

Seat No. _____

Name KEY
(Please print your name and **circle** your last name)

CHEMISTRY 331A

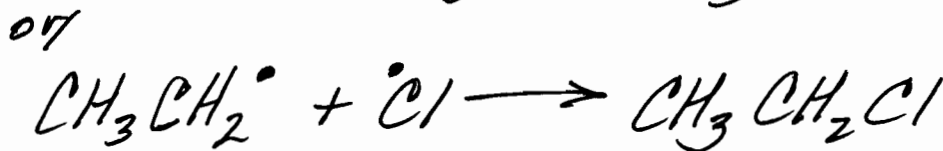
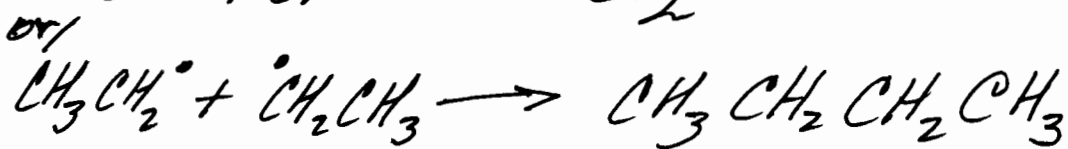
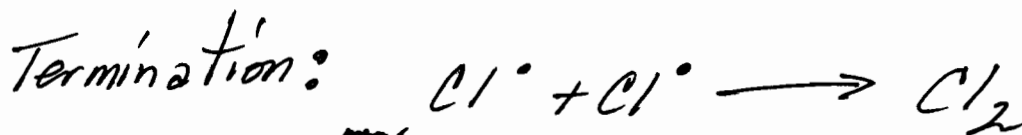
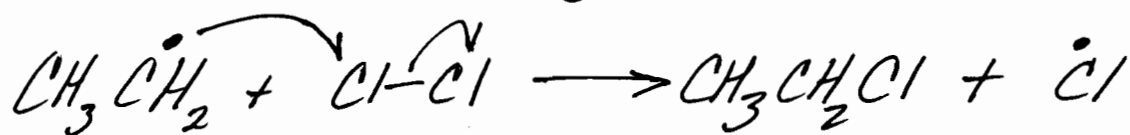
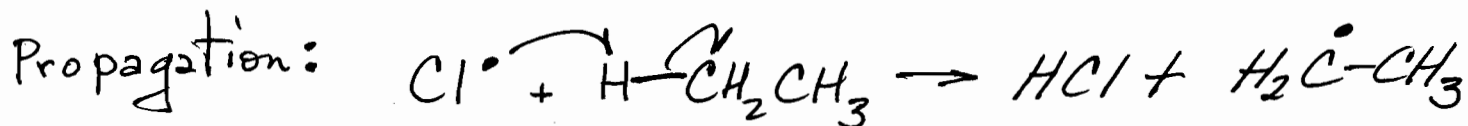
EXAM II

Monday, October 13, 2008

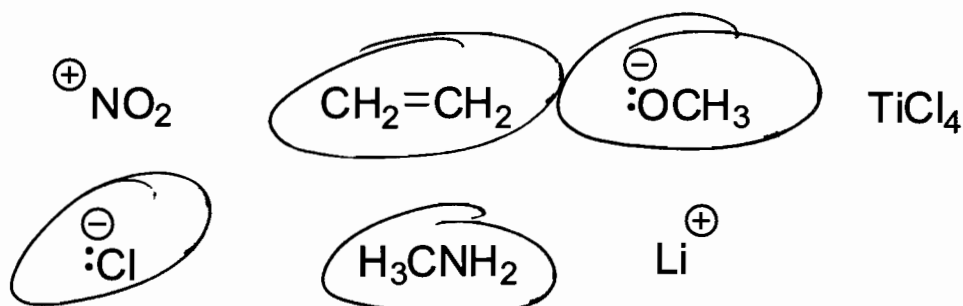
- I. (12 points) _____
- II. (8 points) _____
- III. (10 points) _____
- IV. (20 points) _____
- V. (6 points) _____
- VI. (4 points) _____
- VII. (24 points) _____
- VIII. (15 points) _____
- IX. (1 point) _____

TOTAL(100 points) _____

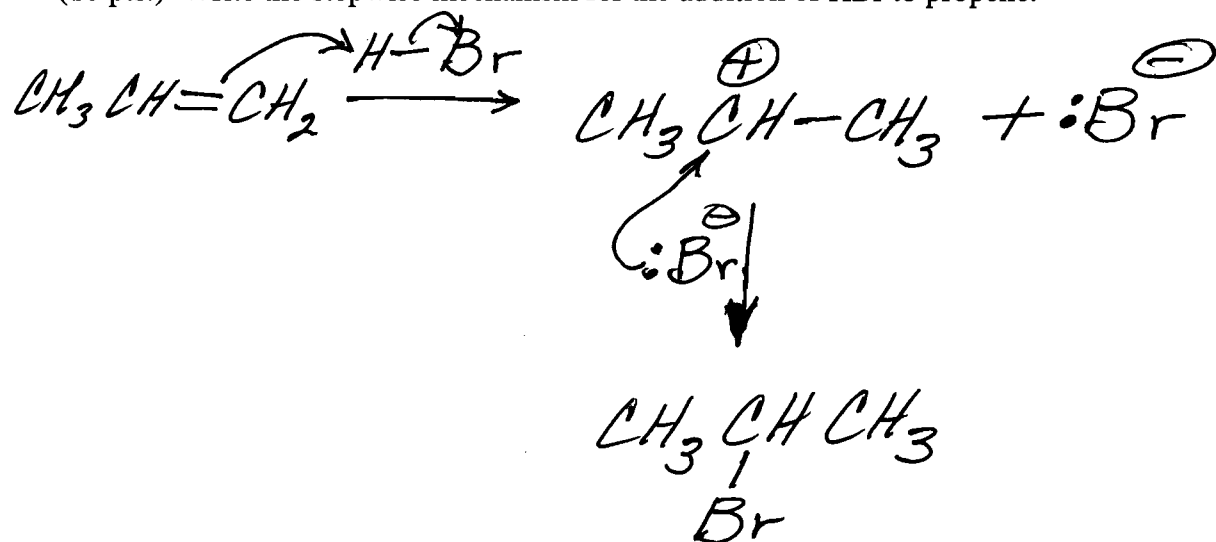
- I. (12 pts.) Write the mechanism for free radical monochlorination of ethane. Label the termination (one example), initiation and propagation steps, and use curved fishhooks to indicate electron movement.



- II. (8 pts.) Circle the species which are likely to behave as nucleophiles



III. (10 pts.) Write the stepwise mechanism for the addition of HBr to propene.



IV. (20 pts.) Free radical reactions result in homolytic cleavages of bonds.

ΔG^\ddagger is a measure of the difference in energy between reactants and

the transition state (T.S.) and therefore controls the rate of the

reaction. Addition of Br_2 to a cycloalkene proceeds to give a trans

dibromide because the intermediate is a (cyclic) bromonium ion. The T.S. of a

strongly endergonic reaction is likely to most resemble the products. The

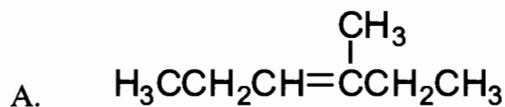
degree of unsaturation of $\text{C}_{20}\text{H}_{32}\text{ClN}$ is 5. The more substituted is

an alkene, the more stable it is. The more substituted is a

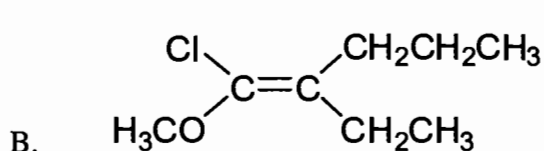
carbocation, the more stable it is. The stability of carbocations is

due to both inductive effects and C-H hyperconjugation.

V. (6 pts.) Provide complete and correct names for the following structures.

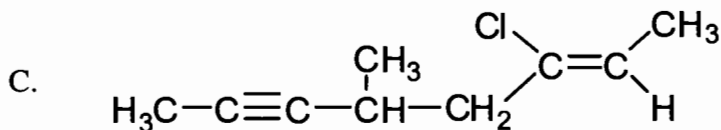


3-methyl-3-hexene



$\text{CH}_3\text{O}-$ = "methoxy"

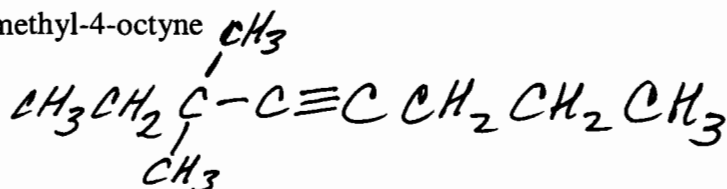
(Z)-1-chloro-2-ethyl-1-methoxy-1-pentene



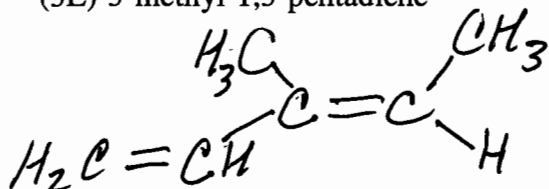
(Z)-3-chloro-5-methylocta-2-ene-6-yne

VI. (4 pts.) Provide complete and correct structures for the following names:

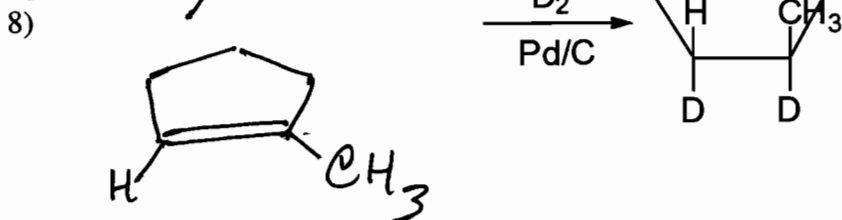
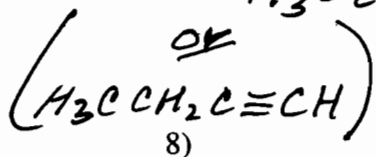
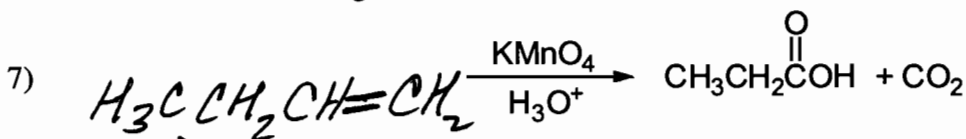
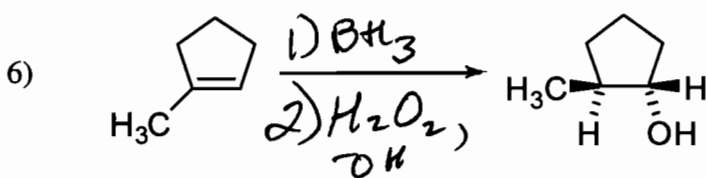
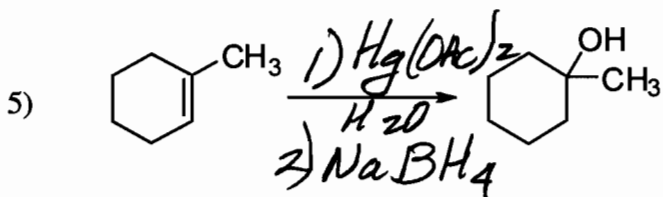
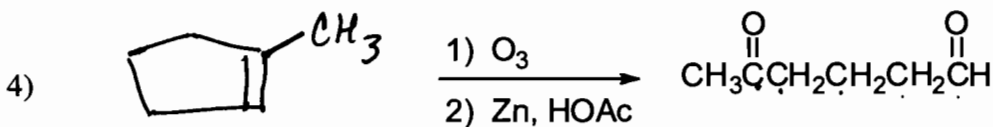
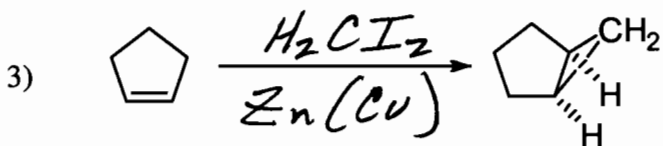
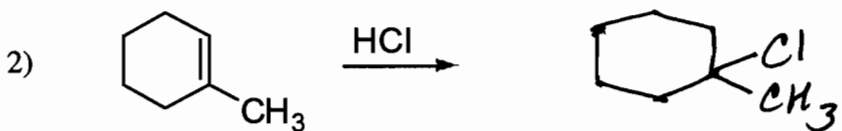
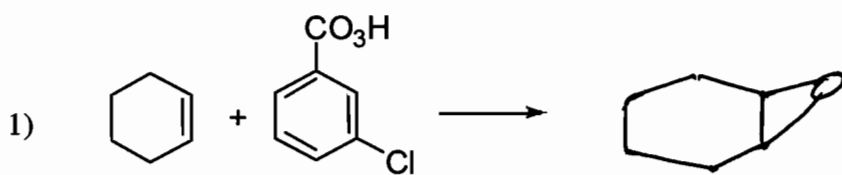
A. 3,3-dimethyl-4-octyne



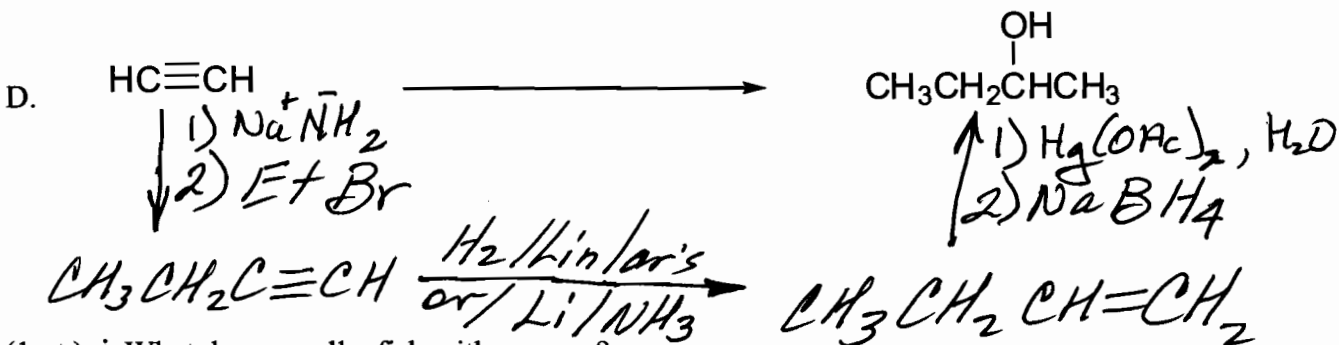
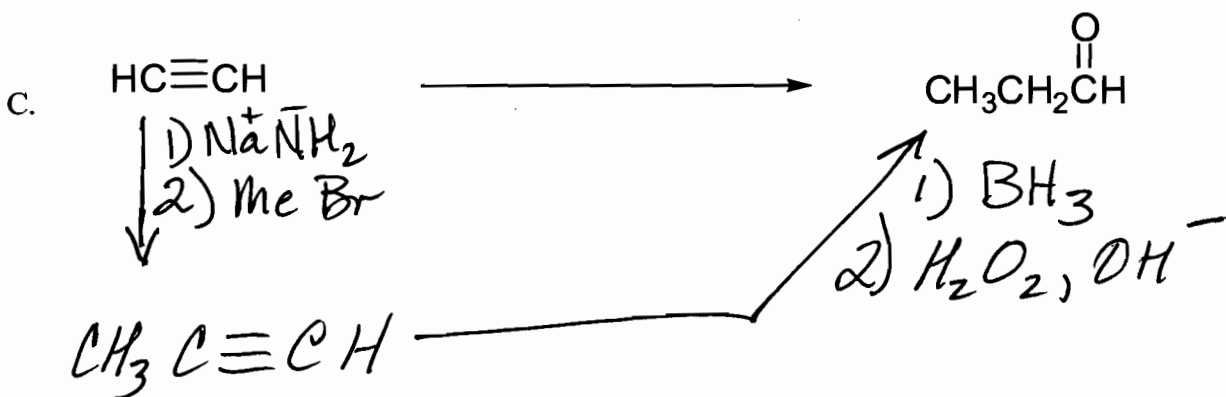
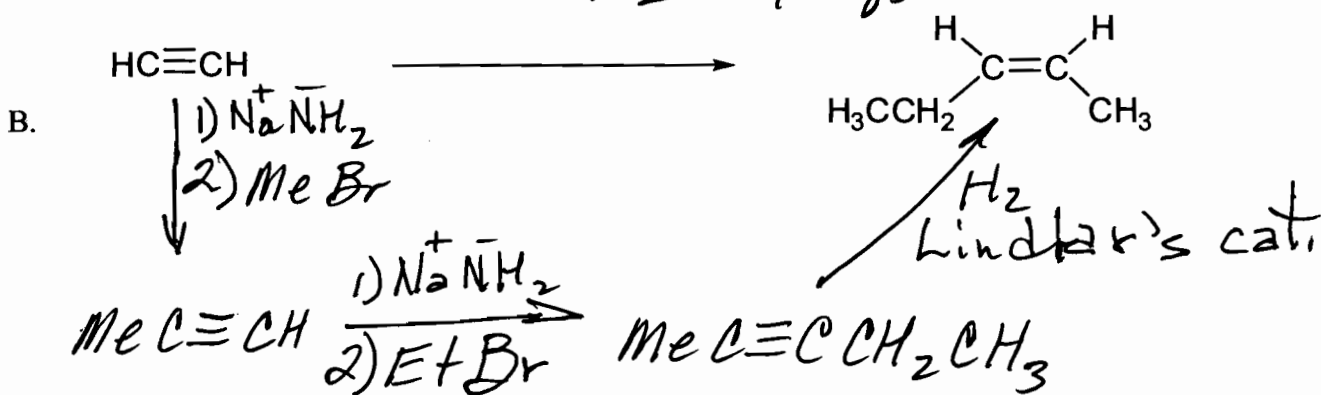
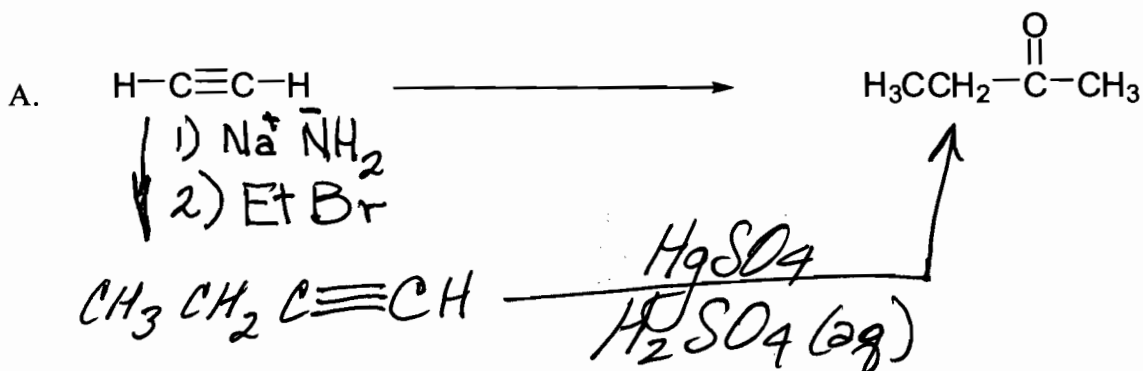
B. (3E)-3-methyl-1,3-pentadiene



VII. (24 pts.) Complete the following reactions with any missing information (e.g. reactants, reagents, products).



VIII. (15 pts.) Show how you would perform 3 of the following transformation. Draw a bold "X" through the one you wish to omit or we will simply omit "A" for you.



IX. (1 pt.) ♪ What do you call a fish with no eyes?

Fsh