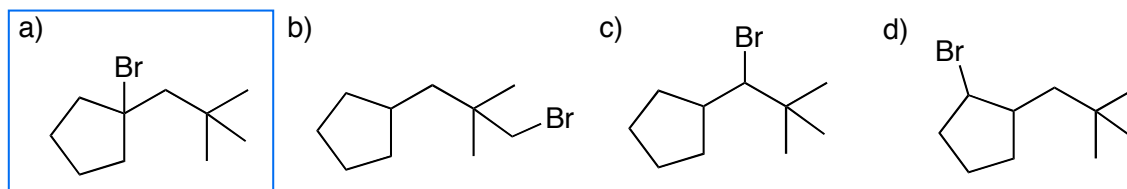
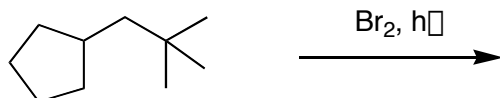
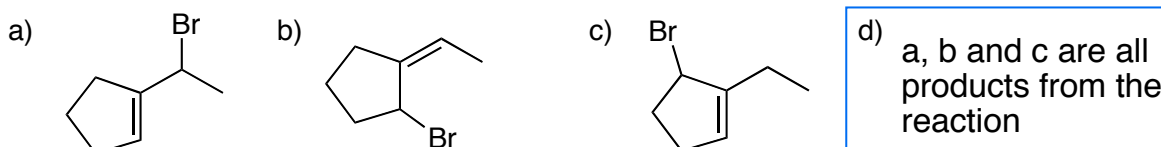


Multiple Choice. Choose the best answer for the following questions. (40 pts)

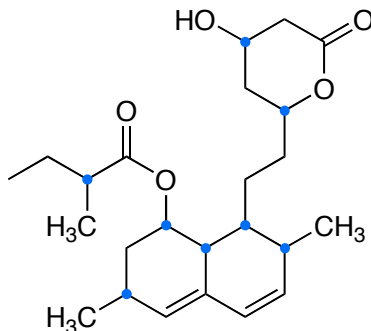
1. Which of the following is predicted to be the major product from the reaction below?



2. Which of the following is a product from the reaction of 1-ethylcyclopentene with N-bromosuccinimide (NBS) and light.

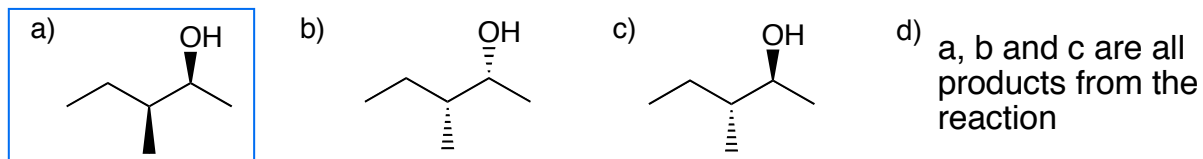


3. How many chiral (stereogenic) centers are in the following molecule?



- a) 5 b) 6 c) 7 d) 8

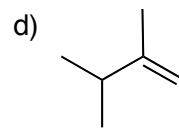
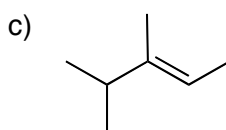
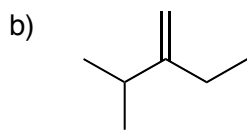
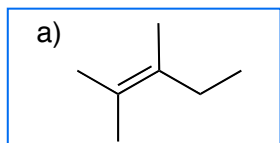
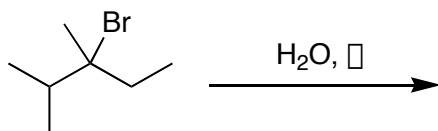
4. Which of the following would not be a product from the oxymercuration of reaction of (R)-3-methyl-1-pentene?



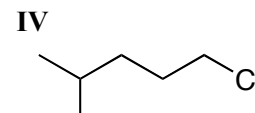
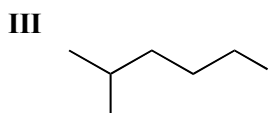
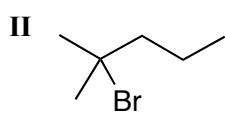
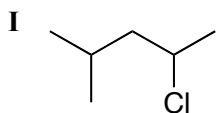
5. Lindlar's catalyst is said to be "poisoned." This means:

- a) when used, the desired reaction doesn't work well.
 b) the catalyst has reduced reactivity.
 c) the reactivity is unselective and will "poison" your product with undesired reactions.
 d) the catalyst may kill you if digested . . . and Prof. Rizzo may kill you if you pick this answer.

6. Which would be the major product from the following reaction?

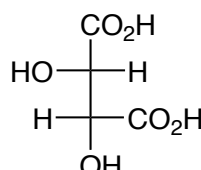
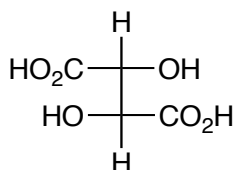


7. What is the order of relative reactivity for the alkyl halides (I-IV) below from most reactive to least reactive, for the $\text{S}_{\text{N}}2$ reaction?

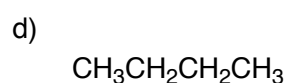
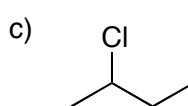
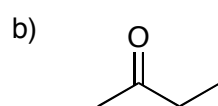
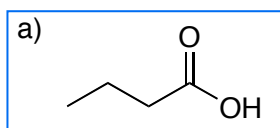


- a. III > II > I > IV
 b. III > IV > I > II
 c. II > I > IV > III
 d. IV > III > I > II

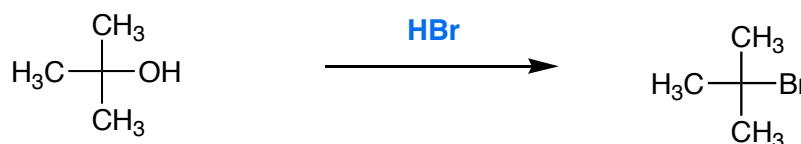
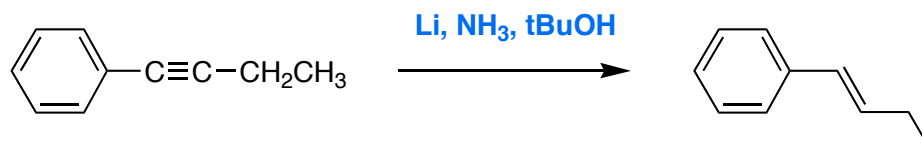
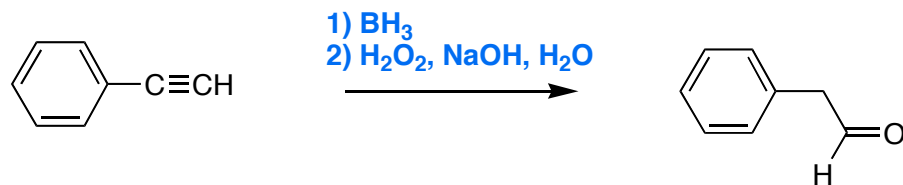
8. What is the relationship between the following compounds?



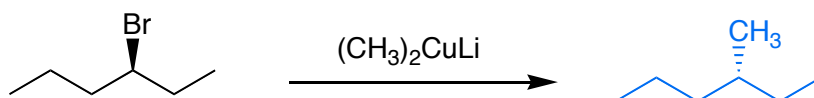
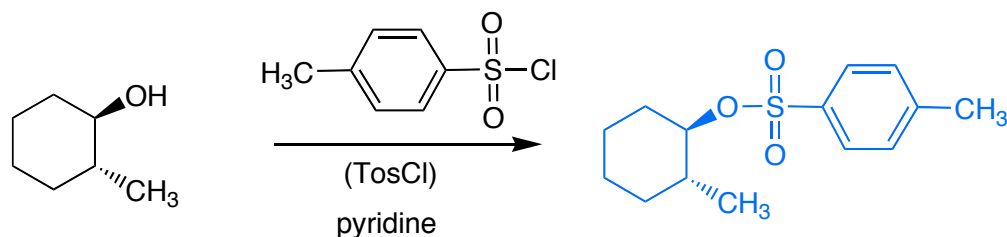
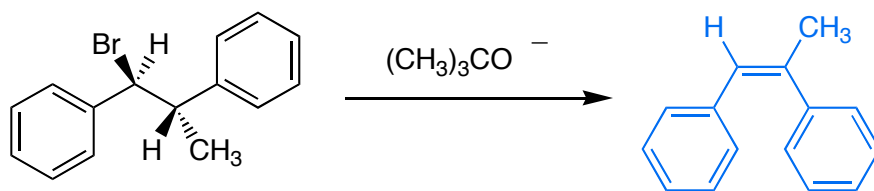
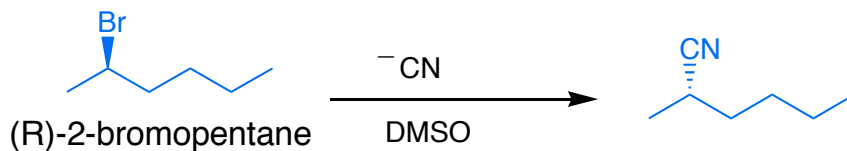
- a. identical but not meso.
 b. identical because they are meso
 c. enantiomers
 d. diastereomers
9. Cholesterol has a molecular weight of 386. A solution of 0.080 g of cholesterol in 1 mL of chloroform gave an observed rotation of -3.2° through a 1 dm sample cell. What is the specific rotation of cholesterol.
- a. -0.3 b. -3.2 c. -40.0 d. -15,240.0
10. Which of the following is in the highest oxidation state.



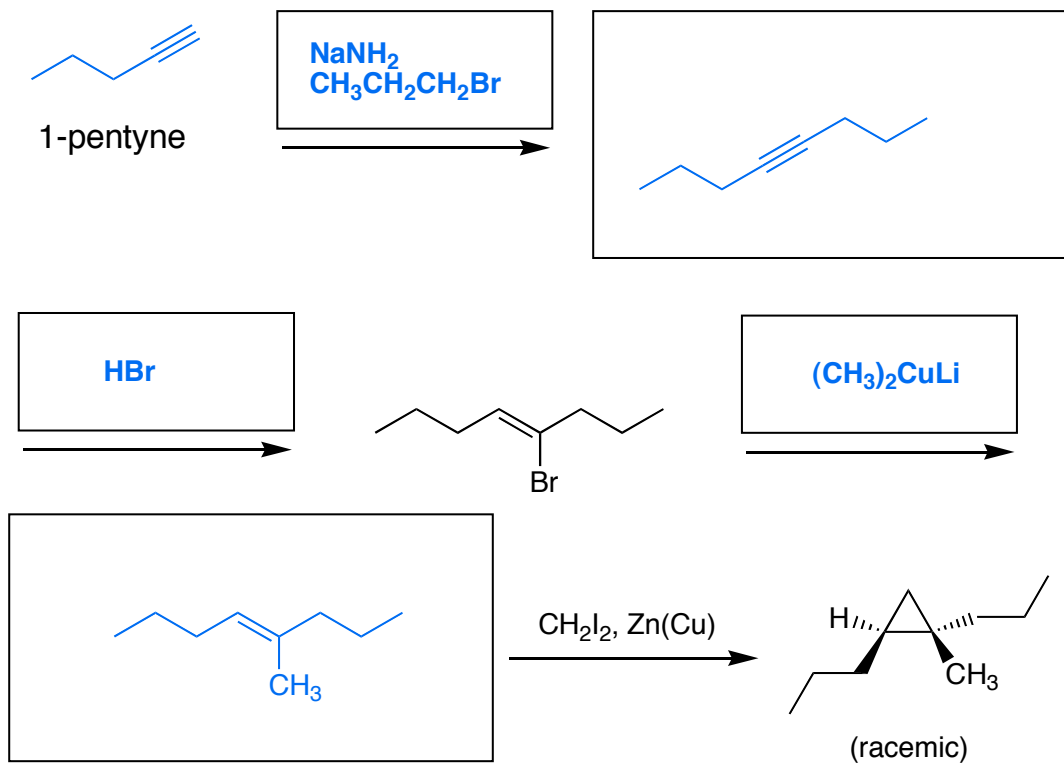
11. Provide all necessary reagents for the following reactions. (16 pts)



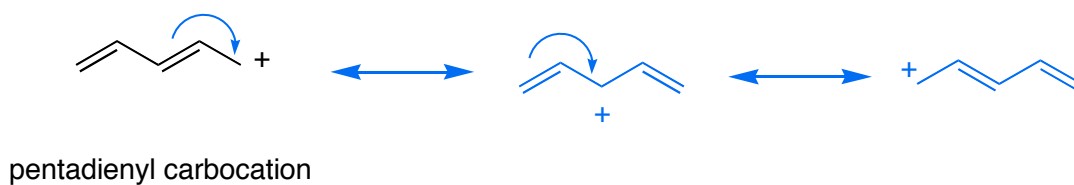
12. Give the product(s) from the following reactions. Note that the reactants are all optically active. Be sure to clearly indicate the stereochemistry of the product(s). (16 pts)



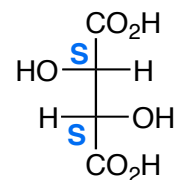
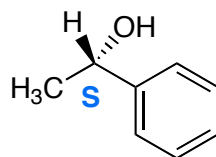
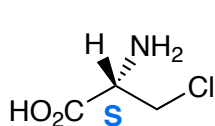
13. Fill in the missing reagents and intermediates for the synthesis below. (15 pts)



14. Show below is the pentadienyl carbocation, which is resonance stabilized. Draw all possible resonance structures and use curved arrows to show how they interconvert (10 pts).



15. Determine the absolute configuration of each chiral center. (8 pts)



Problem 1-10: _____ (40 pts)

11: _____ (16 pts)

12: _____ (16 pts)

13: _____ (15 pts)

14: _____ (10 pts)

15: _____ (8 pts)

Total out of 100: _____