Stereochemistry Practice Chem 231

1. The following molecule **A** is drawn in such a way that the 3-D structure is ambiguous.
2. Circle the atoms that are stereocenters.

 

1. Based on the number of atoms you circled in part **a**, what is the maximum number of stereoisomers possible for **A**?



1. Draw all of the possible stereoisomers of **A** and label their stereoisomeric relationships (diastereomers, enantiomers).
2. Label each stereocenter with its **R** or **S** configuration.



1. (+)-tridachiahydropyrone is a polypropionate that can be isolated from the sea mollusc *Tridachia diomedea*. *.* Assign absolute configuration to any chiral centers. *You isolate a sample of tridachiahydropyrone from a new mollusc and measure the rotation of plane polarized light to be +20°. What is the %ee of the mixture?* What percentage of each enantiomer makes up the mixture you isolated?

 The new isolate is 40%ee (20/50) and is70% (+) and 30% (-) (as determined by the new isolate

 having the same sign as the pure (+) enantiomer.)

 

1. There are three different constitutional isomers of dichlorocyclopentane. Draw them.



1. There are seven different stereoisomers of dichlorocyclopentane. Draw all of them.
2. Label each stereocenter as **R** or **S**.
3. Label each structure as **chiral** or **achiral**.
4. Label any meso compounds.



1. Draw a Fisher projection of this 3-D structure, placing the carboxyl group on the top and the methyl group on the bottom.





1. Draw a staggered 3D representation of the *meso*-2,3-dibromobutane.



1. Indicate, in the space provided, if the pair of structures shown represents diastereomers (D), enantiomers (E), meso compounds (M), the same compound (S), or constitutional isomers (C). If the two molecules are not isomers of any kind, write an X on the blank. The pair may be both M and S. If this is the case, so indicate.



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1. Draw the structures for the following compounds;

a) (E)-4-methyl-5-(3-methylphenyl))-2-pentene b) (Z)-7-methyl-2-phenyl-non-2-en-4-yne



1. By assigning priorities to the groups attached to the chiral center designate either R or S to each of the following molecules. You must show all the priorities (#1 = highest) to receive full credit.



1. Label each of the following compounds as chiral or achiral.



 Achiral

1. Determine the IUPAC name for the following compound include stereochemistry



\_\_\_\_\_\_(2S,3R) -2-bromo-3-methylpentane\_\_\_\_\_\_\_\_

