

Name KTY
 CHE 241, Test 2c
 October 26, 2007

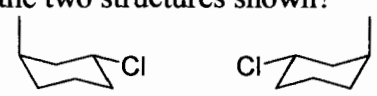
1. Multiple choice. Choose the one best answer for each question. (2 points each)

Which is the correct IUPAC name for the following structure?

- (a) (1Z,3Z)-3-bromo-1-fluoro-2-methyl-1,3-hexadiene
- (b) (1Z,3E)-3-bromo-1-fluoro-2-methyl-1,3-hexadiene
- (c) (1E,3Z)-3-bromo-1-fluoro-2-methyl-1,3-hexadiene
- (d) (1E,3E)-3-bromo-1-fluoro-2-methyl-1,3-hexadiene

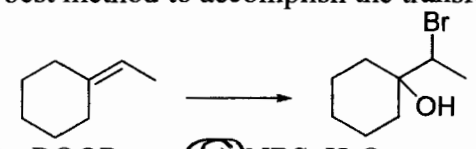
What is the relationship between the two structures shown?

- (a) enantiomers
- (b) diastereomers
- (c) identical
- (d) conformers



Which of the following is the best method to accomplish the transformation shown?

- (a) HBr
- (b) HBr, ROOR
- (c) NBS, H₂O
- (d) all will work equally well



high 95
 median 68
 low 27
 ave. 67

_____ are molecules which contain stereogenic centers and a plane of symmetry.

- (a) Racemates
- (b) Diastereomers
- (c) Enantiomers
- (d) Meso compounds

Which is the most effective method to accomplish the transformation shown?

- (a) H₂, Pt
- (b) H₂, Lindlar's catalyst
- (c) Li, NH₃
- (d) all are equally acceptable



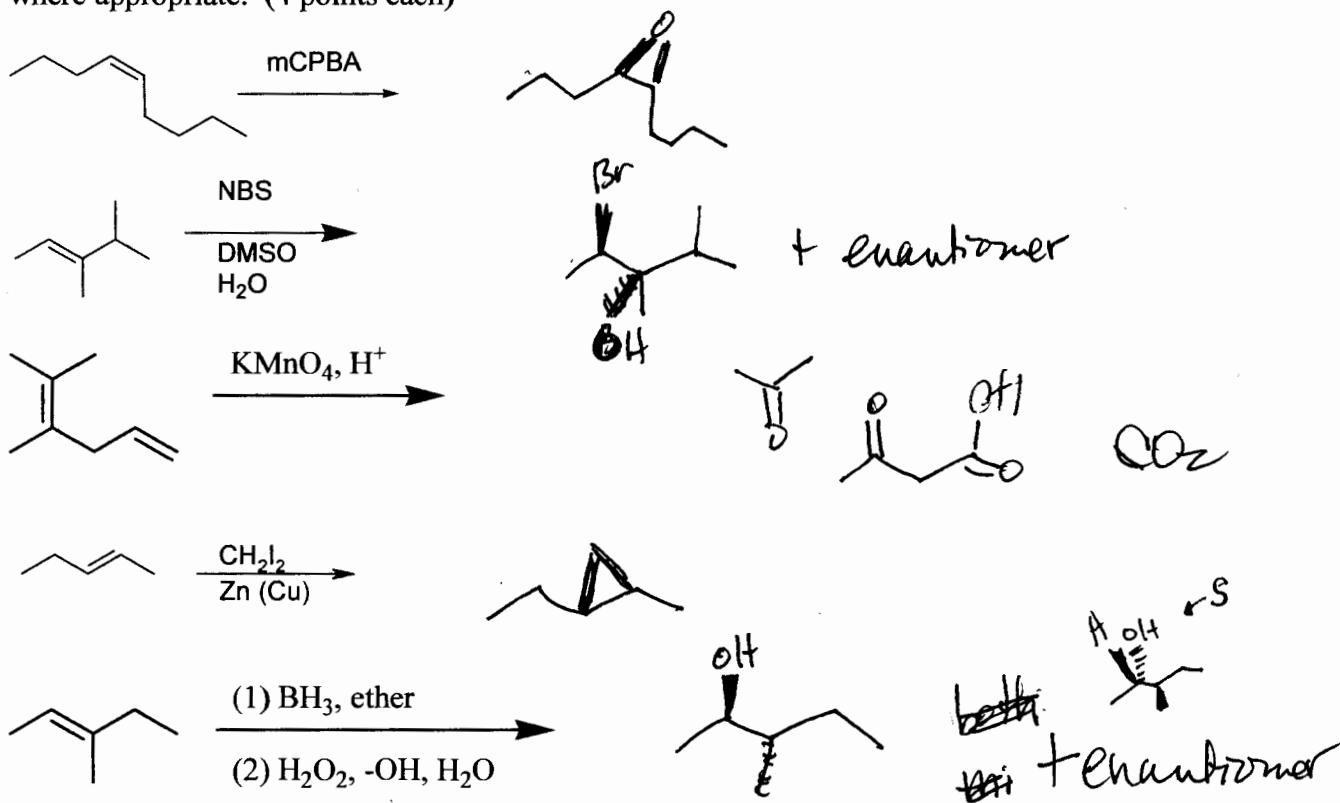
2. (a) Explain briefly how chromatography separates compounds in mixtures. Your explanation should include the terms mobile and stationary phases. (5 points)

Substances are separated based on how strongly they adsorb to the stationary phase (polar, silica gel). Nonpolar substances spend a larger fraction of time in the mobile phase (solvent), so they elute more rapidly than polar substances.

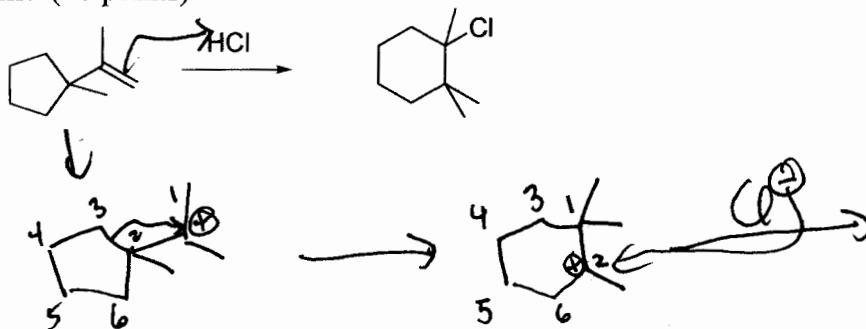
(b) How would you distinguish between the following two compounds by NMR?

A	3H	t			A 6H d
B	2H	m			B 1H m
C	2H	t			

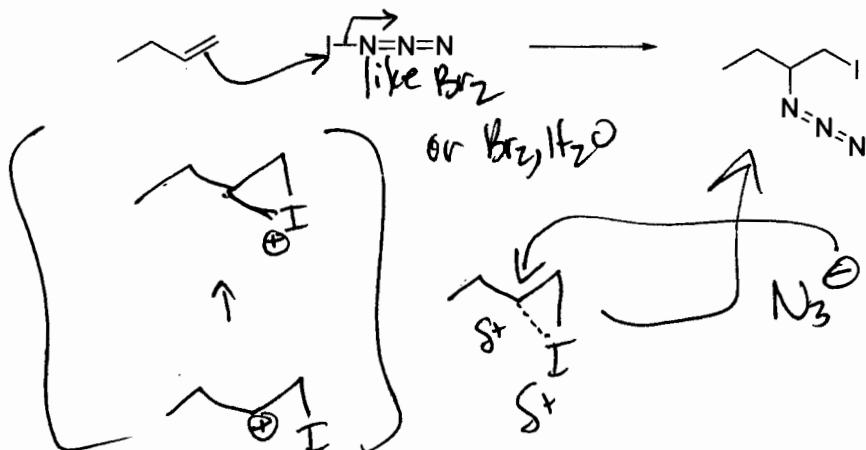
3. Provide the major product(s) for each of the following reactions, showing stereochemistry where appropriate. (4 points each)



4. (a) Propose a mechanism for the following reaction, using arrows to show the flow of electrons. (10 points)

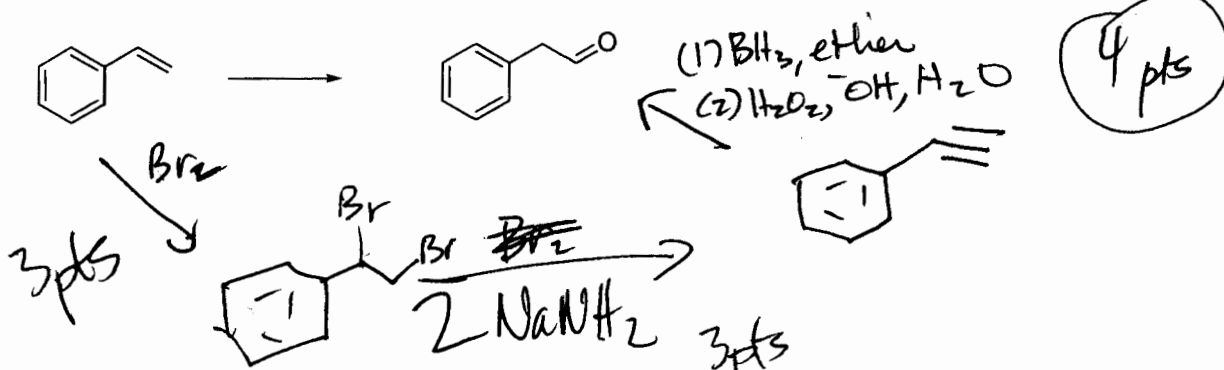


(b) Propose a mechanism for the reaction using arrows to show the flow of electrons. Show every step! Compare I-N_3 to another reagent that you have seen in class. (10 points)

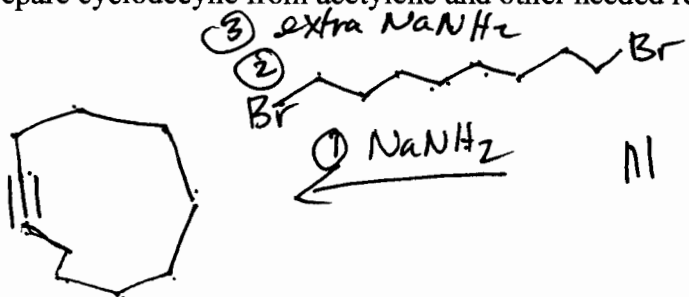


5. Propose a method to carry out each of the transformations shown. (10 points each)

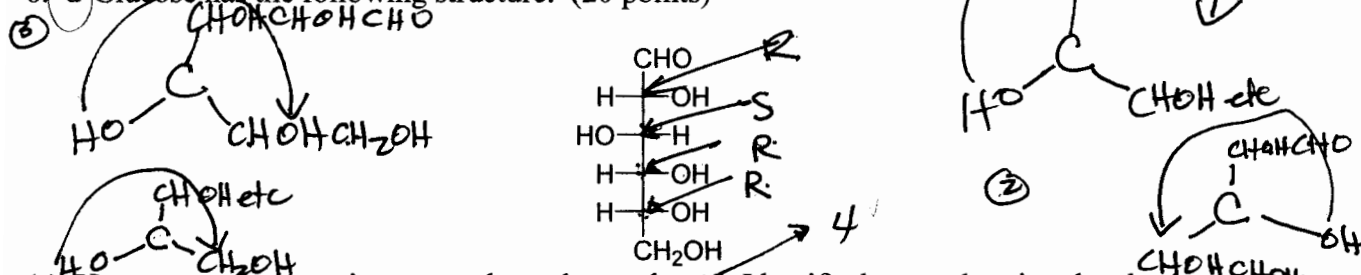
(a)



(b) Prepare cyclodecyne from acetylene and other needed reagents.



6. d-Glucose has the following structure. (20 points)



(a) How many stereogenic centers does glucose have? Identify them and assign the absolute configuration (R or S) to each one.

(b) How many stereoisomers of glucose are there? $2^4 = 16$

(c) Draw the structure of the enantiomer of glucose. If possible, predict whether this compound will be dextrorotatory or levorotatory. If it's not possible, explain why.

(d) Draw the structure of a diastereomer of glucose. If possible, predict whether this compound will be dextrorotatory or levorotatory. If it's not possible, explain why.

