**CHE-2060 Lecture 6 Quiz SHORT**

Problems must be solved, or written out, in their entirety with all work shown on engineering graph paper. You must label each set in the upper left hand corner with your name, the date and the chapter. Problems must be identified by number and all work must be shown with answers boxed. Be sure your handwriting is legible.

**6.1: Symmetry & asymmetry**

1. Which of these molecules has a plane of symmetry? Draw planes of symmetry where you find them.



2. These molecules may, or may not, have chiral carbons. Find them and mark them with asterisks.

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**6.2: Nomenclature of stereocenters**

3. For the molecule shown here:

a. Mark the chiral carbon(s) with an asterisk.

b. Prioritize the four substituents 1 through 4 (1 is high, 4 is low).

c. Label as R or S.



4. Draw the enantiomer of the molecule in the previous problem using either dash-wedge or a Fisher diagram.

**6.3: Properties of asymmetric molecules**

5. Why does only one enantiomer have a biological effect (or the expected biological effect) while the other does not?

**6.5: Fisher projections**

6. Label each chiral carbon and determine whether each is R or S.

CO2H

CO2H

OH

OH

HO

7. Draw a Fisher diagram of the molecule shown here.



**6.6: Molecules with two or more stereocenters**

8. For the molecule shown here:

a. Label the chiral centers.

b. Draw the enantiomer.

c. Draw a diastereomer.



9. Compare the four molecules shown here. I suggest using models!

1. Label the chiral centers.
2. For the first and last molecules, label each chiral center as R or S.
3. What is the relationship between the first and the last molecule?
4. Compare the first and second molecules. What is their relationship?
5. Are any of these molecules meso?



**~~6.7: Resolution of enantiomers~~**

~~10. Why can’t racemic mixtures of entantiomers be separated, or isolated from one another, without modification?~~

**~~6.8: Stereocenters other than carbon~~**

~~11. Identify all stereocenters in the molecules shown here. Label each with an asterisk.~~