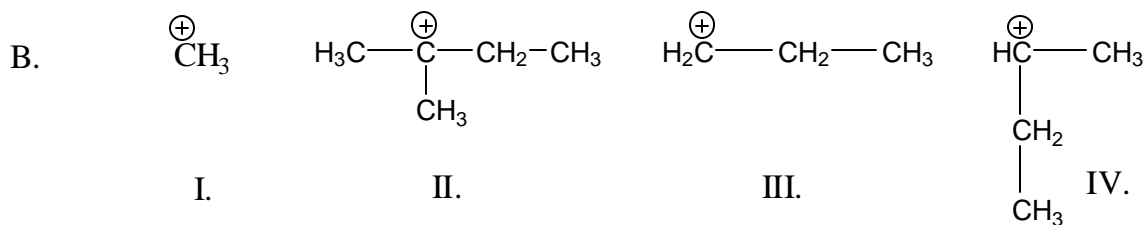
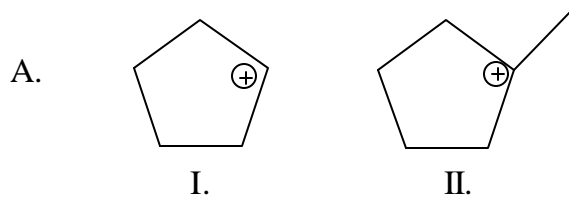
2. Are *cis/trans* isomers possible for each of the following? If so, draw and label both isomers.

- A. 2,3-dichloro-2-butene
- B. 2,3-dichloro-1-butene
- C. 1-pentene
- D. 2-pentene

3. Give the reagents needed or the major organic product(s) for the following reactions.

- A. C1=CCCC1  $\xrightarrow{\text{Br}_2(2 \text{ mole})}$
- B. C1=CCCCC1  $\xrightarrow{\text{H}_2/\text{Pt catalyst}}$
- C. C1=CC=CC1  $\xrightarrow{\text{Br}_2(1 \text{ mole})}$
- D. CC(C)=C(C)C  $\xrightarrow{\text{HCl}}$
- E. CC=CC  $\xrightarrow{??}$   $2 \text{ } \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{C}-\text{C}-\text{H} \end{array}$
- F. CC=CC  $\xrightarrow{\text{H}_2\text{O}/\text{H}^+}$
- G. CCC=C  $\xrightarrow{??}$  CCC(O)CC
- H. CCC=C(C)C  $\xrightarrow{\text{HBr}}$
- I. CC#CC  $\xrightarrow{??}$  CCC
- J. C1=CCCCC1  $\xrightarrow{\text{H}_2\text{O}/\text{H}^+}$
- K. C=CC=C  $\xrightarrow{\text{HI}}$
- L. C1=CC=CC1 + CC=CC=O  $\rightarrow$
- M. CC(C)(C)=C(C)C  $\xrightarrow{??}$  CC(C)(O)C(C)(O)C
- N. CC(C)=C(C)C  $\xrightarrow{\text{H}_2/\text{Pd}}$
- O. CC#CC  $\xrightarrow[\text{Lindlar's Catalyst}]{\text{H}_2}$
- P. CC#CC  $\xrightarrow{??}$  CC(Br)C(Br)C

4. Place the following carbocations in order of decreasing stability.



5. Write step-step mechanisms for the reactions given in question 3H, 3J and 3K.