

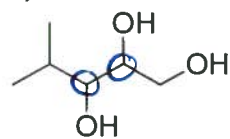
## PRACTICE PROBLEMS UNIT 6

### 6A. Identify stereogenic centers in a molecule

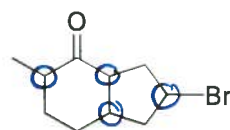
OCSL: 7.1 - 7.15

6A.1 Circle all chiral carbons in the following molecules:

a)



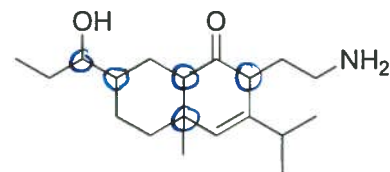
b)



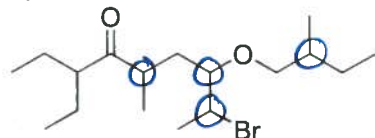
c)



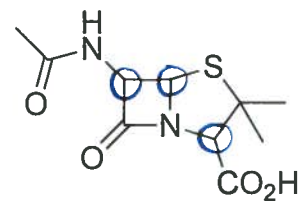
d)



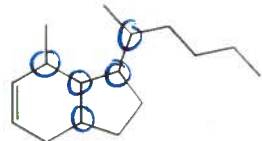
e)



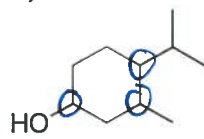
f)



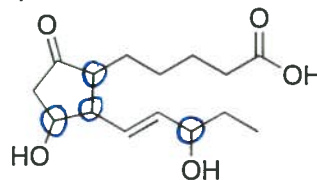
g)



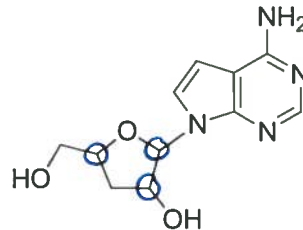
h)



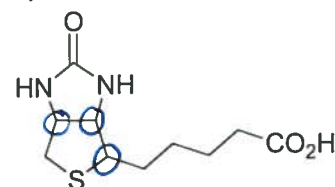
i)



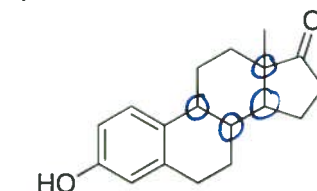
j)



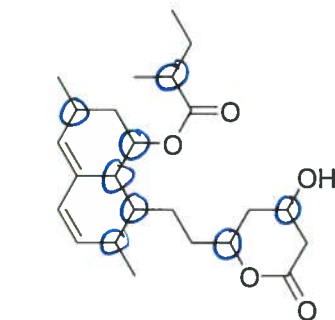
k)



l)



m)

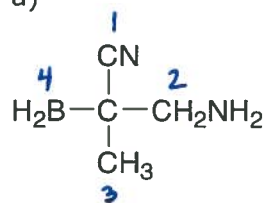


## 6B. Determine the absolute stereochemistry of chiral carbons

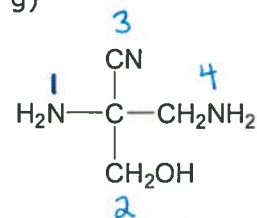
OCSL: 7.16 – 7.43, 7.50 – 7.63, 7.75 – 7.81

6B.1 Assign priorities 1-4 for the following chiral centers.

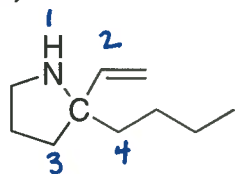
a)



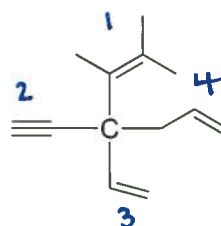
g)



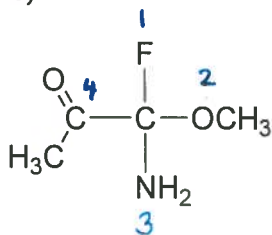
b)



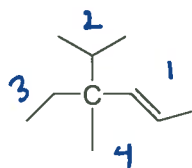
h)



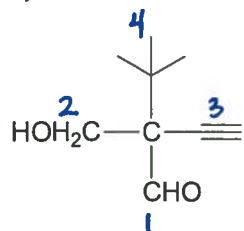
c)



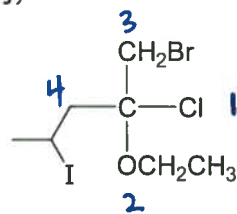
i)



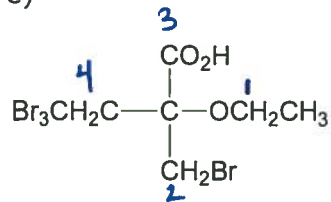
d)



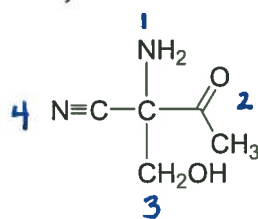
j)



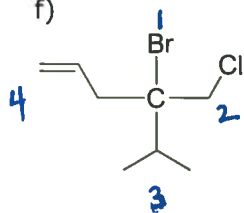
e)



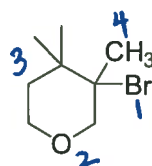
k)



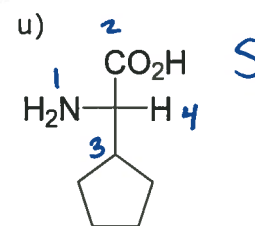
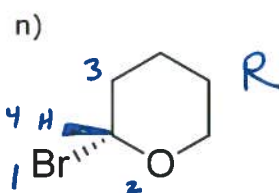
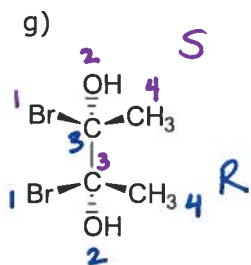
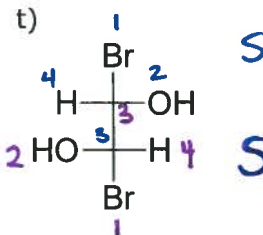
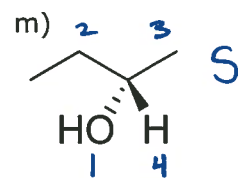
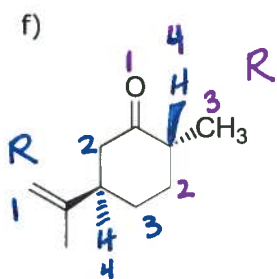
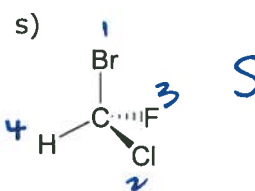
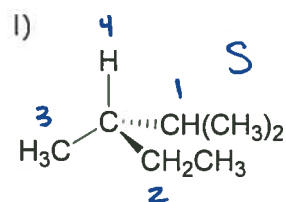
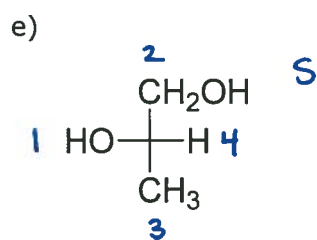
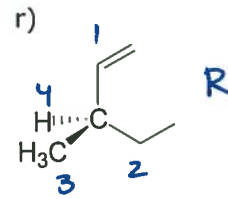
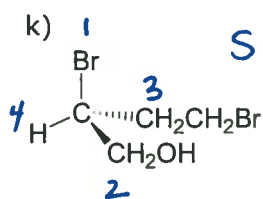
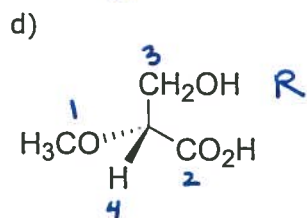
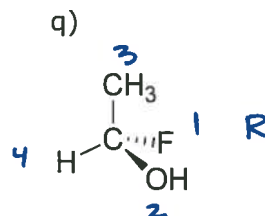
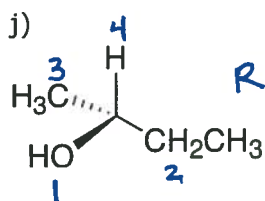
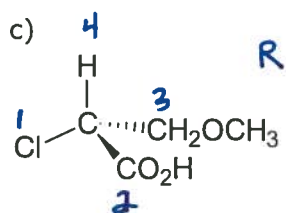
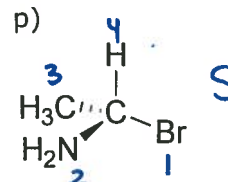
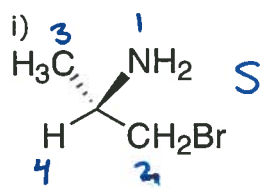
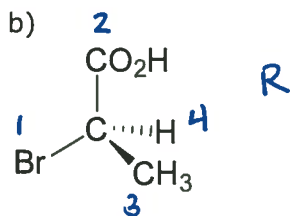
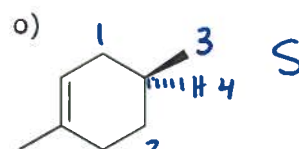
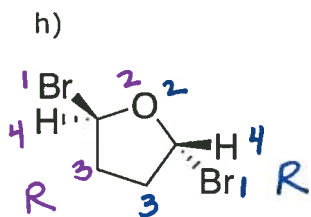
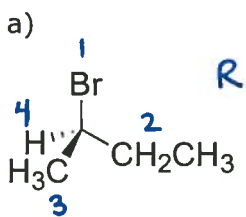
f)



l)



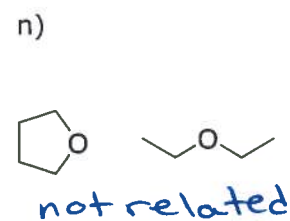
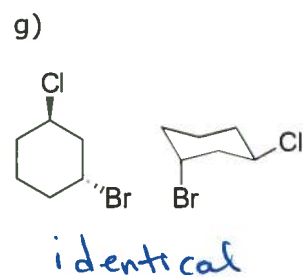
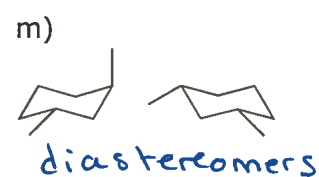
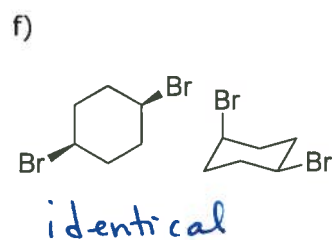
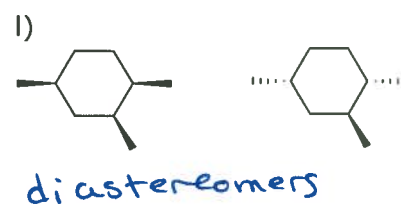
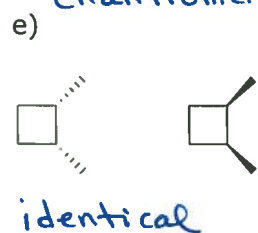
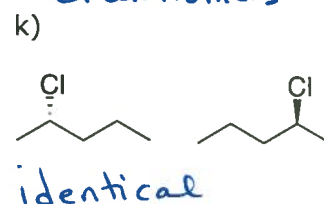
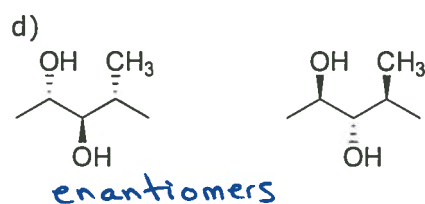
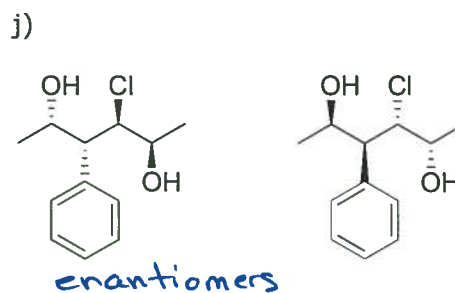
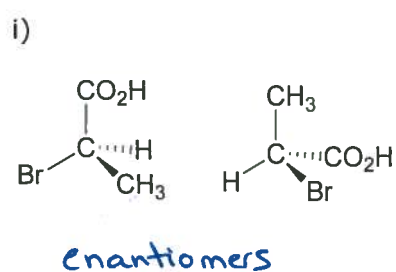
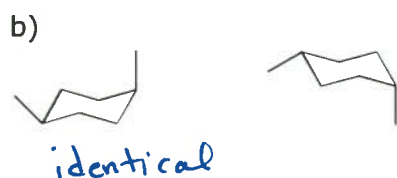
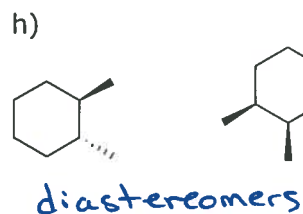
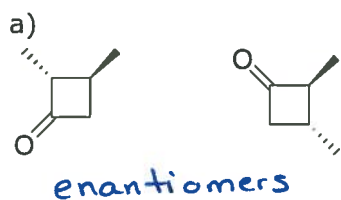
6B.2 Determine the absolute stereochemistry at each chiral center.



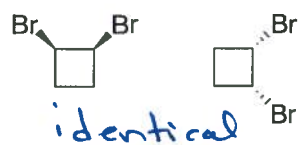
6C. Determine if molecules are enantiomers, diastereomers, identical or not related.

OCSL: 7.64 - 7.74

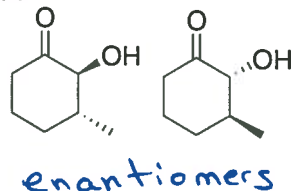
6C.1 Determine if the following molecules are enantiomers, diastereomers, identical or not related.



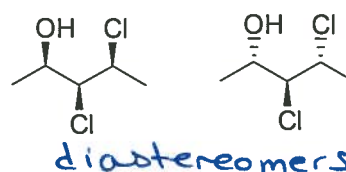
o)



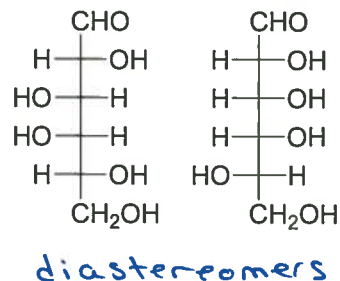
p)



q)



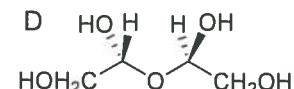
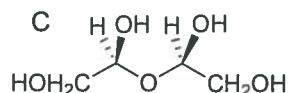
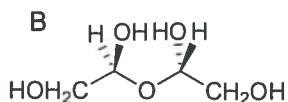
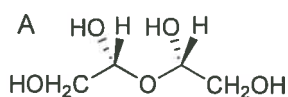
r)



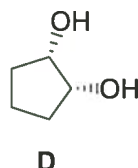
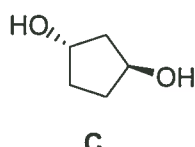
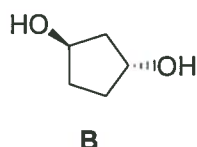
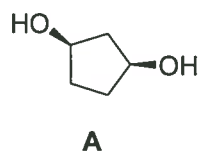
### 6D. Predict physical properties of enantiomers and diastereomers including optical rotation.

6D.1. Fill in the appropriate letters based on the molecules below. (Some may have more than one correct answer)

- a) \_\_\_ and \_\_\_ are enantiomers **B + D**
- b) \_\_\_ and \_\_\_ are diastereomers **A/B, A/D, B/C, C/D**
- c) \_\_\_ does not rotate polarized light **A + C**
- d) \_\_\_ and \_\_\_ are meso compounds **A + C**



6D.2 Base your answers on the molecules below.



List a pair of compounds that are constitutional isomers: A, B, or C + D

List a pair of compounds that are enantiomers B + C

List a pair of compounds that are diastereomers A + B, A + C

List all compounds that are optically active B, C

6D.3 Circle all of the following that do not rotate polarized light.

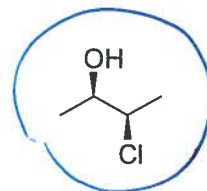
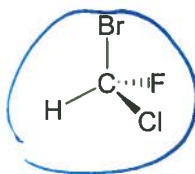
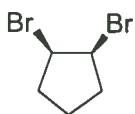
a) a 50/50 mixture of diastereomers

b) a 50/50 mixture of enantiomers

c) meso compounds

d) compounds with a non-identical mirror image

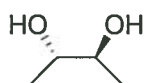
6D.4. Circle all of the following molecules which will rotate polarized light.



6D.5 For the molecules below,

Which will rotate polarized light? A + C

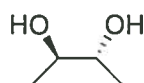
Which will have identical melting points? A + C



A



B



C

6D.6 How are R and S related to (+) and (-)? They are not related

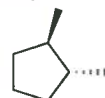
6D.7 Circle true or false based on the following molecules: (4 points)

True  False A is optically active.

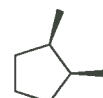
True  False A and C have the same melting point.

True  False A and B can be separated by normal physical means.

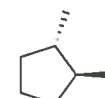
True  False A 50/50 mixture of A and C will rotate polarized light.



A

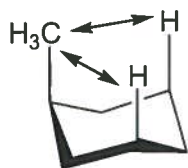


B



C

6X.1 Name the interaction indicated by arrows below. Is this a favorable or unfavorable interaction?



1,3-diaxial strain  
unfavorable