

Name: \_\_\_\_\_

CHEMISTRY 3311, Fall 1990

Professor Walba

Second Hour Exam

11/8/90

scores:

1)

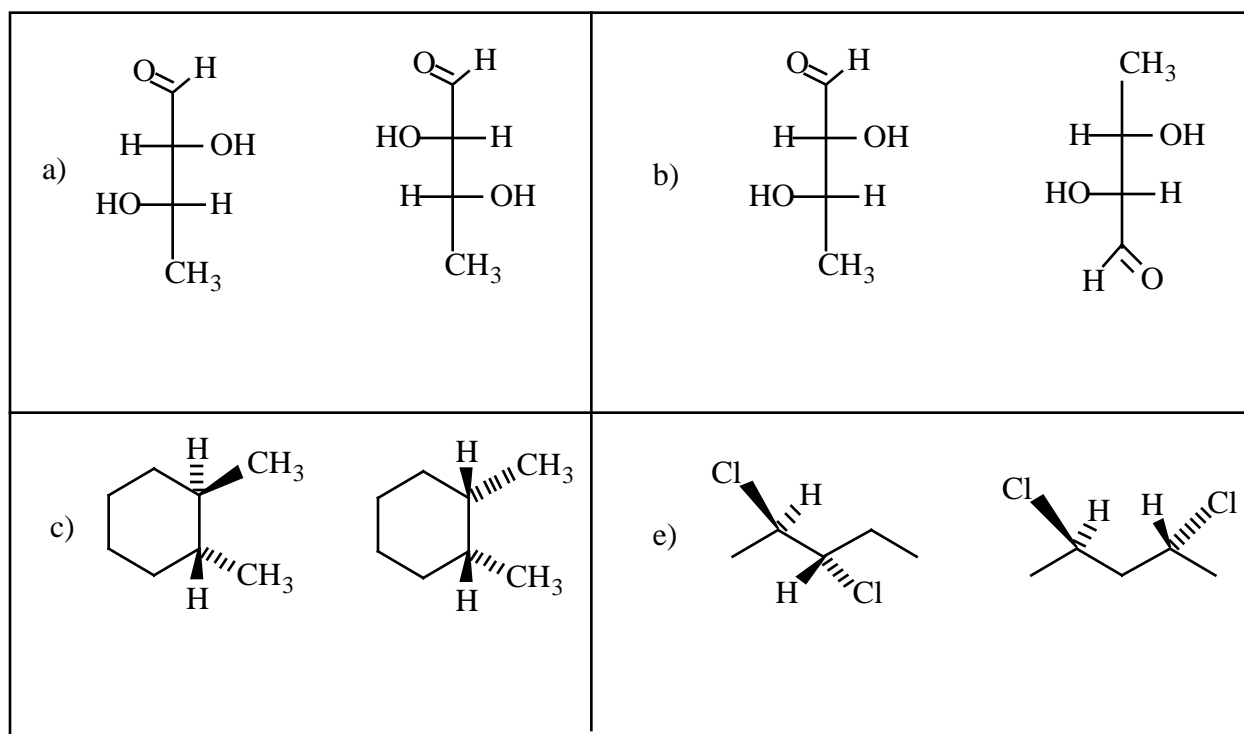
2)

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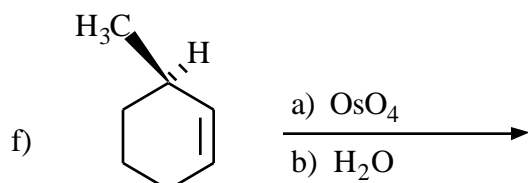
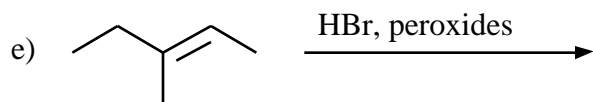
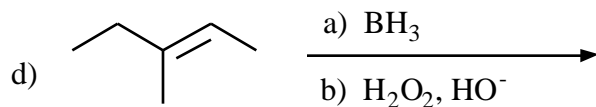
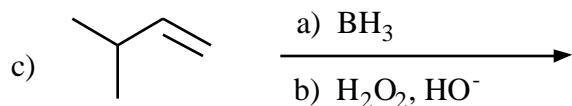
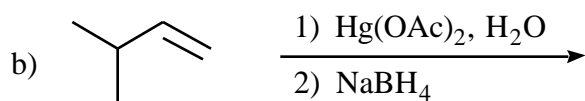
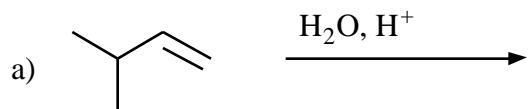
This is a closed-book "open model" exam. You may use models, but no notes or books. Please put all your answers on the test. Use the backs of the pages for scratch.

1) (12 pts) Label each of the following pairs of structures as homomers, enantiomers, diastereomers, or constitutional isomers.



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2) (38 pts) Give the major organic product (or products if more than one major product will be formed) of each of the following reactions. Show the stereochemistry of each product if there is the possibility of stereoisomerism. If a racemate is formed, show only one of the enantiomers, and label it as racemic.

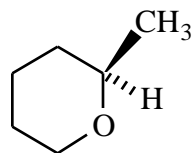


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3) (25 pts) A wedges and dashes structure of 1-methyltetrahydropyran is given below.

a) Label the stereocenter as R or S.



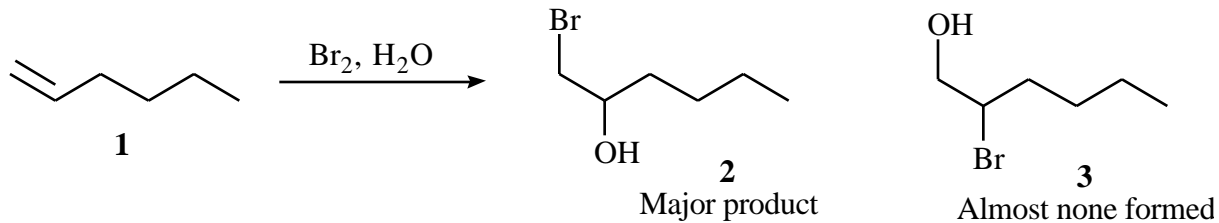
**1**

b) Carefully draw the two chair conformations of compound **1**.

c) Indicate which conformation is the lowest in energy (the major conformation).

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4) (25 pts) Treatment of 1-hexene (**1**) with bromine in water gives 1-bromo-2-hexanol (**2**) as the single major product (racemic, of course).



- a) Give an arrow-pushing mechanism for formation of compound **2** from compound **1**.
- b) Explain briefly why the major product is formed, and very little of isomer (**3**) is produced.

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4c) Referring to the reaction given below, one might think that 5-hexene-1-ol (**1**) would produce 5,6-dibromohexane-1-ol upon treatment with bromine. Instead, the major product of this reaction has only one bromine atom, and no OH group! The molecular formula of the major product is  $C_6H_{11}OBr$ . Propose a structure for this product.

