REVIEW CHAPTER 2

1. For 1,2-dichloroethane:

(a) Draw Newman projections for all eclipsed conformations formed by rotation from 0 °C to 360 °C about the carbon-carbon single bond.

(b) Which eclipsed conformation(s) has the lowest energy? Which, if any, of these eclipsed conformations are related by reflection?

2. Following is a planar hexagon representation for one isomer of 1,2,4-trimethylcyclohexane. Draw the alternative chair conformations of this compound, and state which one of the two is the more stable.

3. Draw structural formulas or name the following compounds:

a) bicycle[310]hexane

b) Acid 2,5-cyclohexadien1,4dicarboxylic

c) 

\[
\begin{align*}
\text{O}_2\text{N} & \quad \text{CH}_3 \\
\text{CH}_3 & \quad \text{NO}_2 \\
\text{NO}_2 & 
\end{align*}
\]

d) 

\[
\begin{align*}
\text{H}_2\text{C} & \equiv \text{CH} \equiv \text{C} \equiv \text{C} \equiv \text{C} \equiv \text{CH} \\
\text{H}_2\text{C} & \equiv \text{H} \equiv \text{H} \equiv \text{CH} 
\end{align*}
\]

e) \text{H}_3\text{C} \equiv \text{C} \equiv \text{NH} \equiv \text{C}_6\text{H}_5

f) 4,4-dimethyl-2hexynedial
4. Which cycloalkanes show cis, trans isomerism? For each that does, draw both isomers and name them.

a) 

b) 

c) 

5. How many stereoisomers exist for 1,3-cyclopentanediol? And for 1,4-cyclohexanediol? This is an advance of chapter 3. Answer what you can (cis, trans). Check this problem again after studying chapter 3.

6.

1,4 dioxane piperidine

a) Complete the Lewis structure of each compound by showing all unshared e-pairs
b) Predict bond angles about each C, O and N atom.
c) Describe the most stable conformations with the chair conformation of cyclohexene

7. Below there is a stereorepresentation of glucose:

a) Convert the stereorepresentation on the left to a planar hexagon representation
b) Convert the stereorepresentation on the left to a chair conformation. Which substituent groups in the chair conformation are equatorial? Which axial?