

CHEMISTRY 3311, Fall 2002
Professor Walba
Second Hour Exam, October 24

scores:

- 1)
- 2)
- 3)
- 4)

CU Honor Code Pledge: On my honor, as a University of Colorado at Boulder Student, I have neither given nor received unauthorized assistance.

Name (printed): _____

Signature: _____

Recitation TA Name: _____

Recitation day and time: _____

This is a closed-book exam. The use of notes, models, calculators, and other paraphernalia will not be allowed during the exam. Please put all your answers on the test. Use the backs of the pages for scratch.


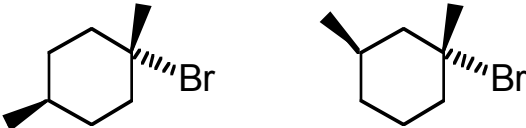
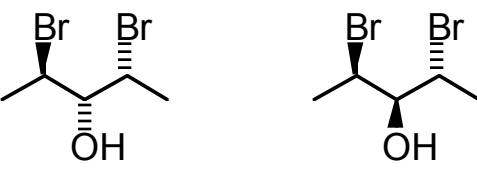
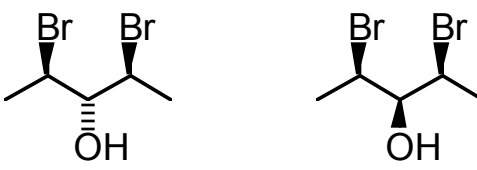


PLEASE read the questions carefully!

Partial Periodic Table

1A							8A
1 H	2A	3A	4A	5A	6A	7A	2 He
3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
							35 Br
							53 I

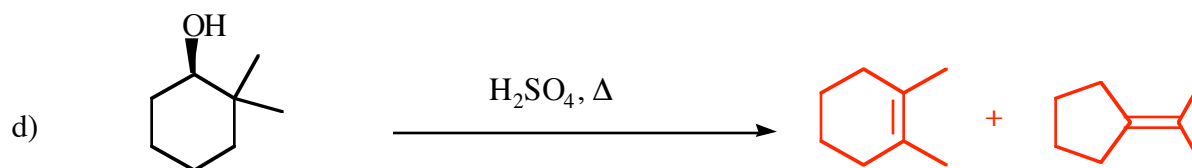
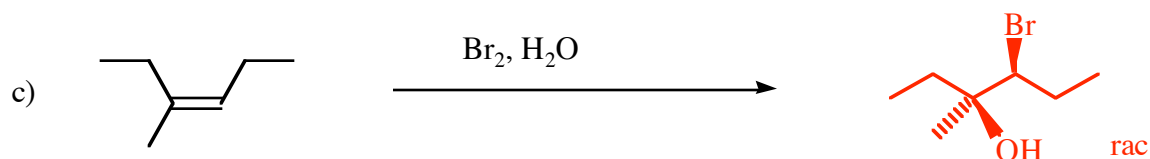
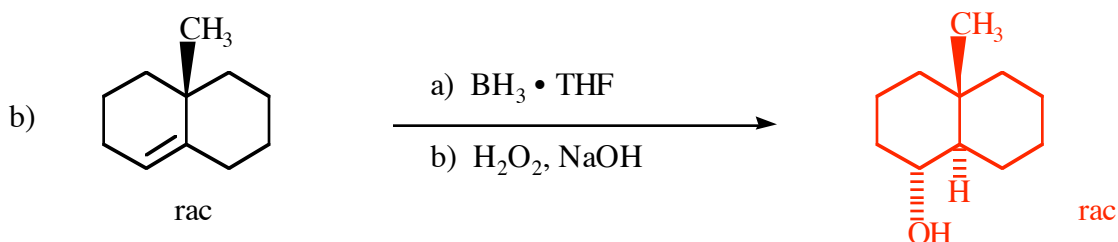
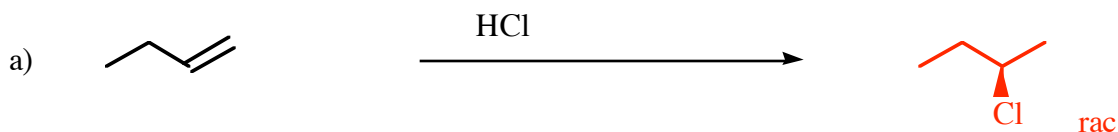
Name: _____

1 (24 pts) Label each of the following pairs of structures using one of the following terms: homomers; constitutional isomers; diastereomers; or enantiomers. Indicate FOR EACH STRUCTURE whether or not it is chiral using the check boxes (a check means the structure is chiral, no check means it's achiral).

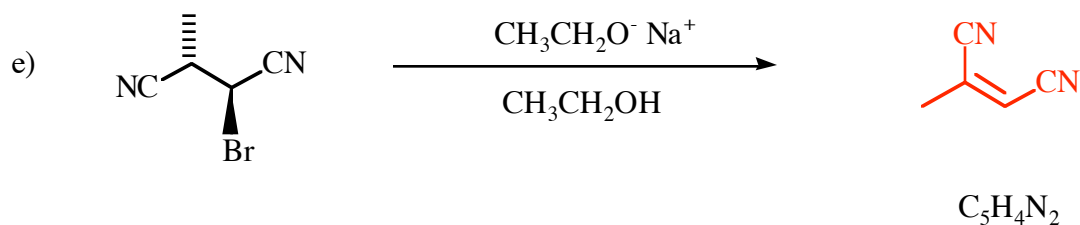
 <p>enantiomers</p> <p>chiral <input checked="" type="checkbox"/> chiral <input checked="" type="checkbox"/></p>	 <p>constitutional isomers</p> <p>chiral <input type="checkbox"/> chiral <input checked="" type="checkbox"/></p>
 <p>homomers</p> <p>chiral <input checked="" type="checkbox"/> chiral <input checked="" type="checkbox"/></p>	 <p>diastereomers</p> <p>chiral <input type="checkbox"/> chiral <input type="checkbox"/></p>
 <p>homomers</p> <p>chiral <input type="checkbox"/> chiral <input type="checkbox"/></p>	 <p>enantiomers</p> <p>chiral <input checked="" type="checkbox"/> chiral <input checked="" type="checkbox"/></p>

Name: _____

2) (25 pts) Give the single major organic product of each of the following reactions, unless you are specifically asked for more than one product. Carefully indicate the stereochemistry of the product(s) if appropriate, using wedges and dashes for chirality centers. If a racemate is formed, show only one enantiomer, and label it "rac."

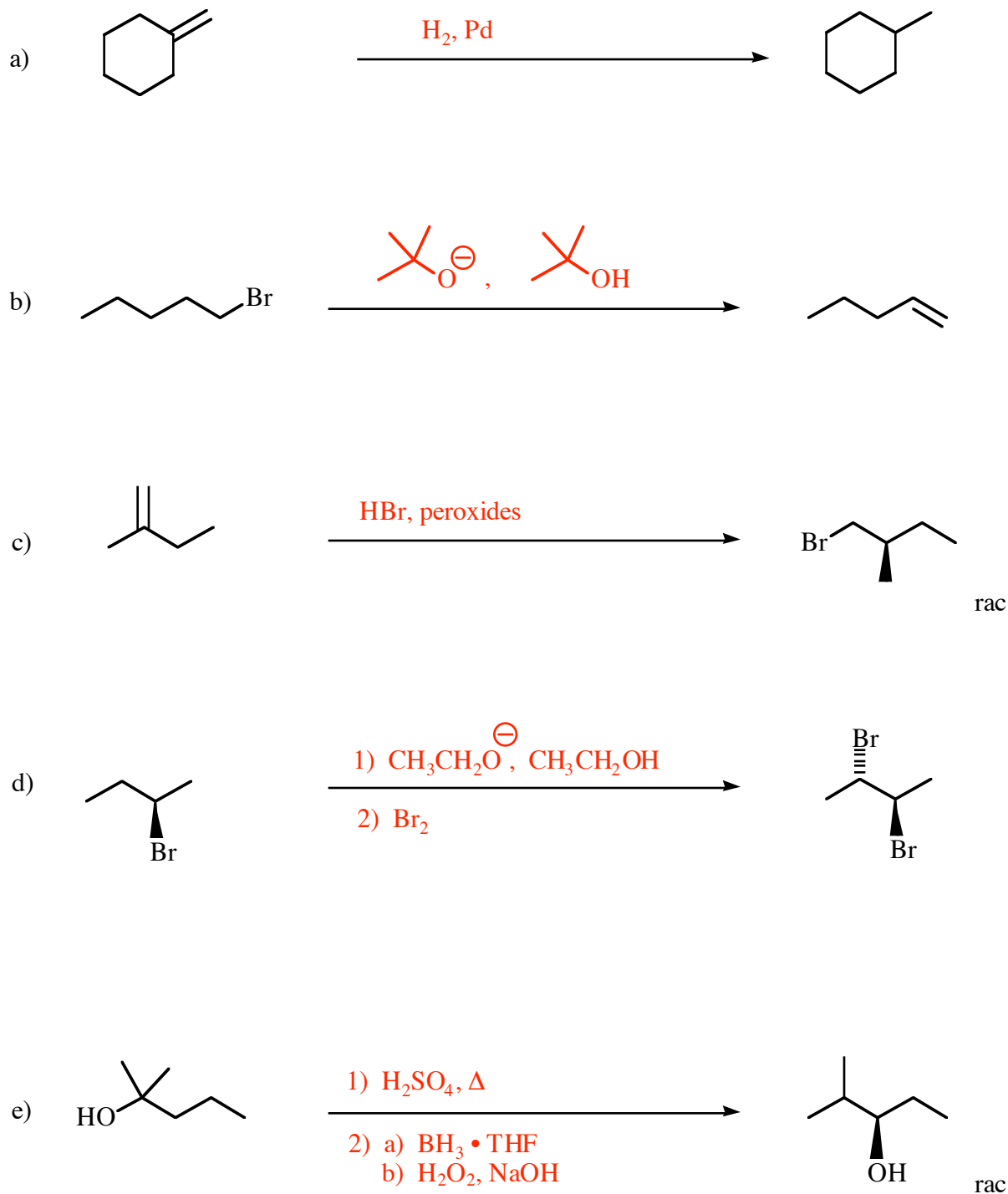


Give 2 major products for reaction d.



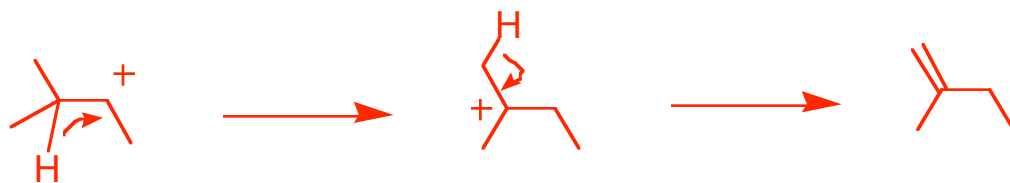
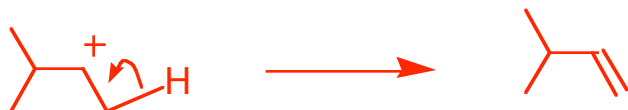
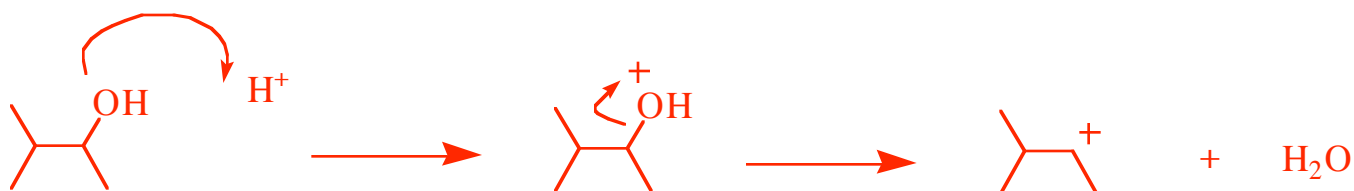
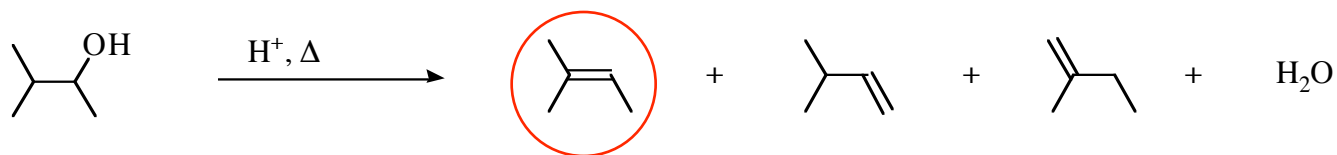
Name: _____

3) (25 pts) Propose reagents for accomplishing the following transformations. NOTE: more than one step may be required! Try to make your synthesis efficient (i.e. the desired product should be the major product). You must use the starting material given,; you may use any other reagents you need.



Name: _____

4) (26 pts) a) Propose an arrow-pushing mechanism for the formation of all three products of the following reaction. Carefully show all of the intermediates in your mechanism. You MUST show correct formal charges, but please do not show lone pairs.

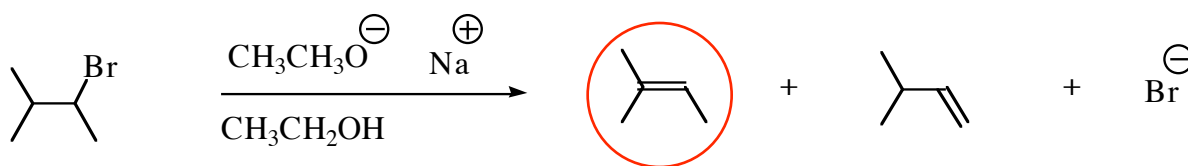


b) Circle the major product formed in the reaction in 4a.

Name: _____

4 – continued

c) Circle the major product of the following reaction.



d) Give the name of the mechanism by which the products in part 4c are formed:

E2

e) Complete the energy diagram describing the reaction shown in part 4c. Do not put any structures on the energy diagram, but be very careful to show clearly the relative energy of all transition states and products in the diagram (hint: BOTH products are more stable than the starting materials).

