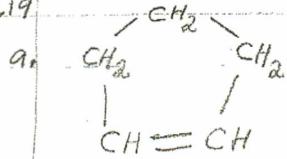
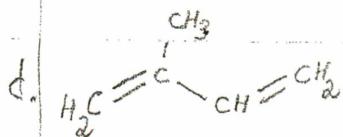
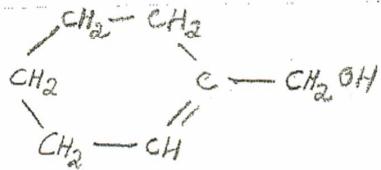


Convert to Lewis

12.19

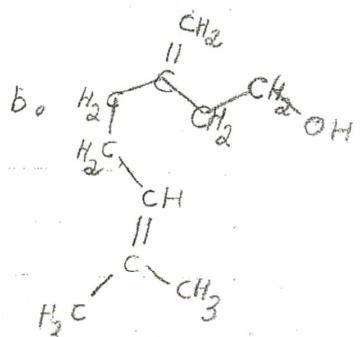
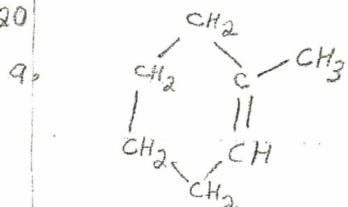


b.

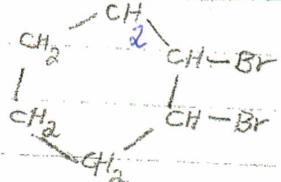
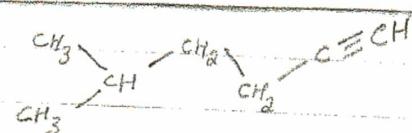


omit C

12.20

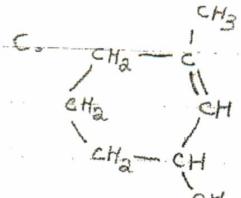
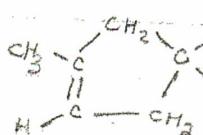


c.

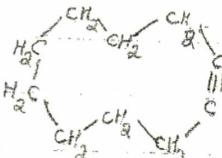


12.24

b.



g.



Convert to Line Bond

12.24

d.



12.25

c.



d.

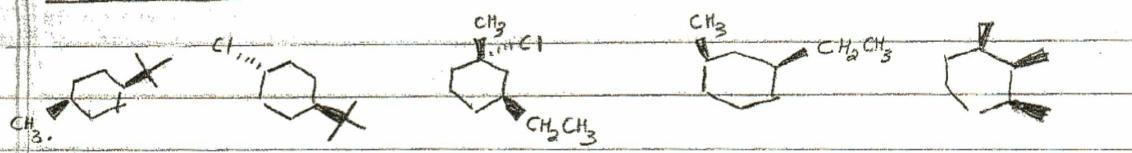


Cyclohexane Chairs

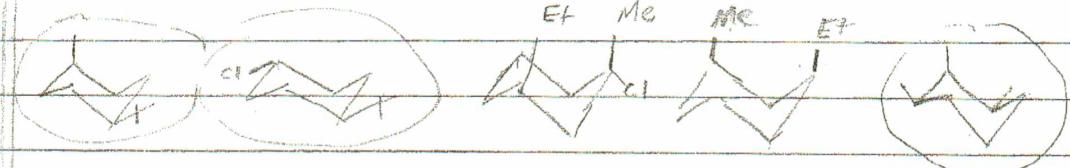
Key

314a

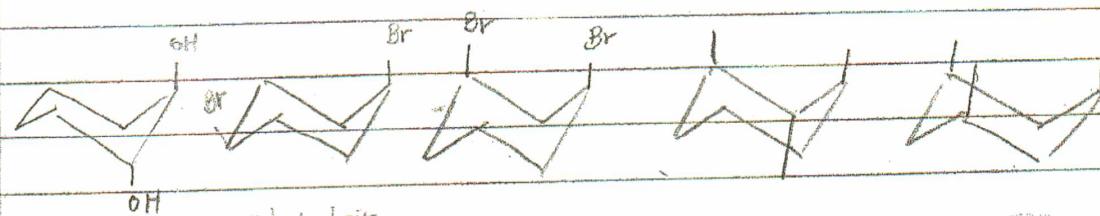
Practice Problems: Draw both chairs & circle the lower energy one.



A B C D E

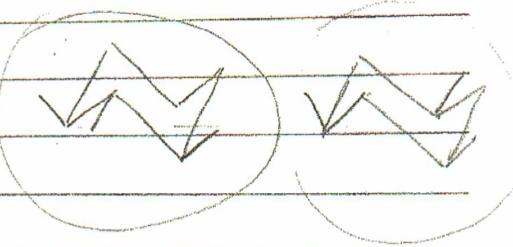
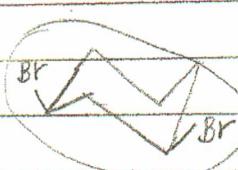
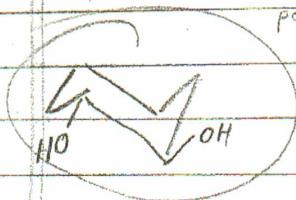


F G H I J



OH Br Br Br

only 1 chair
possible

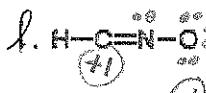
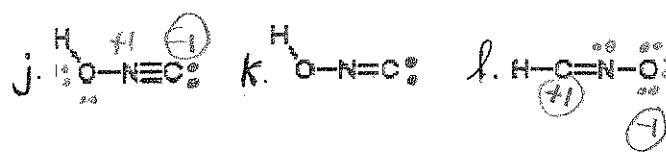
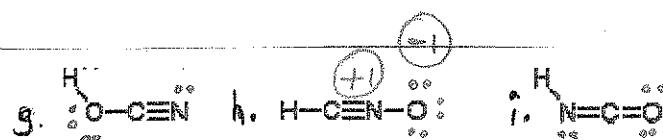
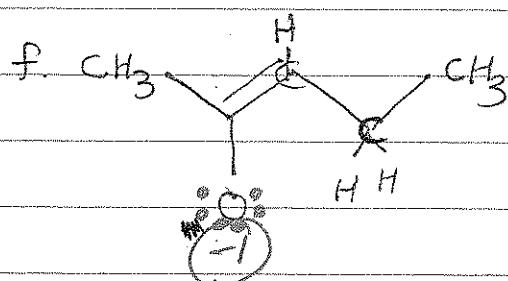
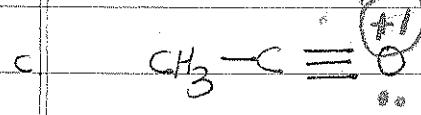
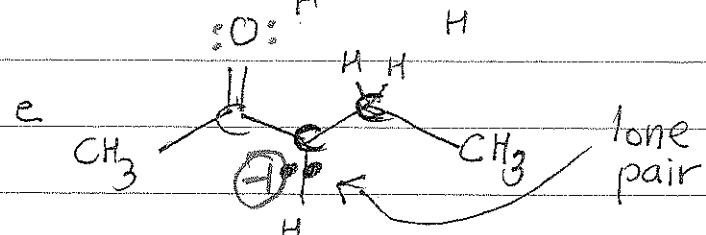
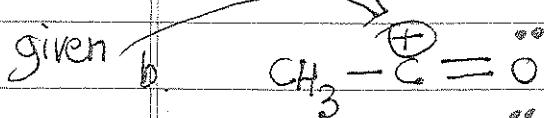
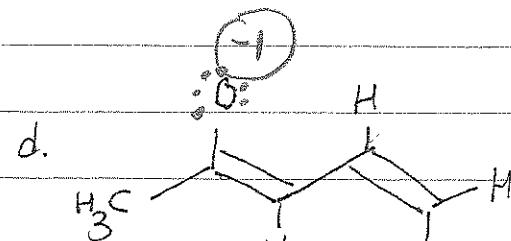
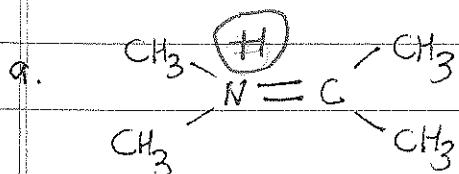


5/4 a

key

Calculating Formal Charge

Calculate the formal charge on each O, N & C shown below

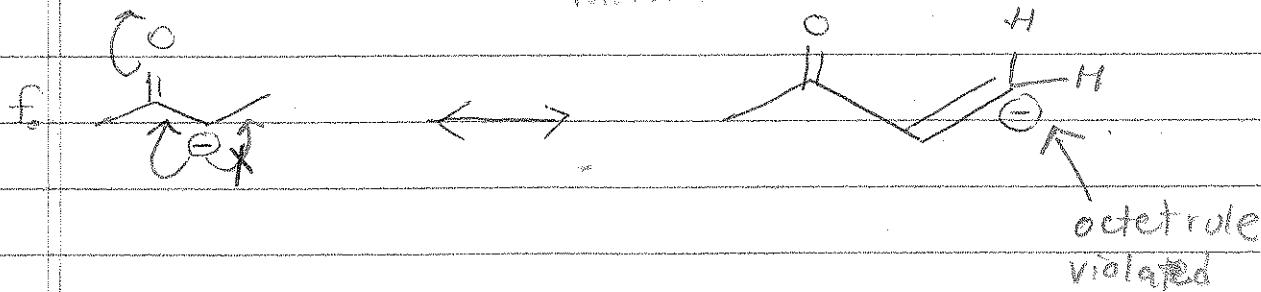
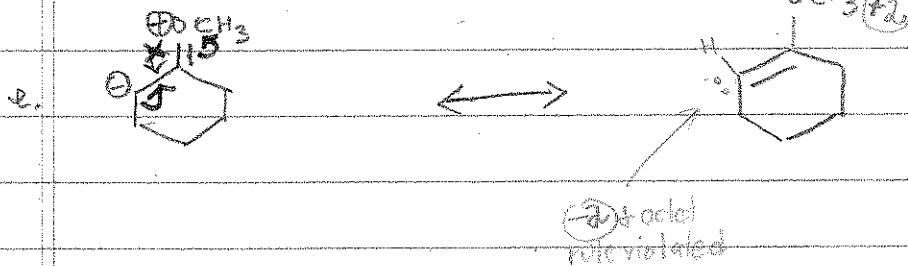
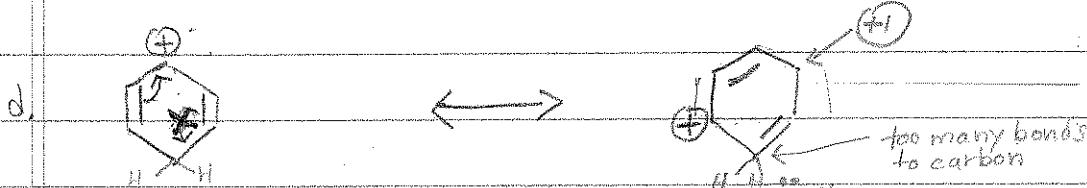
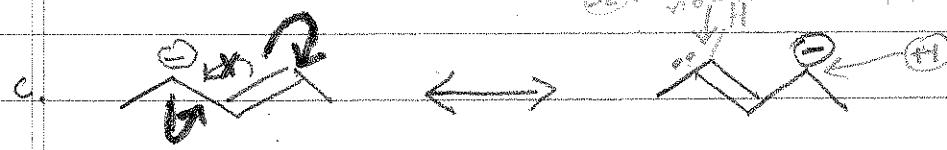
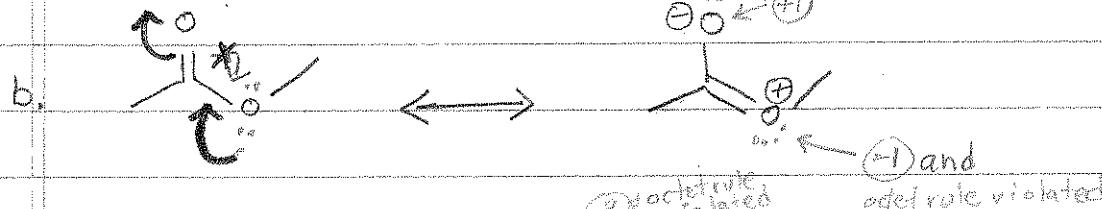
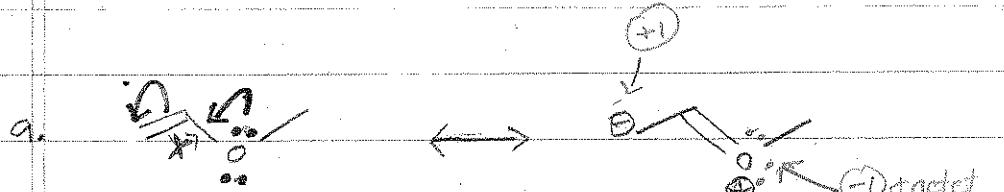


only non zero charges are shown

key

Resonance Arrows - What's Wrong Here? 5/7 d

For each question, two resonance structures are given. Arrows show (incorrectly) how to get from the structure on the left to the structure on the right. Figure out what is wrong with resonance arrows given + draw in correct arrows for each case:

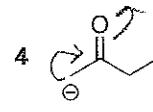
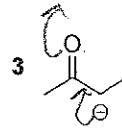
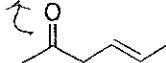
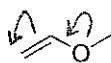


Answer key

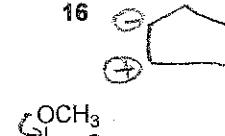
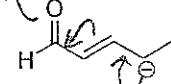
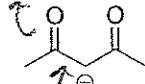
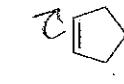
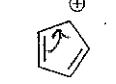
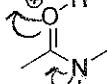
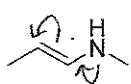
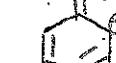
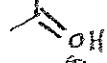
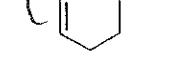
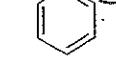
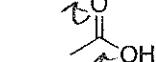
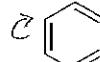
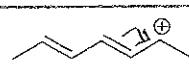
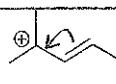
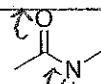
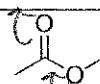
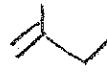
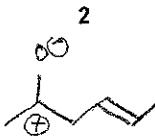
CHM 235
Dr. Minger

Resonance practice problems

For each of the molecules shown, draw mechanistic arrows and provide at least one additional reasonable resonance structure. (Some will have only one.) Not all lone pairs are shown, but all non-zero formal charges are included.



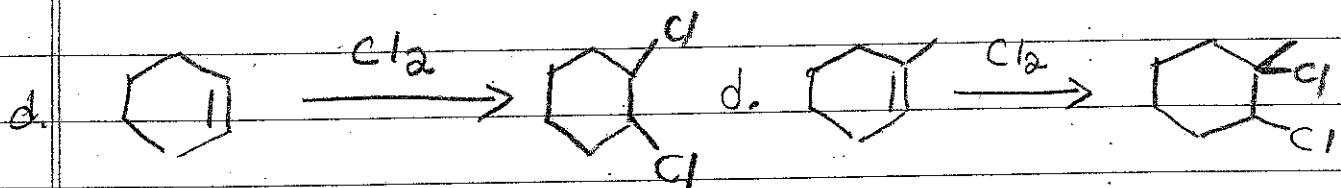
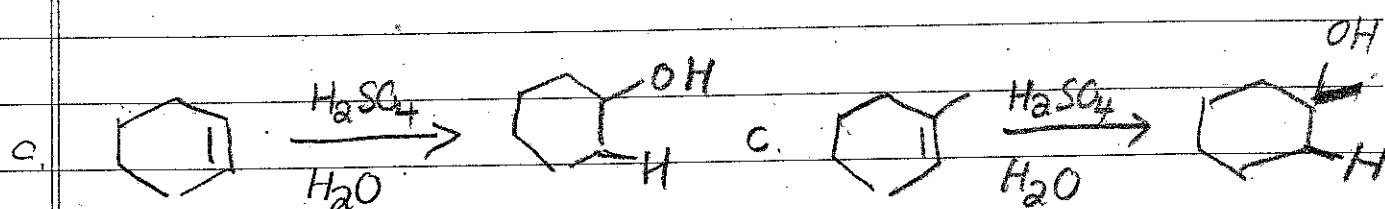
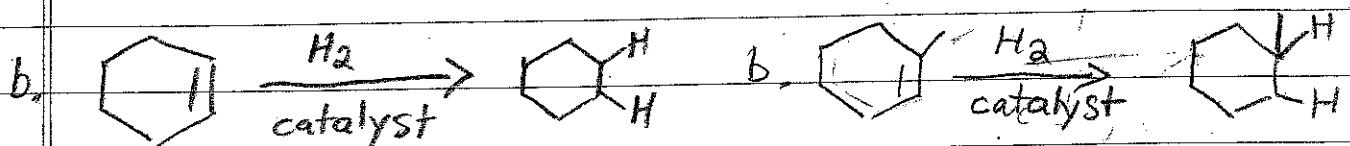
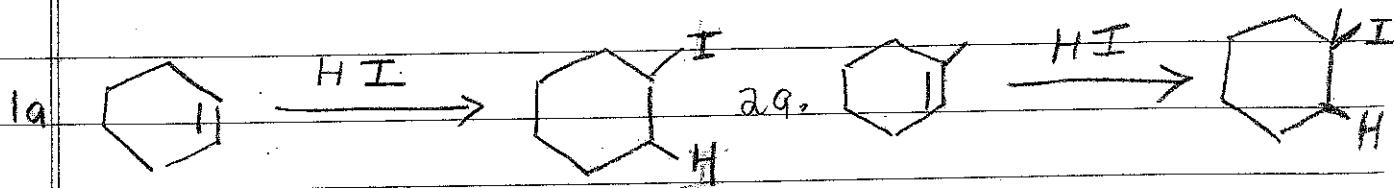
(How many hydrogens are on the carbon with the negative charge in structure 3? in structure 4?)



key

X37/2 a

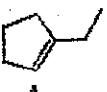
Alkene Rxns: Give the Product



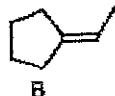
key

Alkene Reactions - Matching

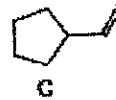
Three isomeric cycloalkene starting materials are available for your use. They are:



A



B



C

Using one of these compounds, and selecting reagents from the list on the right, indicate how the following products might be prepared. Each question (1. through 8) requires two responses. Under Starting Material enter A, B or C. Under Reagents enter a number corresponding to your selection.

Ignore the possibility of molecular rearrangement.

Desired Product	Response Boxes	Desired Product	Response Boxes
1	Starting Material <input checked="" type="checkbox"/> C Reagent Number <input checked="" type="checkbox"/> VI	3	Starting Material <input checked="" type="checkbox"/> C Reagent Number <input checked="" type="checkbox"/> IV
2	Starting Material <input checked="" type="checkbox"/> A or B Reagent Number <input checked="" type="checkbox"/> VI	4	Starting Material <input checked="" type="checkbox"/> A, B Reagent Number <input checked="" type="checkbox"/> V

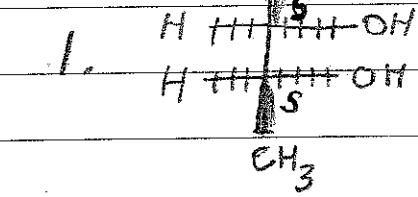
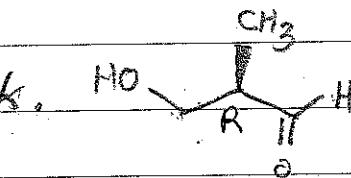
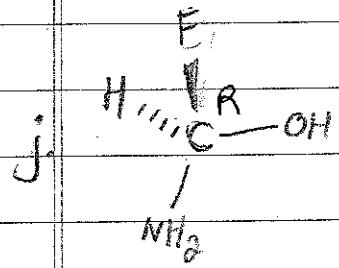
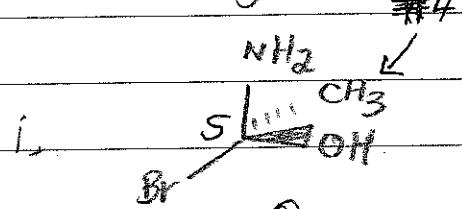
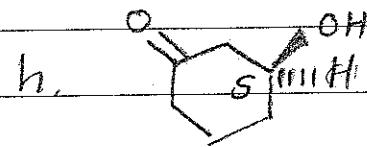
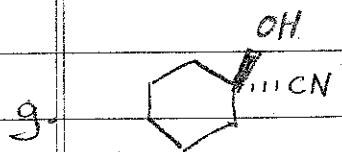
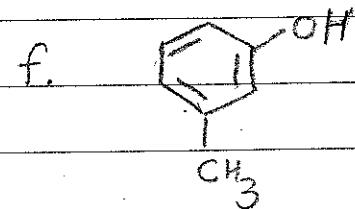
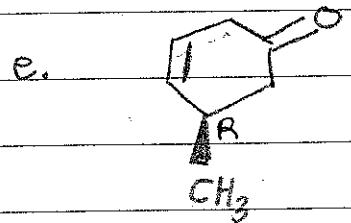
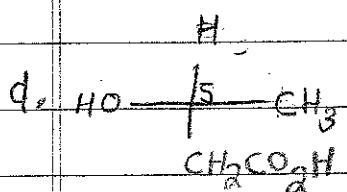
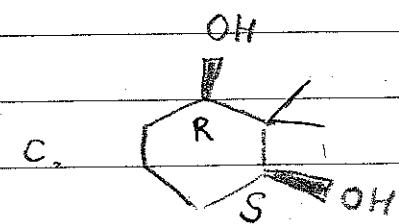
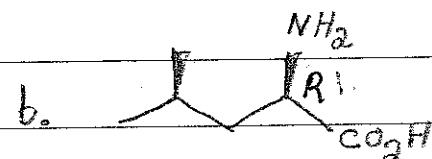
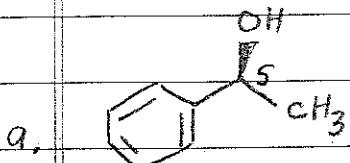
IX Br_2 IX Cl_2 III X H_2 IV X HCl II X HBr VI X $\text{H}_2\text{SO}_4 + \text{H}_2\text{O}$

Identifying Chiral Centers

10/4.6

Answer Key

Label any chiral centers in the molecules shown below:

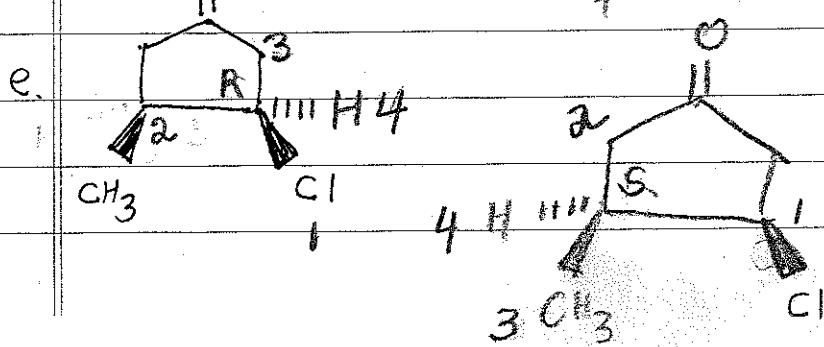
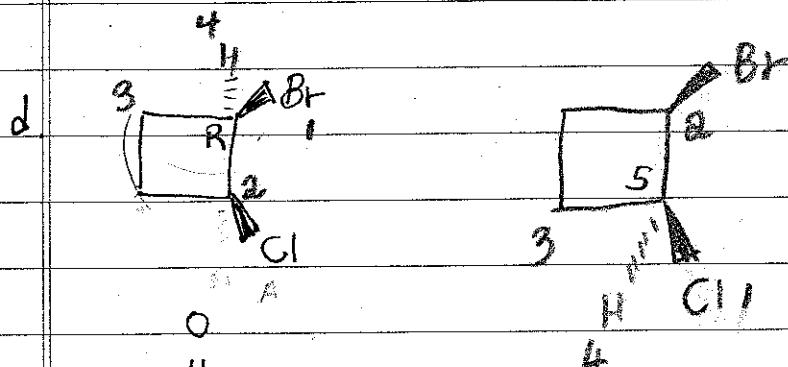
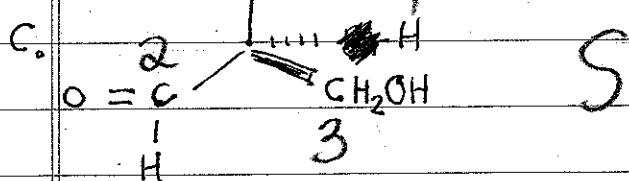
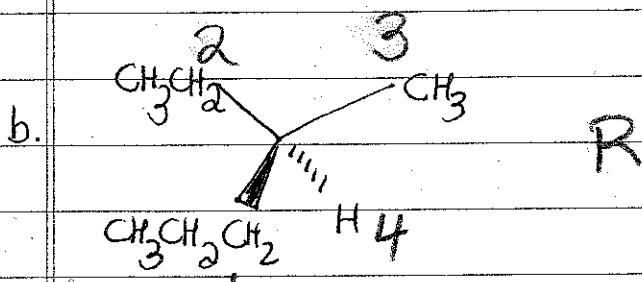
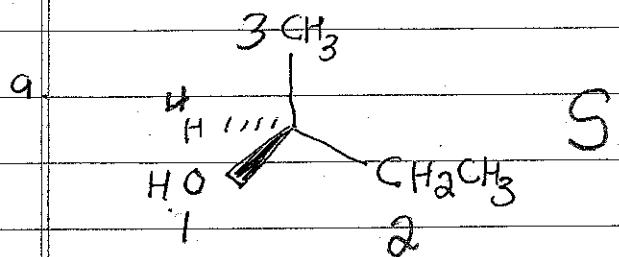


~~Answer key for
R/S Configuration
Available at Florowitz Website~~

10/6/9

Assigning R + S

Determine the R/S configuration for each molecule shown below & draw its enantiomer (mirror image):



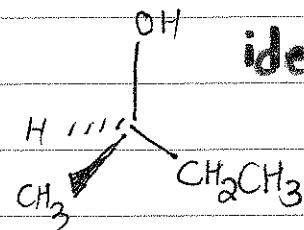
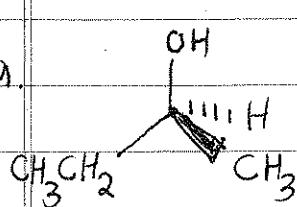
Relationships Btwn Molecules

Key

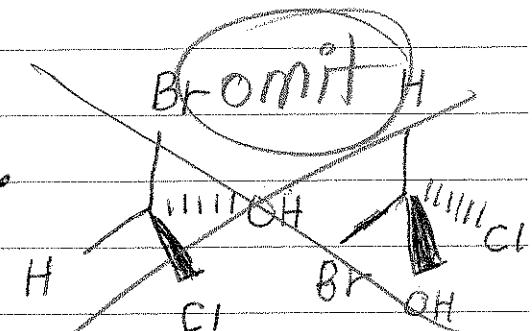
11/1 a

For each pair below, indicate if the two molecules are identical, enantiomers, constitutional isomers, diastereomers, or unrelated.

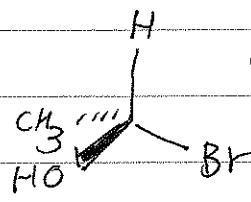
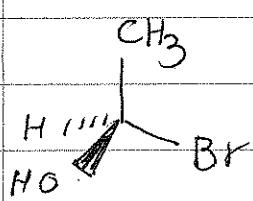
enant g.



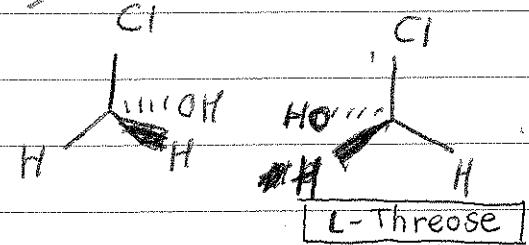
ident g.



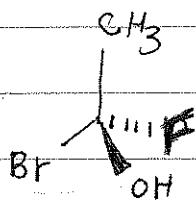
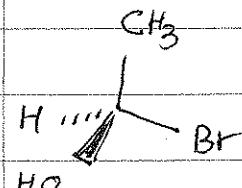
enant b.



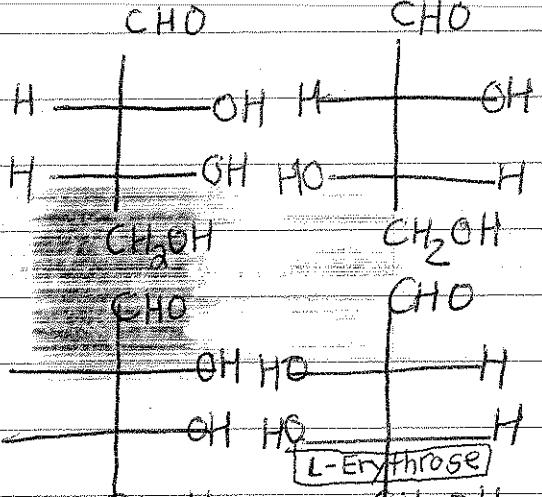
ident h.



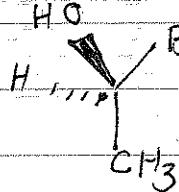
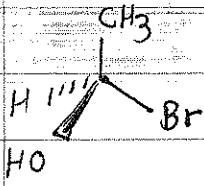
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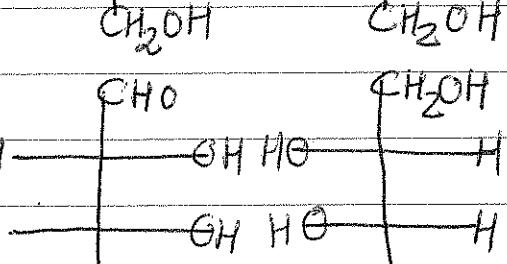
diast.



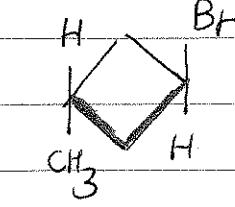
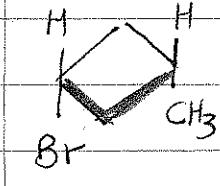
enant j.



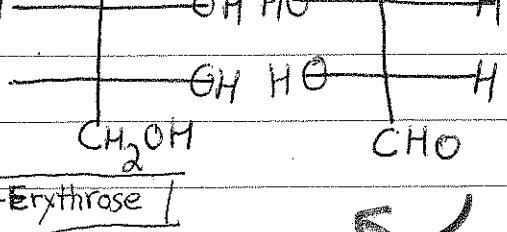
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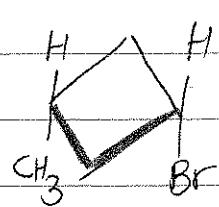
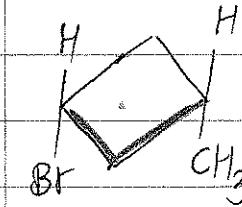
cis/trans
diast. e.



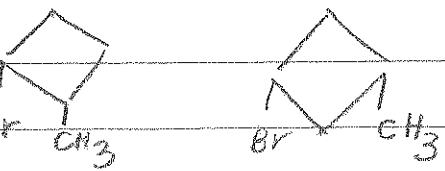
ident k.



ident f.



ident l.



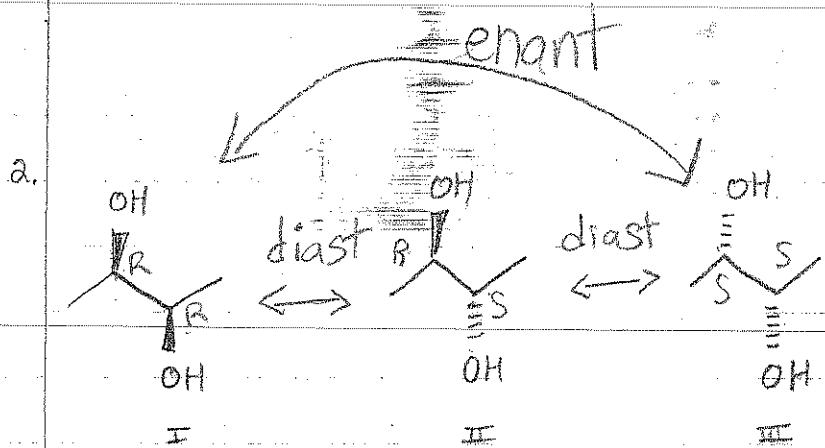
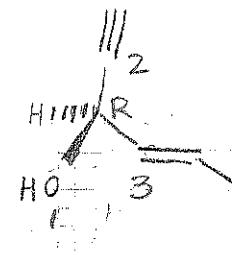
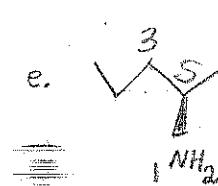
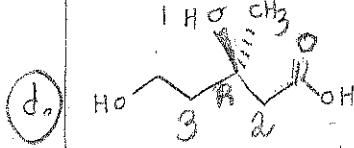
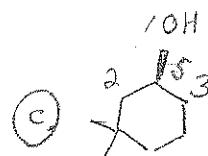
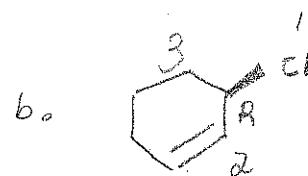
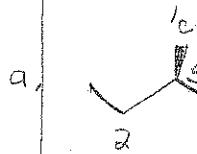
const

rotate

Key

Chapter 15: Extra Practice

1. Find R or S for each chiral center



a. Label all chiral centers.

b. Find R and S for each chiral center in molecule I.

Compare molecules II & III to molecule I to find R or S for molecules II & III.

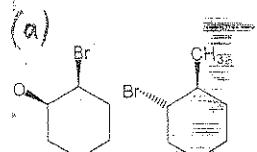
c. Which of the three molecules are enantiomers?

d. Which are diastereomers?

Key

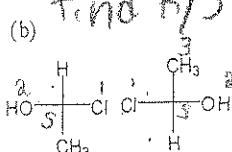
Chapter 5. Isomerism 2: Chirality, Enantiomers, and Diastereomers

3. Identify the specific relationship between each pair of molecules (that is, either same molecules, constitutional isomers, enantiomers, diastereomers, cis/trans isomers, or unrelated).

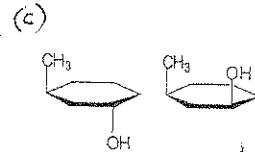


unrelated

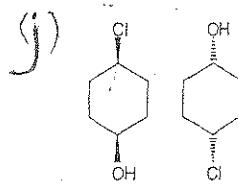
find R/S



ident

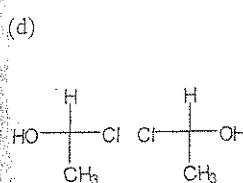


diast

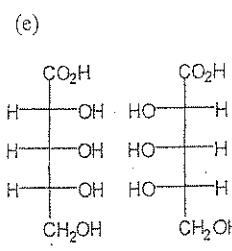


(a)

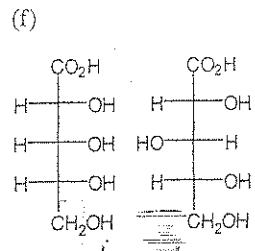
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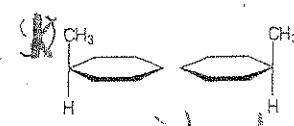
enant



enant

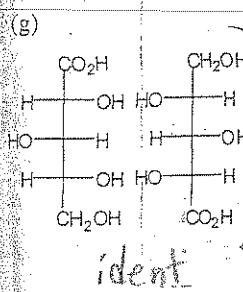


diast

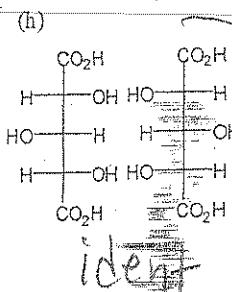


(a)

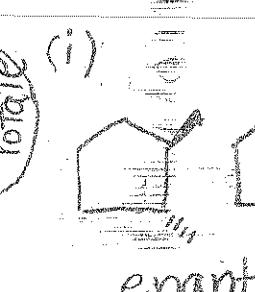
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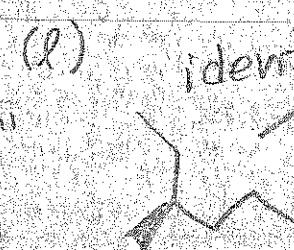
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ident

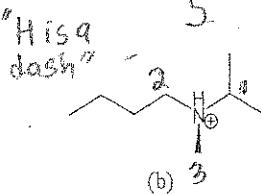
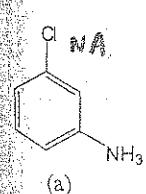


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ident

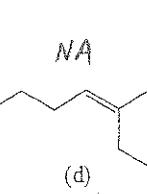
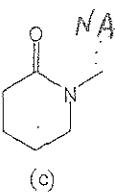
4. Label all chiral centers/R or S:



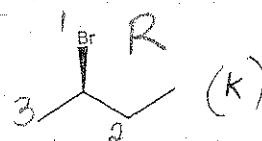
S

2

3



NA

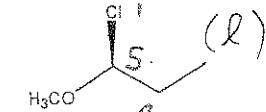


R

1

2

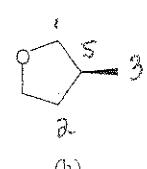
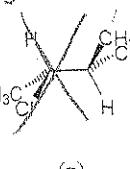
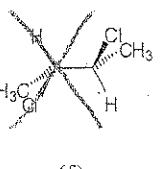
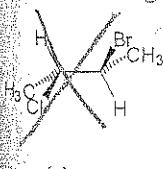
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S

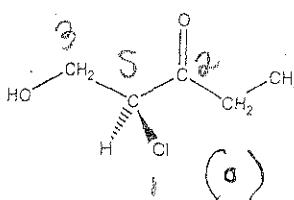
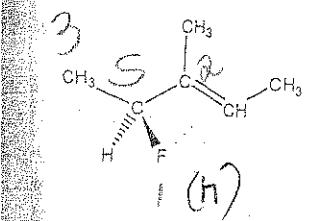
2

3



2

3



2

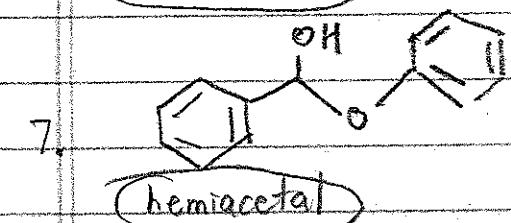
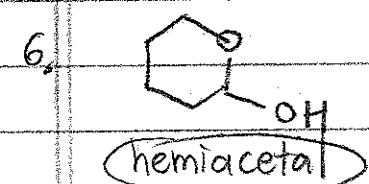
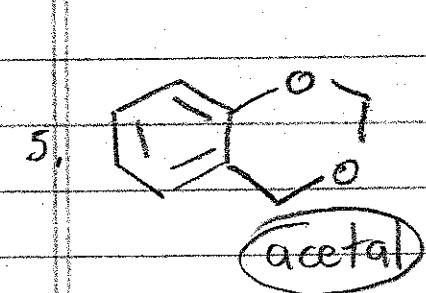
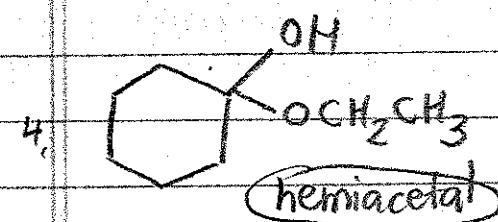
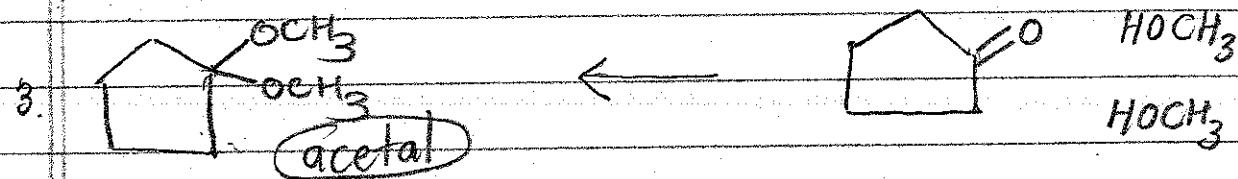
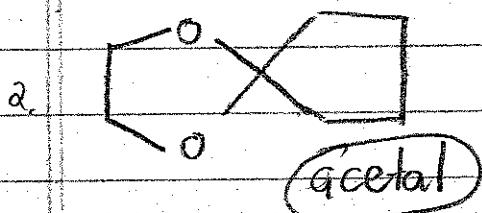
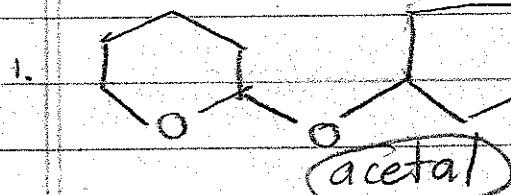
3

key
I

CHAPTER 17 - EXTRA PRACTICE

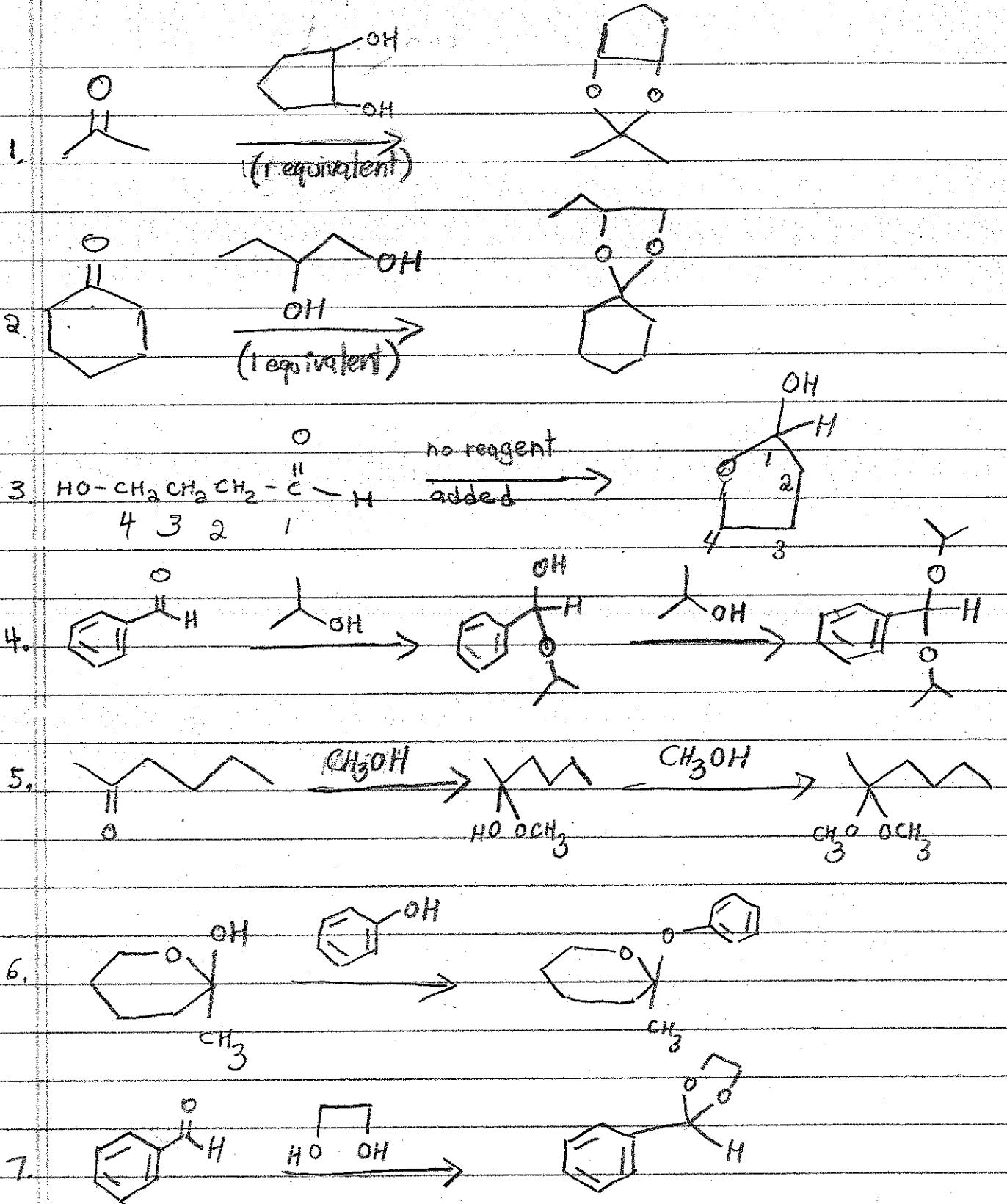
9. For each compound, indicate if it a hemiacetal or acetal.

6. Draw the structures of the carbonyl compounds (aldehydes or ketones) and alcohols that were used to create these compounds.



II. Draw the hemiacetal or acetal product for each reaction:

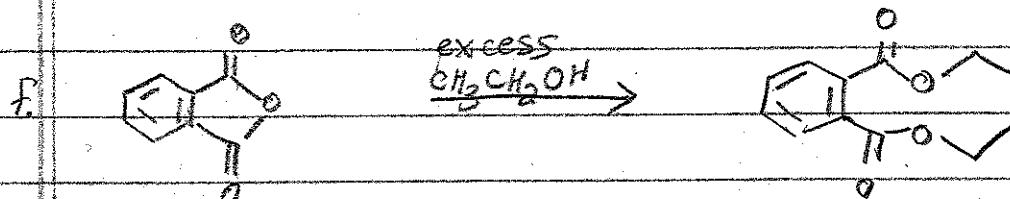
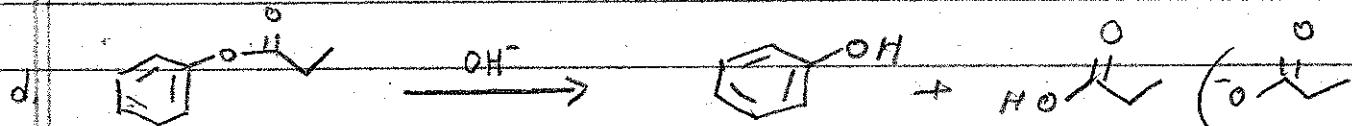
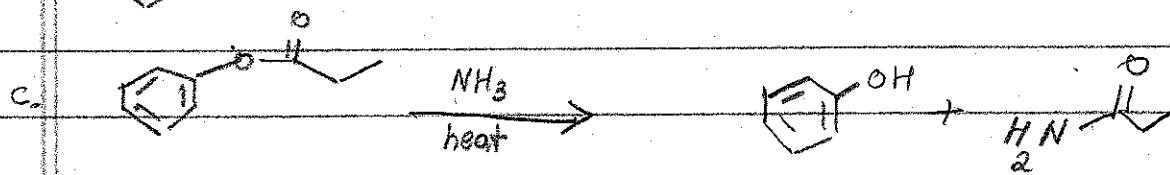
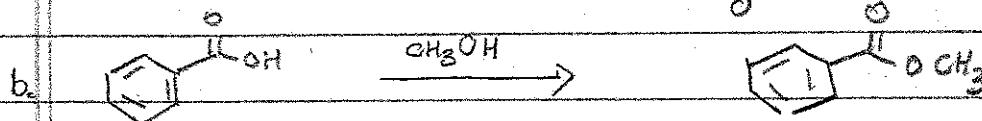
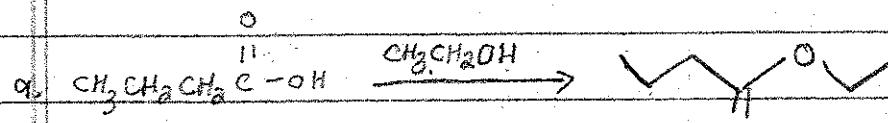
Key



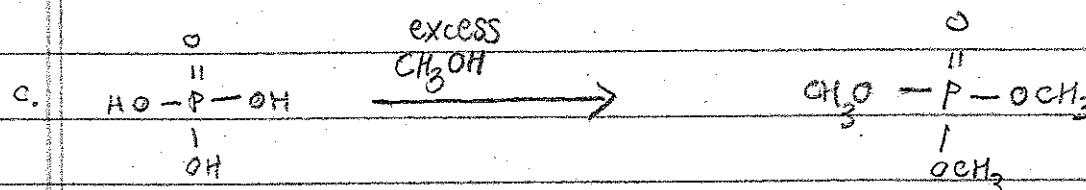
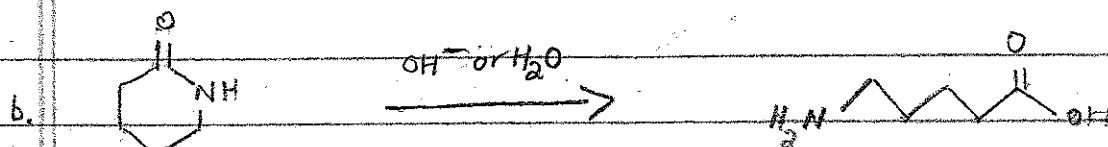
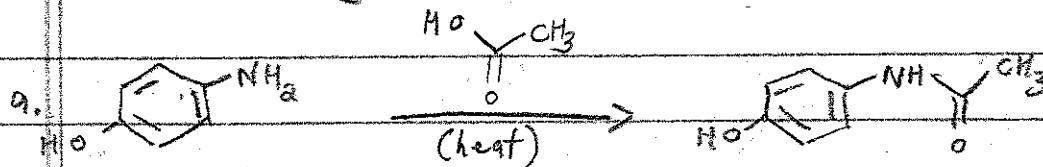
Chapters 18 & 19 - Exam Practice

key

1. Give the product:



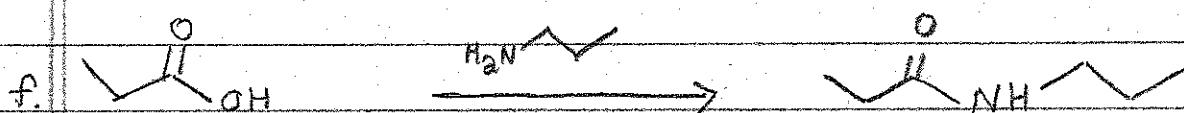
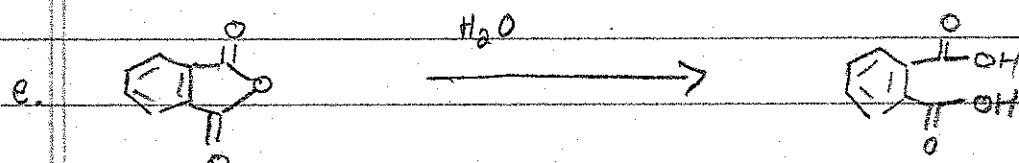
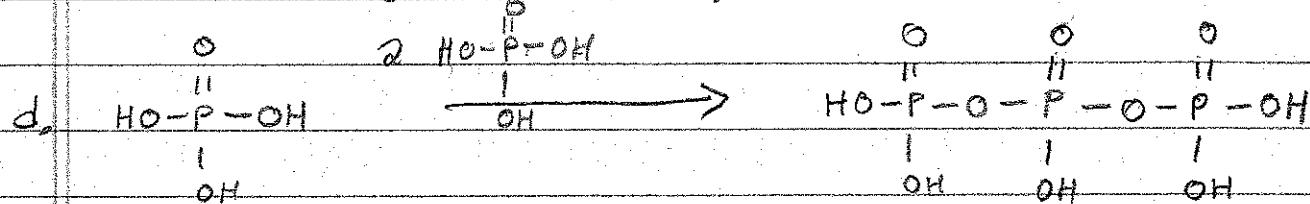
2. Fill in the missing reagent:



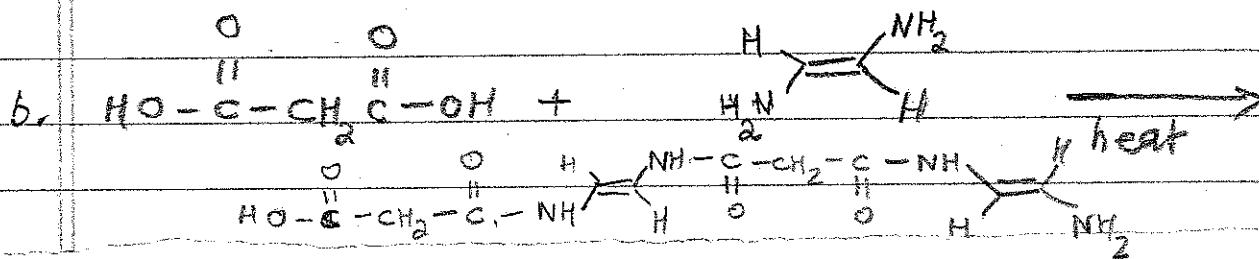
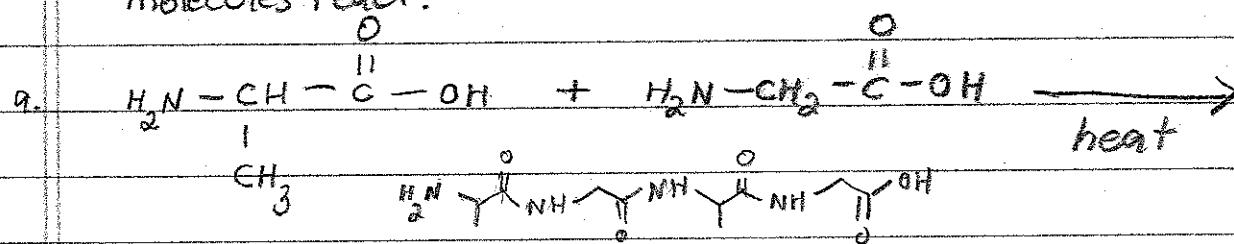
Chapters 18 & 19 - Extra Practice Cont

key

a. Fill in the missing reagent (cont.):



3. Draw the polymer that forms when the following two molecules react:



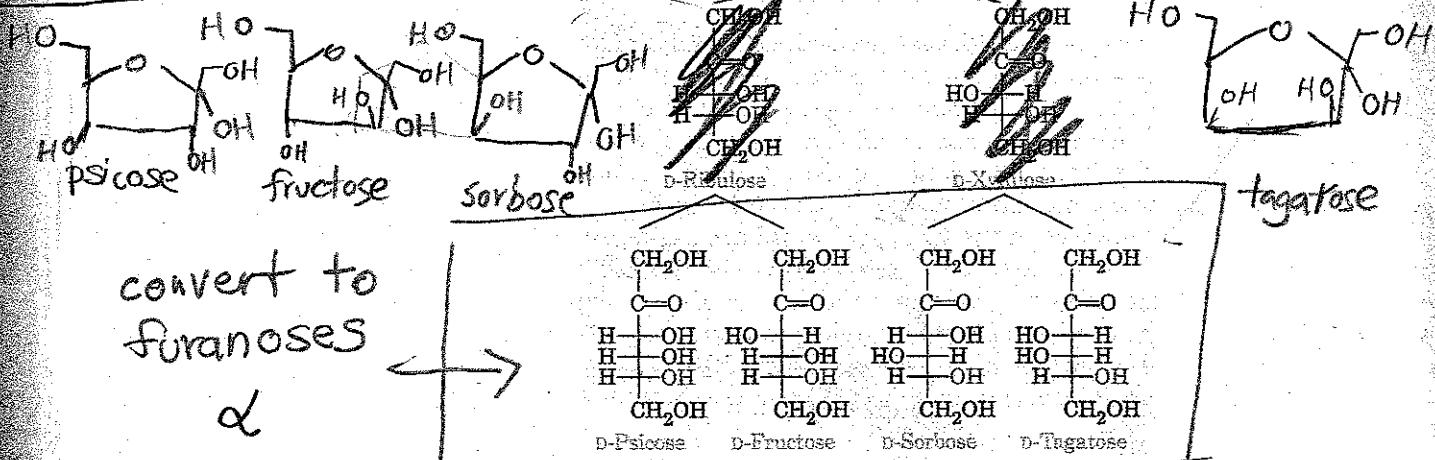
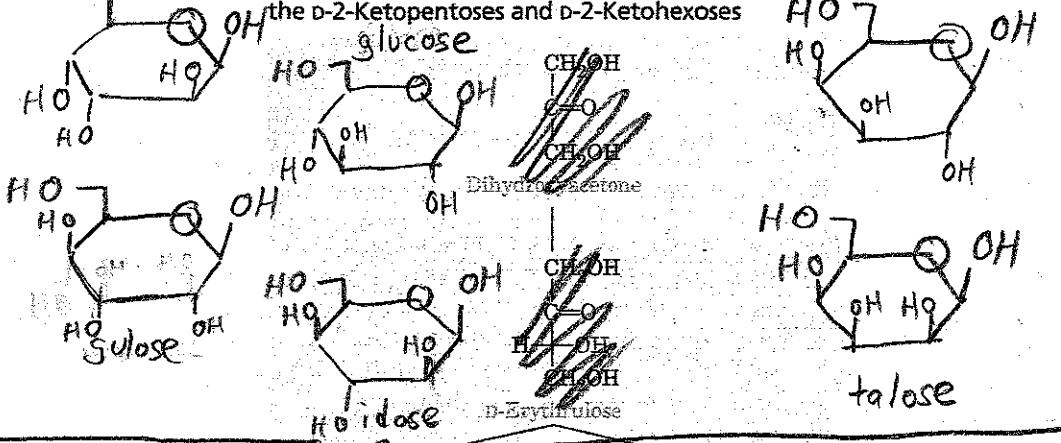
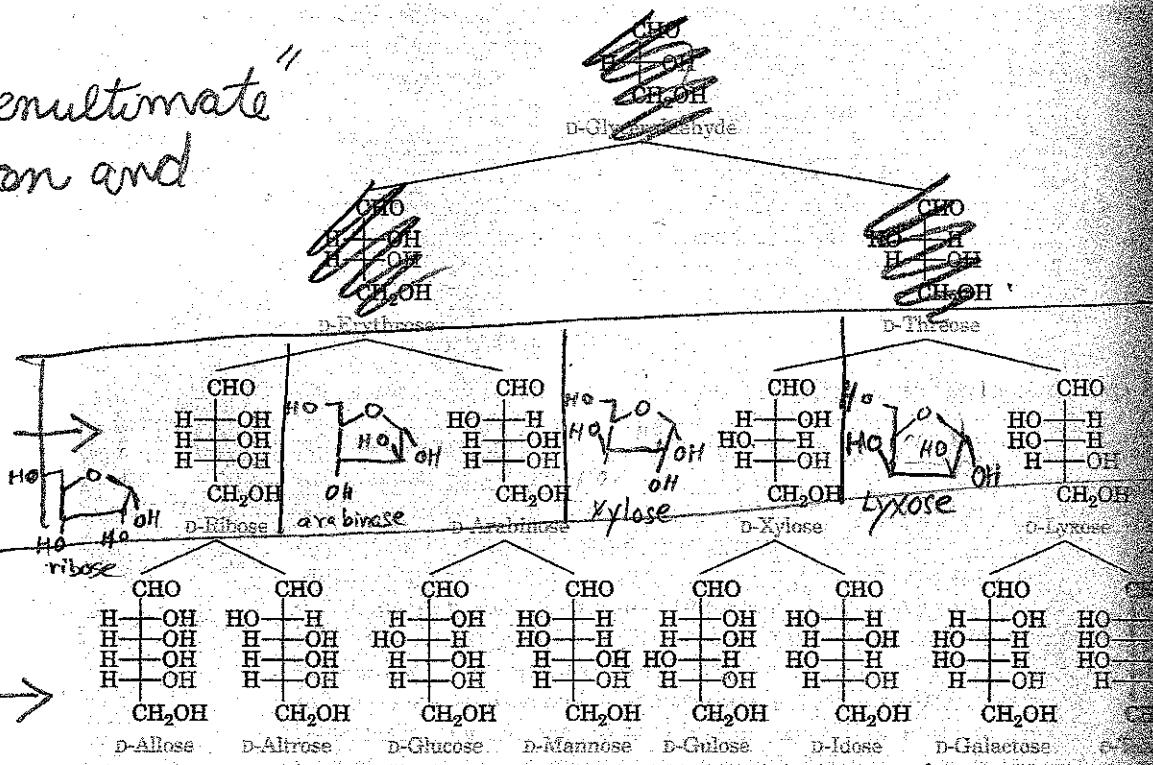
Extra Practice Key

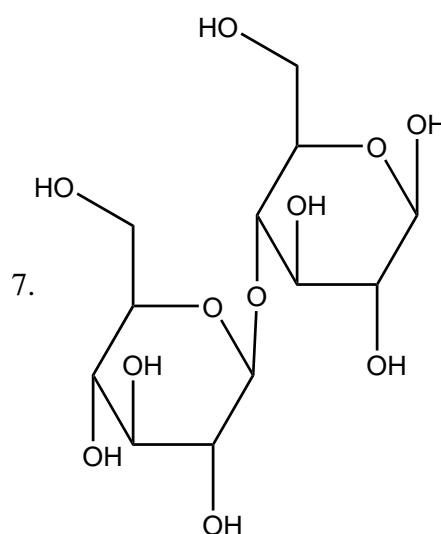
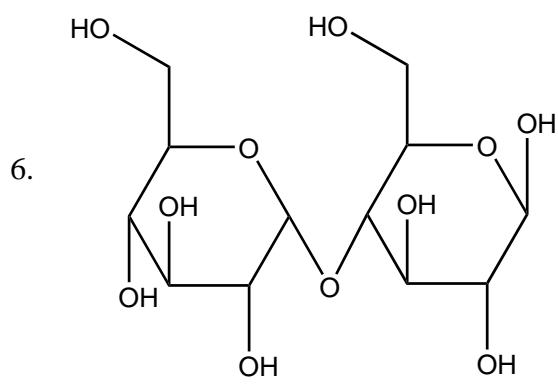
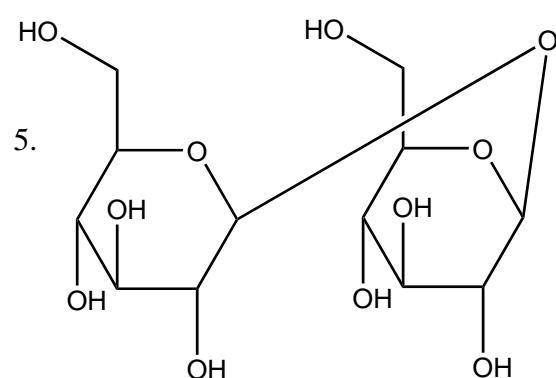
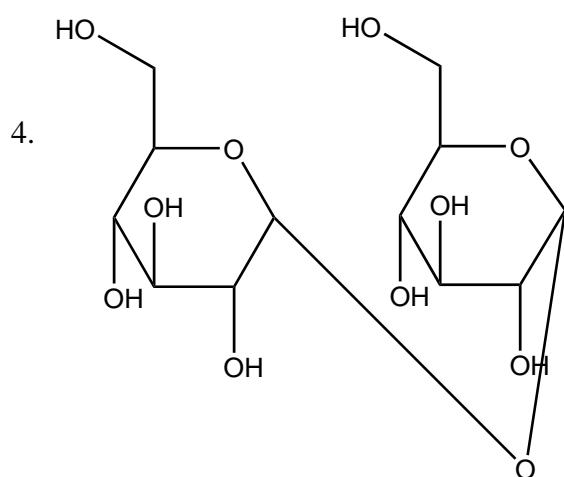
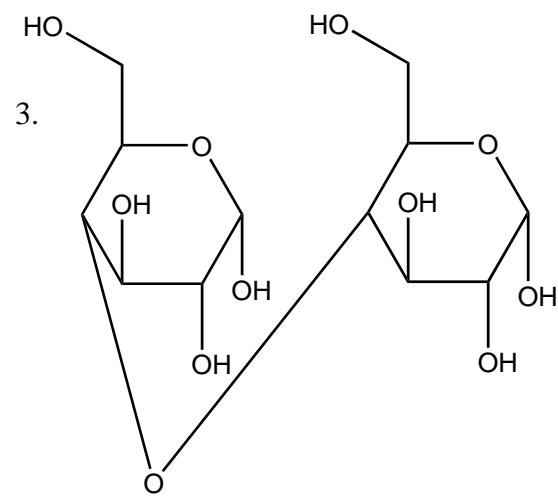
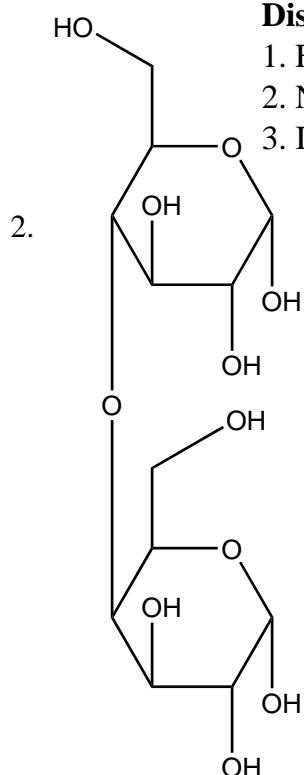
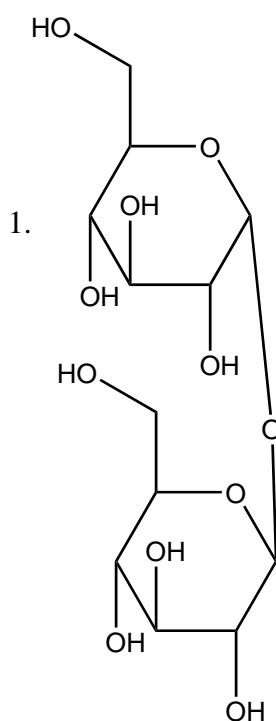
Table 20.1 Configurational Relationships among the Isomeric D-Aldotetroses, D-Aldopentoses, and D-Aldohexoses*

use "penultimate" carbon and

convert to furanoses α

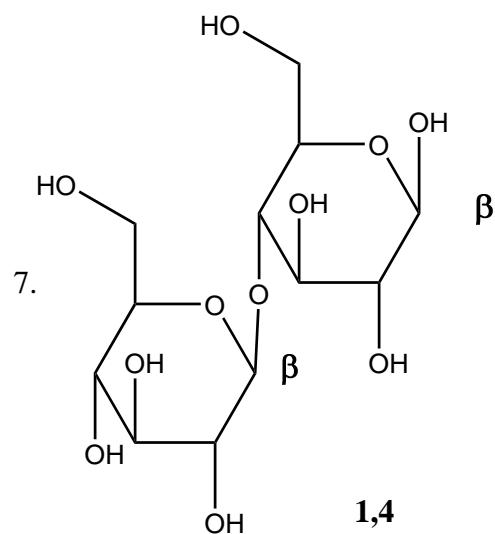
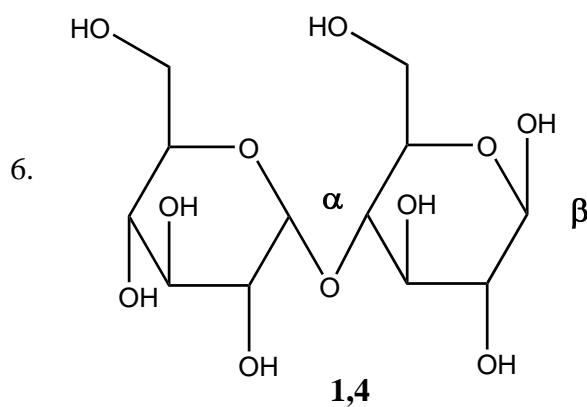
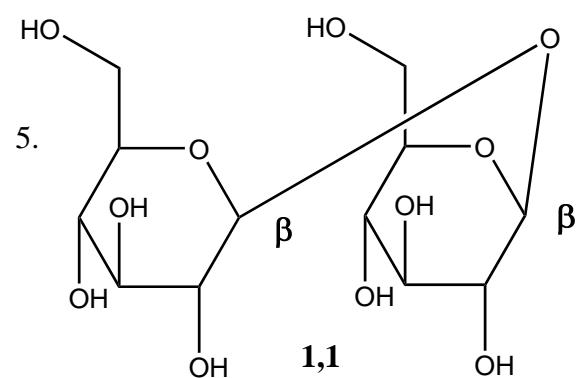
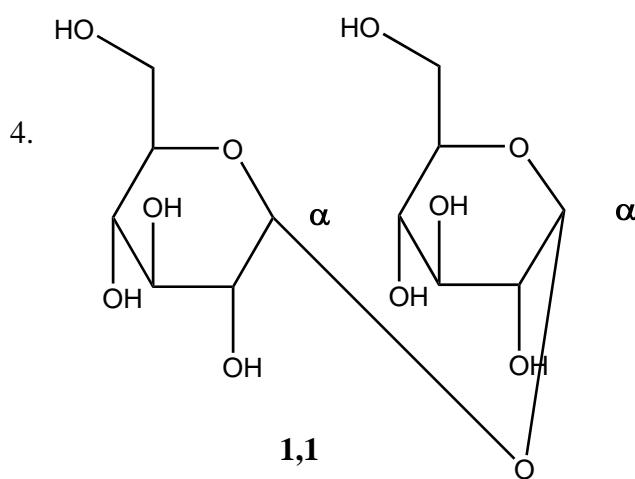
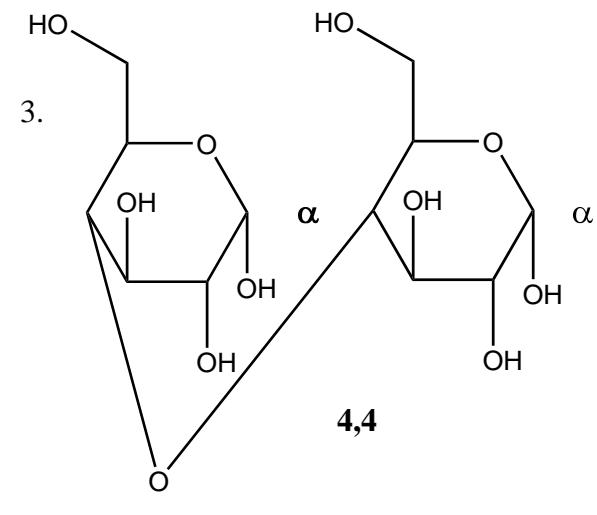
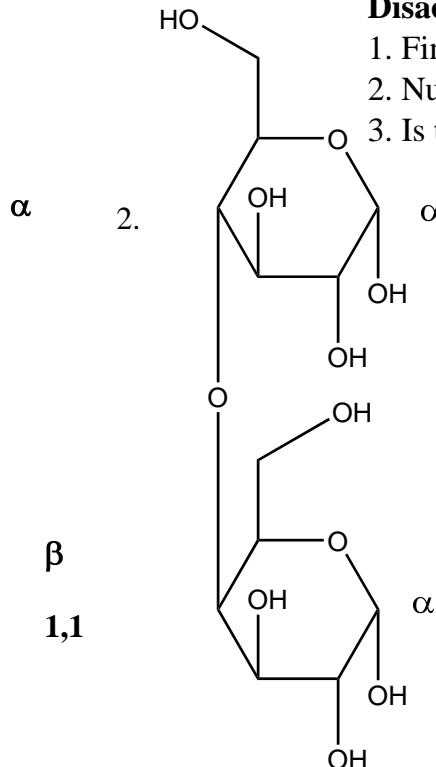
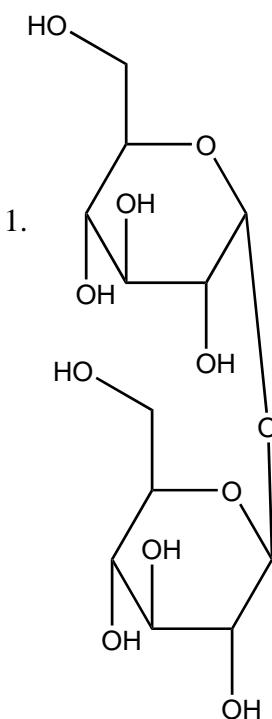
convert to pyranoses β





Disaccharide Practice:

- Find each anomeric carbon and determine α or β ,
- Number the linkage between sugars
- Is the molecule a reducing sugar?



Disaccharide Practice:

1. Find each anomeric carbon and determine α or β ,
2. Number the linkage between sugars
3. Is the molecule a reducing sugar? 2,3,6,7