

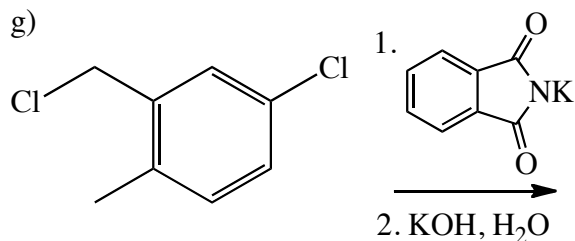
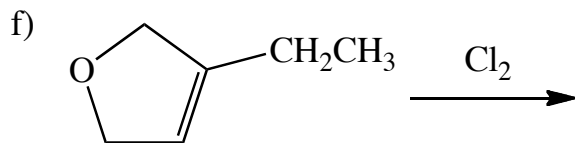
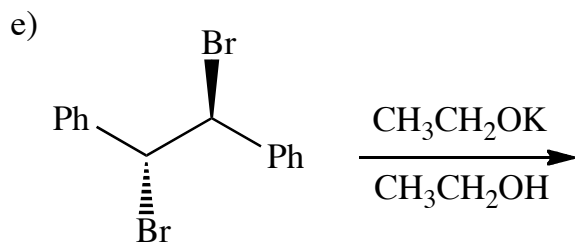
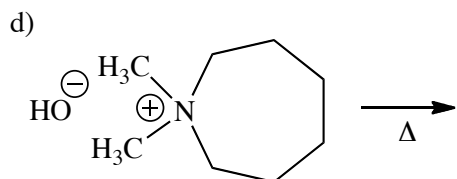
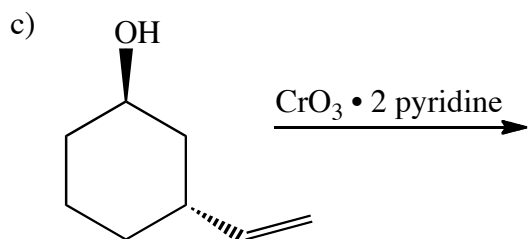
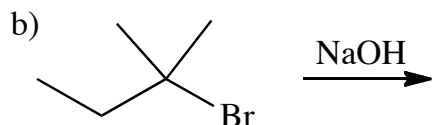
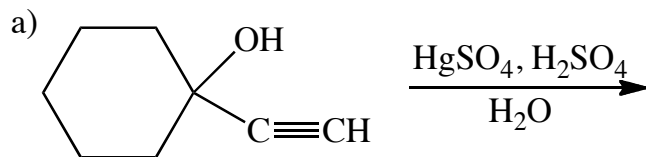
Name: _____

1

Chemistry 250A -- Exam #3 -- November 13, 2009

Show non-zero formal charges for all structures. There are 5 pages.

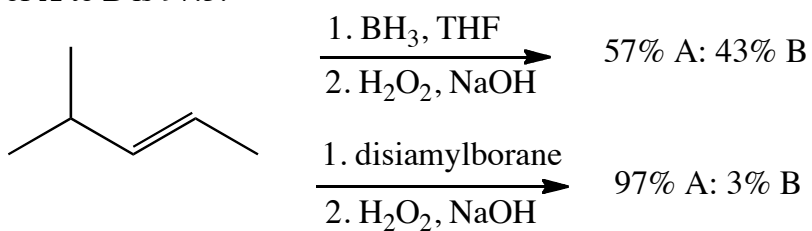
1. (21 pts) Complete the following reactions. (Hint: They all react!) Clearly show the stereochemistry of the products where appropriate. Label major and minor products where appropriate.



Name: _____

2

2. (14 pts) When the alkene shown below is treated with borane in THF, followed by H_2O_2 and NaOH , two products, **A** and **B** are formed in at 57:43 ratio. When disiamylborane is used instead, the ratio of **A** to **B** is 97:3.



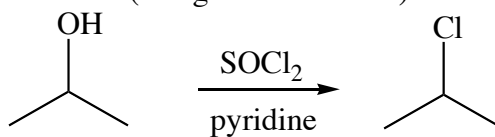
a) Provide names for both the alkene shown above and for H_2O_2 .

b) Draw the structure of disiamylborane and THF.

c) Draw the structures of **A** and **B**. (Clearly indicate which is which.)

d) Clearly explain the reason for the differences in the percentages.

3. (9 pts) Write a detailed mechanism (using curved arrows) for the following reaction.

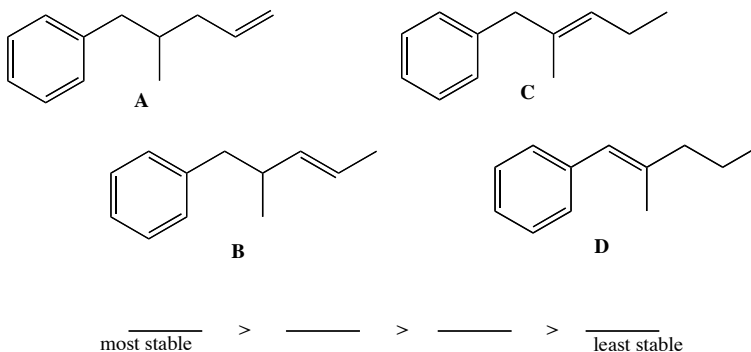


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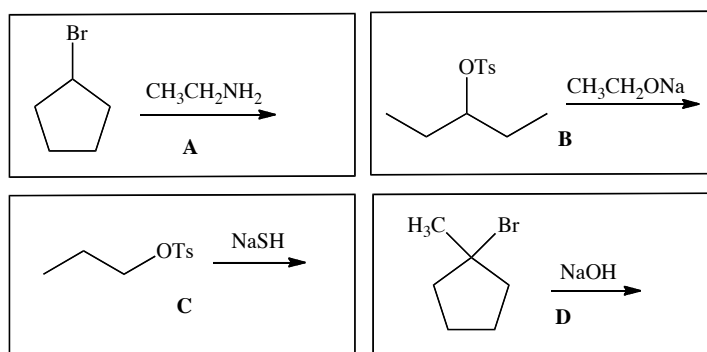
3

4. (10 pts) Rank the following compounds according to the indicated property:

a) stability

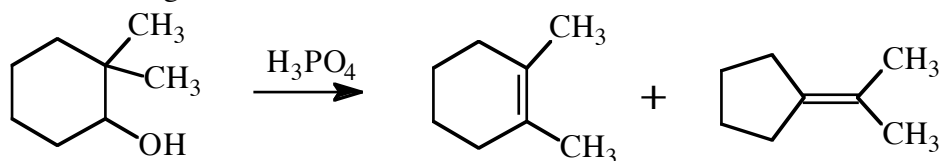


b) Ratio of substitution/elimination



most substitution
>
>
>
>
most elimination

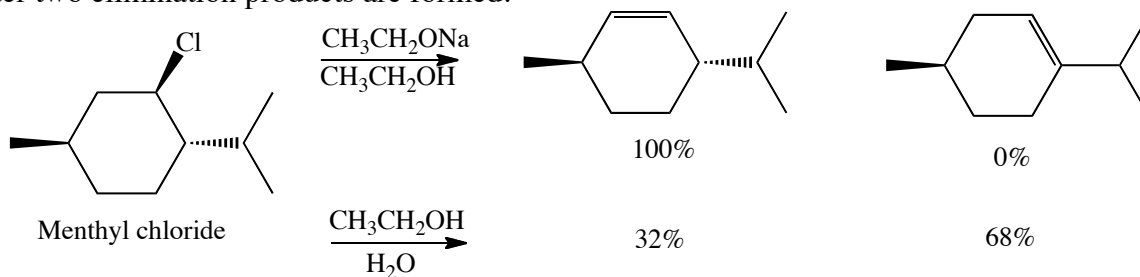
5. (10 pts) Write a detailed mechanism (using curved arrows) to account for the products observed in the following reaction.



Name: _____

4

6. (16 pts) When menthyl chloride is treated with sodium ethoxide in ethanol, only one elimination product is produced. However when menthyl chloride is treated with ethanol in water two elimination products are formed.



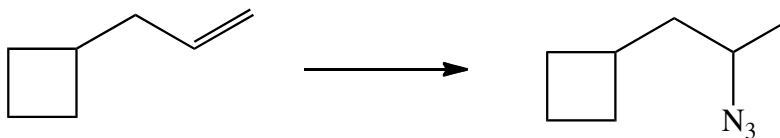
a) Draw detailed mechanisms (using curved arrows) for both of these reactions showing the formation of the products. Then clearly explain why only one product is obtained under the first set of conditions, and why a mixture favoring the other product is obtained under the second set of conditions.

Name: _____

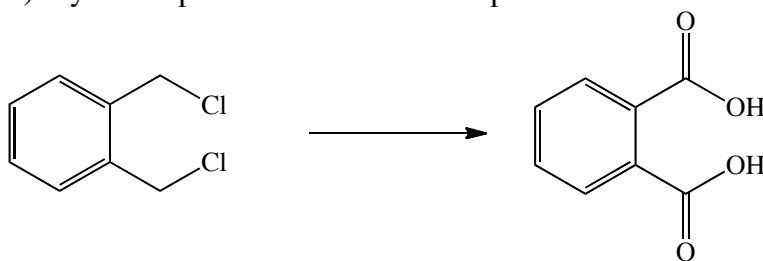
5

7. (20 pts) List the reagents necessary to accomplish the following transformations. In addition to the indicated starting material, you may use any molecules of 3 carbons or less as well as any standard reagents. (For multistep transformations show the major organic product for each step. You do **not** need to show the mechanisms.)

a)



b) Extra credit (2 pts) if you can provide the name of the product.



c)

