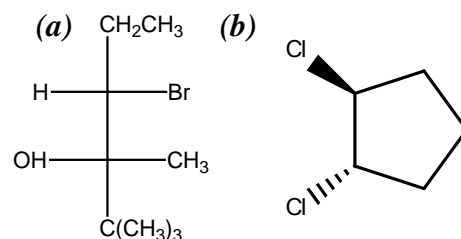


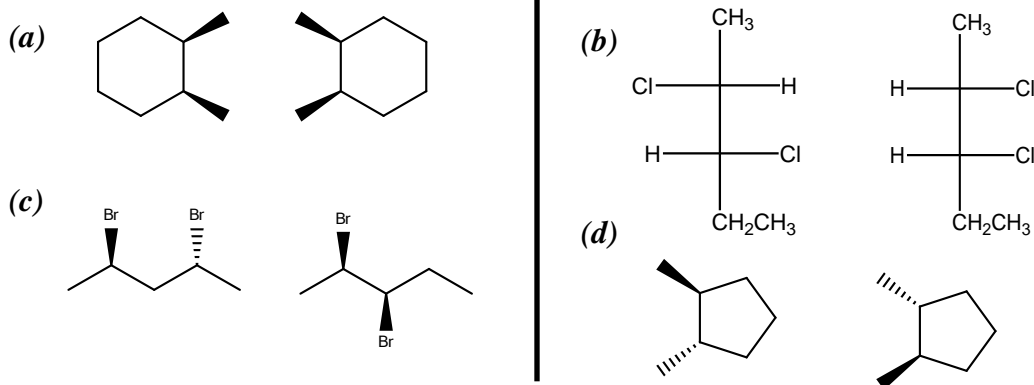
Organic Chemistry Practice Problems

Organic Chemistry I Practice Set #10 (Chapters 7-8 – Carey)

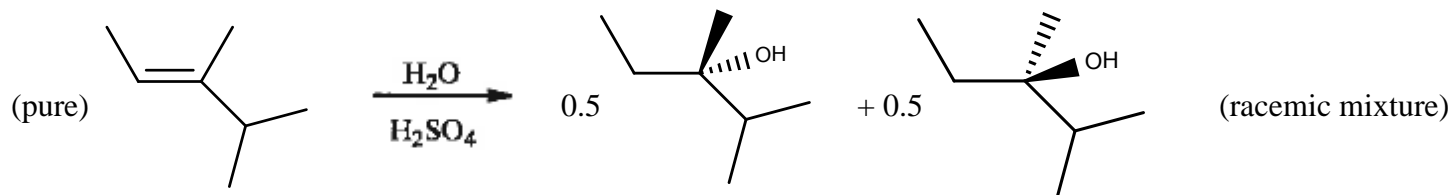
- 1) For each of the *optically pure* compounds given, provide a name. Name stereoisomers appropriately.



- 2) Provide a structural formula for (a) L-glucose (b) (R)-hexa-2,3-diene (c) syndiotactic polystyrene
- 3) For each, give the answer which describes the relationship between the molecules in the pair.
(i) *same molecule* (ii) *constitutional isomers* (iii) *diastereomers* (iv) *enantiomers*



- 4) Using arrows to show the flow of electrons, provide a stepwise mechanism for each of the following reactions. Show clearly the stereochemistry associated with each step and how the stereochemistry in the product is formed.

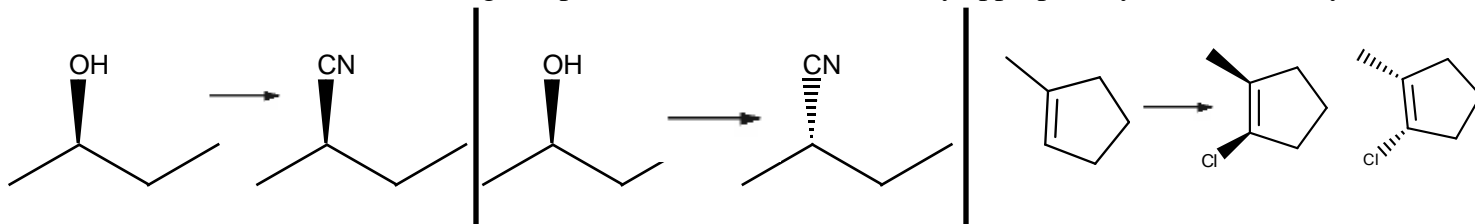


- 5) (i) Which reacts faster with NaI in acetone: (a) chlorocyclopentane (b) bromocyclopentane
(ii) Which rxn w/sodium azide is faster: (a) 1-chloropentane in DMSO (b) 3-chloropentane in DMSO
(iii) Which reacts with Cl₂ to give the vicinal dichloride as a racemic mixture of the three diastereomer: (a) (Z)-2-pentene (b) (E)-2-pentene
(iv) Which substrate reacts faster via S_N1: (a) 3-bromo-2-methylhexane (b) 2-bromo-2-methylhexane
(v) Which reaction w/sodium cyanide is faster: (a) 1-chlorobutane in DMSO (b) 1-iodobutane in DMSO
(vi) Which reacts with D₂ and Pt to give the erythro diastereomer: (a) (Z)-2-pentene (b) (E)-2-pentene

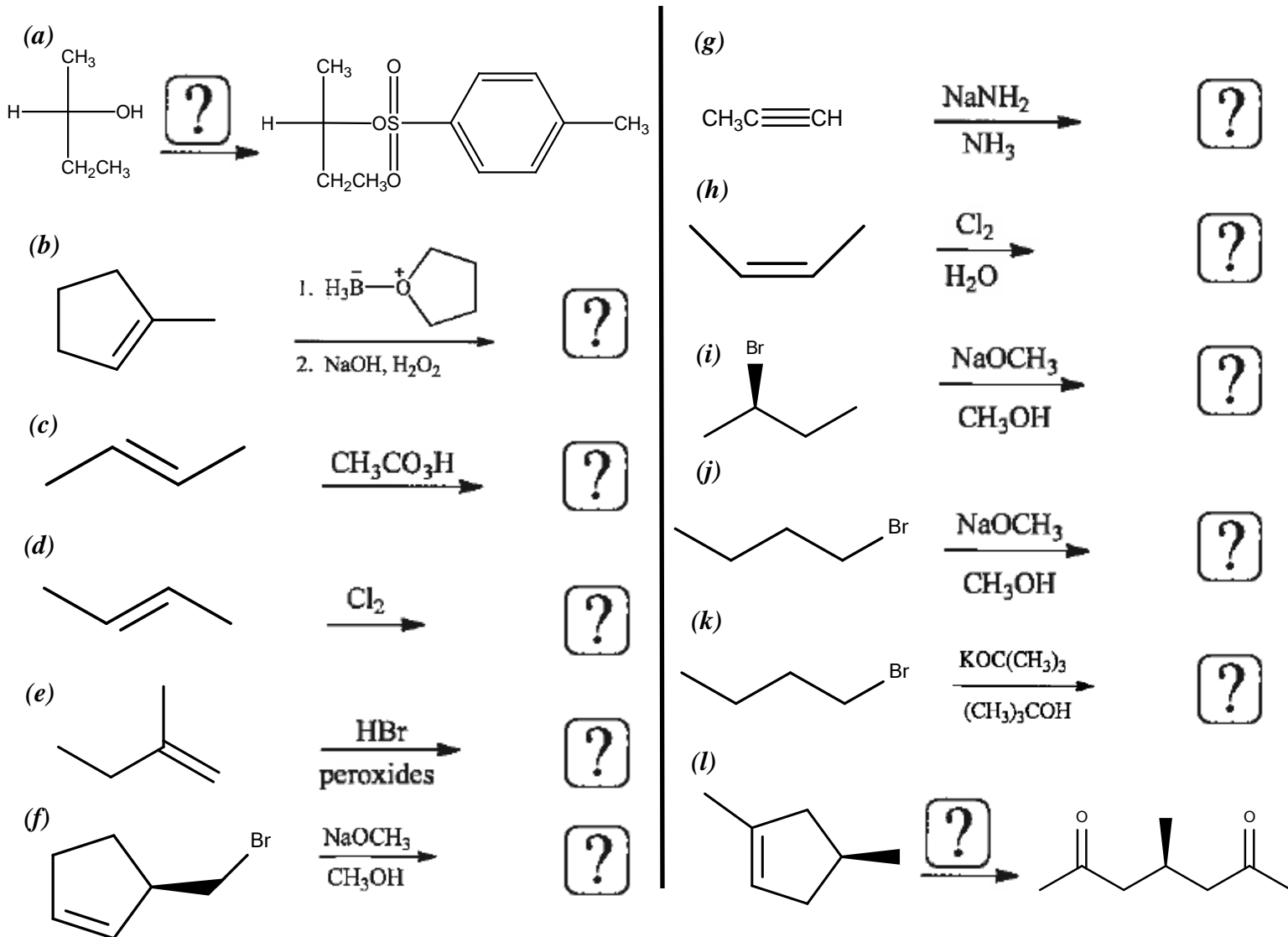
Organic Chemistry Practice Problems

- (vii) Which substrate reacts faster via S_N2 : (a) 1-bromo-1-methylcyclohexane
(b) 1-bromo-2-methylcyclohexane

6) Provide an efficient multistep synthesis for each of the following conversions of the given starting material into product. For each transformation, give all necessary reagents and catalysts and give a structural formula of the organic product. Show stereochemistry appropriately when necessary.



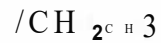
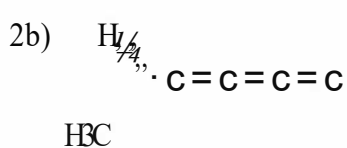
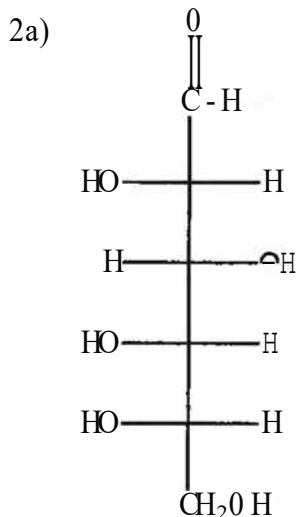
7) Fill in what is missing. Either give all of the missing reagents to complete the reaction or give a structural formula for the **major organic product(s)**. Show stereoisomers properly if necessary. If no reaction occurs, write *N.R.* **If the product is a racemic mixture, show both structures.**



Organic Chemistry Practice Problems

Organic Chemistry I Answers to Practice Set #10 (Chapters 7-9- Carey)

1a) (3S,4S)-4-bromo-2,2,3-trimethylhexan-3-ol 1b) (1S,2S)-1,2-dichlorocyclopentane



3a) i Si) b

3b) iii 5ii) a

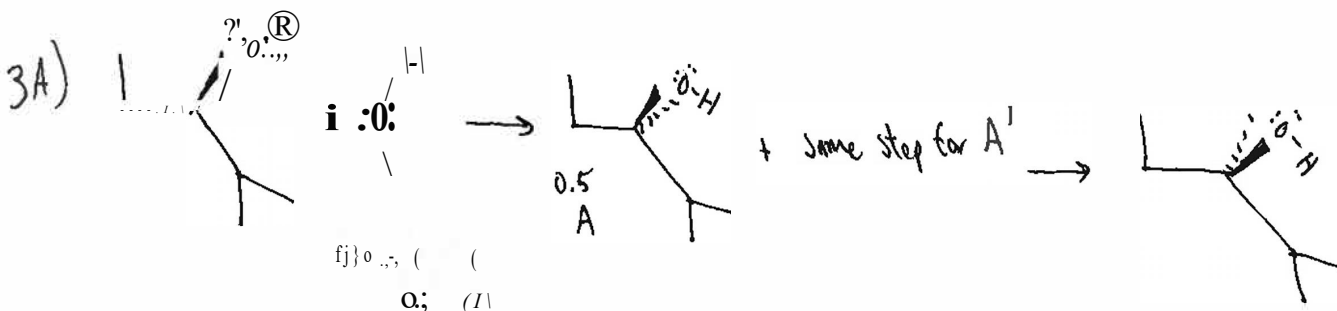
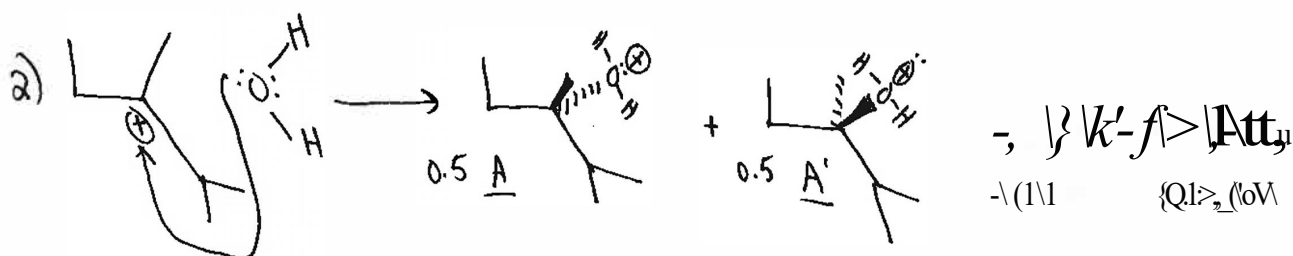
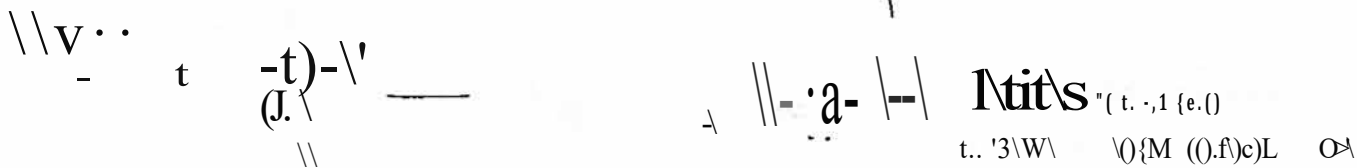
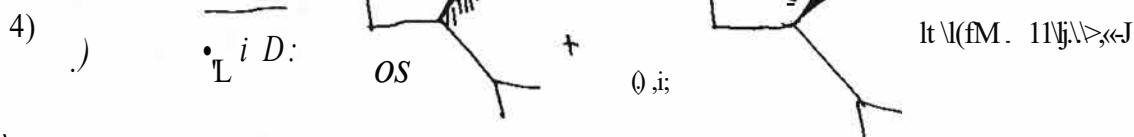
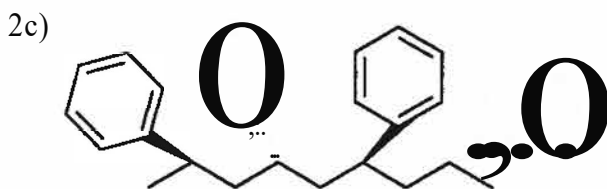
3c) ii 5iii) a

3d) iv 5iv) b

5v) b

5vi) a

5vii) b



Organic Chemistry Practice Problems

Organic Chemistry I Answers to Practice Set #10 (Chapters 7-9 – Carey)

