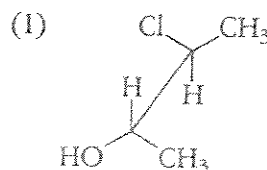
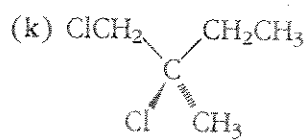
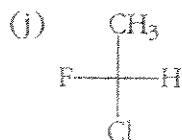
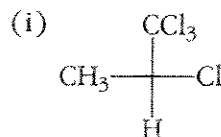
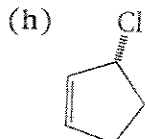
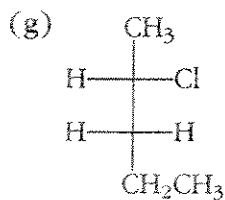
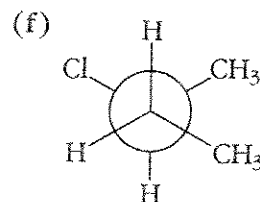
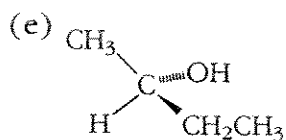
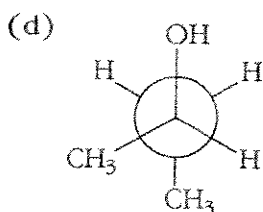
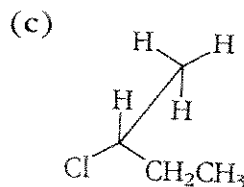
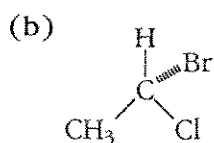
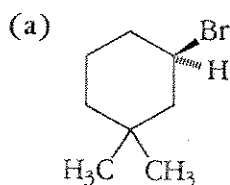


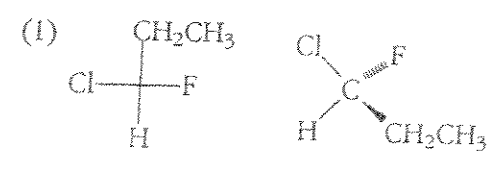
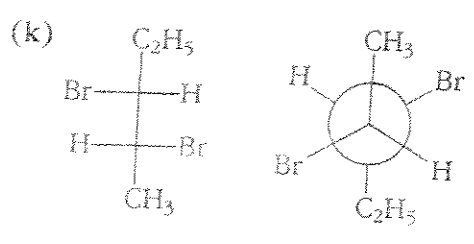
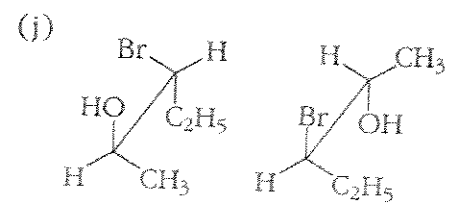
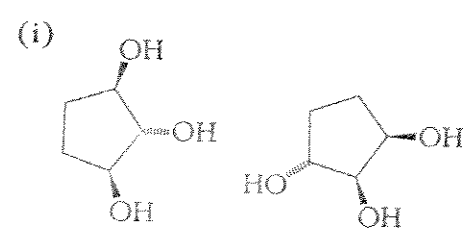
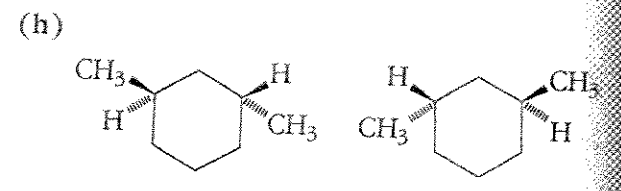
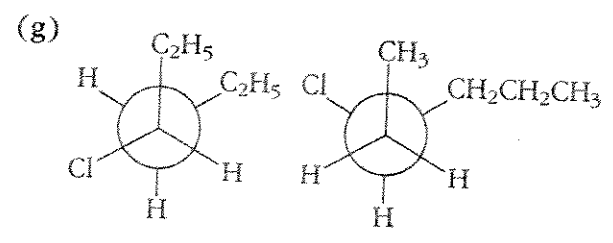
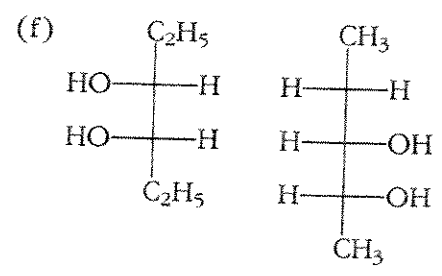
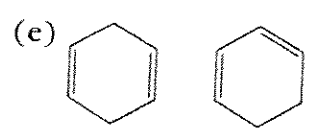
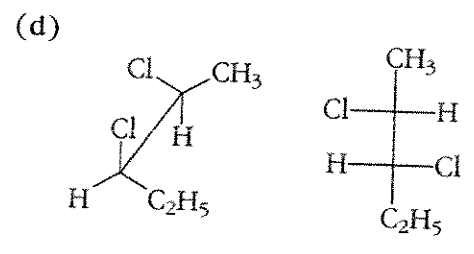
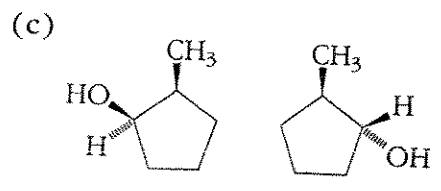
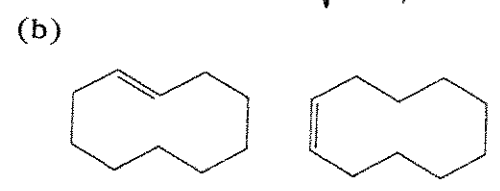
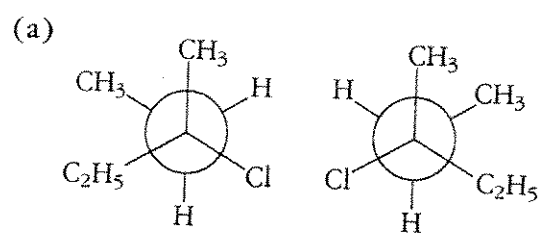
This take-home test will be weighed as an additional test. Therefore, there will be a total of six examinations during the semester. The fourth exam is on November 17<sup>th</sup>. Check the class syllabus for information on chapters and the date of the fifth exam.

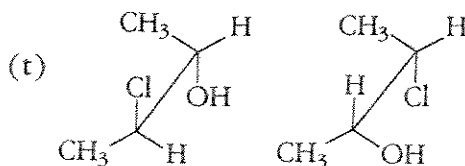
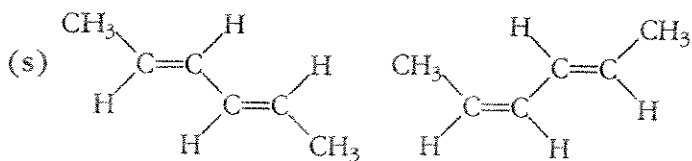
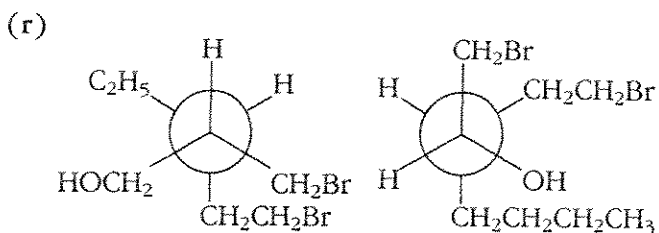
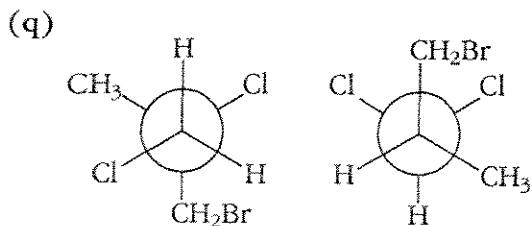
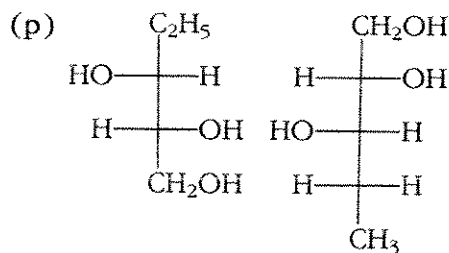
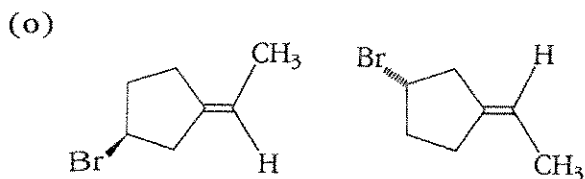
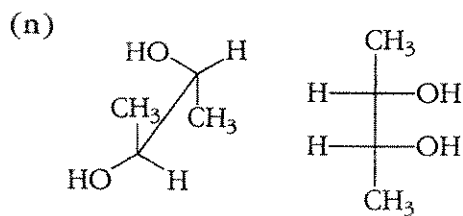
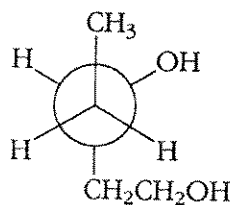
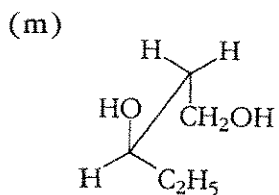
Chapter 9 take-home exam is due on Wednesday November 12<sup>th</sup> at 9:45 am.

1. Label each chiral center as either *R* or *S* in the following structures: (12 pts)



2 Describe the relationship between each pair of structural formulas as that of *constitutional isomers*, *enantiomers*, two drawings of the *same* compound (although perhaps in different conformations), *diastereomers*, or completely *different* compounds that are not isomers. (20 pts)





3. Monochlorination of (*S*)-1-chloro-2,5-dimethylhexane would yield a variety of dichloro products ( $C_8H_{16}Cl_2$ ), which could be separated by distillation. (5 pts)
- Draw the reactant. *Show all stereochemistry.*
  - Draw the products of the reaction. *Show all stereochemistry.*
  - Label all chiral centers in your drawings as *R* or *S*.
  - Name each product.
  - For each product you draw, state clearly: (1) whether or not the molecule is chiral; and (2) whether or not the product would be obtained in optically active form.
4. Answer Problem 6.3 for the chlorination of (*R*)-1-bromo-3-chloro-2-methylpropane to yield  $C_4H_7BrCl_2$  isomers. (5 pts)
5. Answer Problem 6.3 for the chlorination of (*S*)-1-chloro-2,4,4,6-tetramethylheptane to yield  $C_{11}H_{22}Cl_2$  isomers. (5 pts)
6. Explain why it is not possible to assign the configuration of a carbon atom as either *R* or *S* if the carbon atom is not chiral. (1 pt)