Third Exam

Chemistry 3331

November 30, 2012

Name (PRINT) _____
Last, First

Signature _____

ID # _____

PLEASE CIRCLE CLASS TIME

10:00 AM

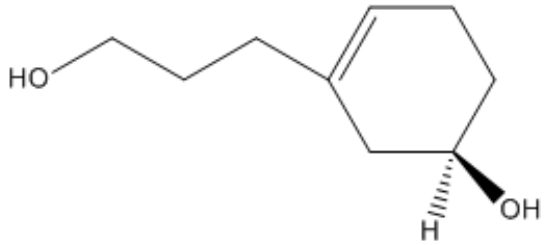
1:00 PM

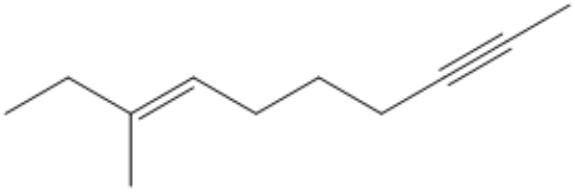
Page #	Score	
1. 16 pt		
2. 24 pt		
3. 18 pt		
4. 18 pt		
5. 12 pt		
6. 12 pt		
7. 9 pt		

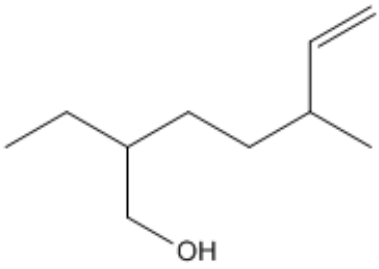
Total: _____

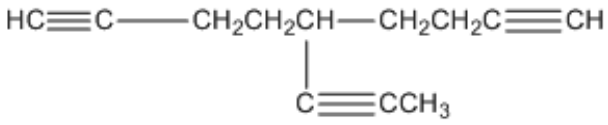
NOTE: Present your ID when you return the exam booklet

A. Nomenclature: (16 points)
Give an acceptable IUPAC name for each of the following compounds. Be sure to indicate the **stereochemistry** where appropriate.

1. 

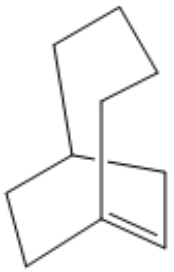
2. 

3. 

4. 

B. FACTS: Total = 24 points

1. Label the alkenes as stable (S) or unstable (U). (6 points)



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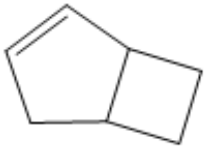

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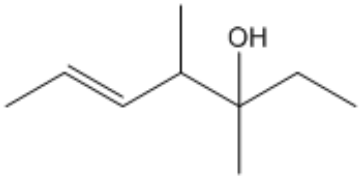
2. Place the alcohols in order of increasing reactivity in an acid catalyzed dehydration. (1=least reactive, 3=most reactive) (6 points)



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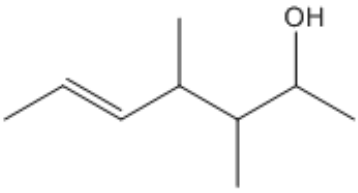

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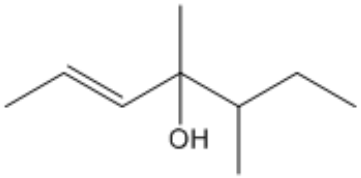

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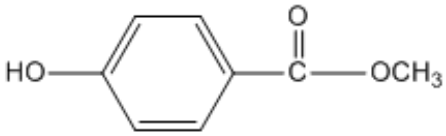
3. Place the compounds in order of increasing acidity. (1=weakest acid, 3=strongest acid) (6 points)



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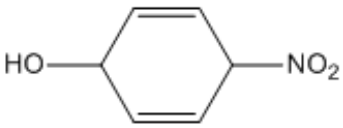

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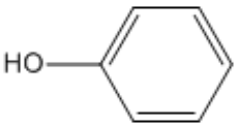

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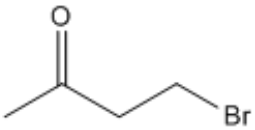
4. Place a "Y" in the box below any halide that will produce a useful Grignard reagent. Place an "N" in the box below any that will not. (6 points)



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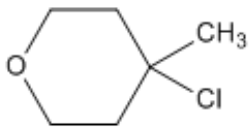

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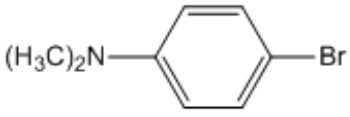

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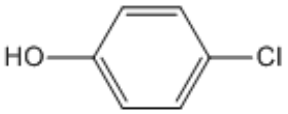

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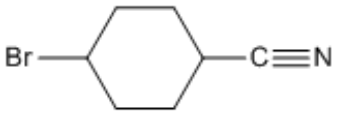

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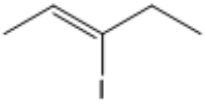

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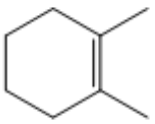
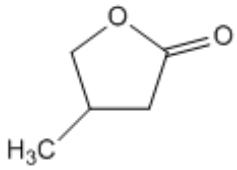
C. Reactions: Total= 36 points, 6 points each

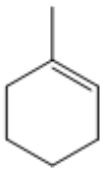
Please provide the major product in the answer box. Be sure your drawing indicates stereochemistry if applicable. Partial credit is awarded only when intermediate products in multi-step reaction are shown below the reaction.

1. 

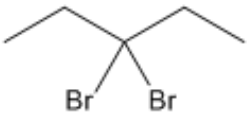
1. O_3
2. $(CH_3)_2S$
3. H_2, Ra-Ni
4. H_2SO_4/ Heat

2. 

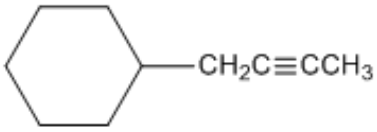
1. $LiAlH_4$, then $H_3O^{\oplus}$
2. PCC / CH_2Cl_2
3. $H_3CC{\equiv}C:^{\ominus}\ Na^{\oplus}$ then $H_3O^{\oplus}$

3. 

1. HBr, peroxide
2. Mg/ Et_2O
3. $H_3C-\overset{O}{\overset{\|}{C}}Cl$, then $H_3O^{\oplus}$

4. 

1. $NaNH_2$ / 150 C, then $H_3O^{\oplus}$
2. $Sia_2BH_{\ominus}$
3. H_2O_2/ OH

5. 

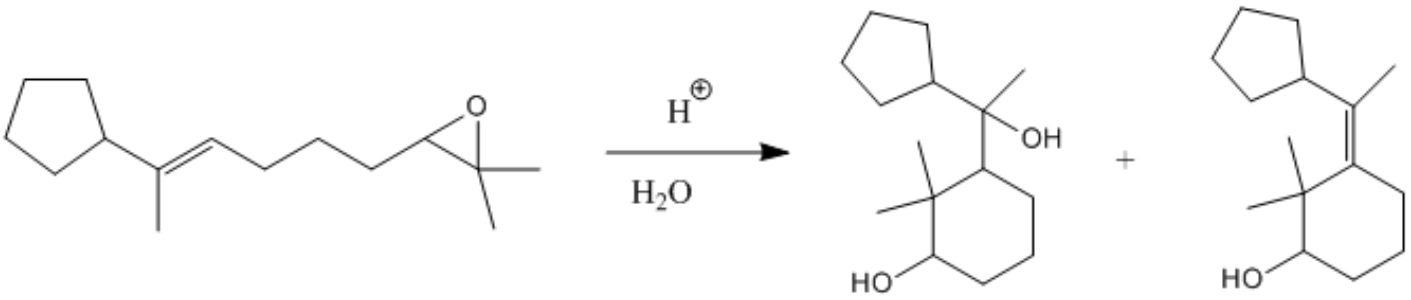
1. Na / NH_3
2. MCPBA

6. 

1. OsO_4 / H_2O_2 / OH
2. CrO_3 / H_2SO_4 / H_2O / acetone / 0C
3. $NaBH_4$ / EtOH

D. Mechanisms: (12 points)

The reaction below produces a mixture of products. Provide a clear mechanism to explain the formation of each product. Use curved arrows to indicate "electron flow". Remember to show only one step at a time. **Show all intermediate and all formal charges. Do not shwo transition states.**



E. Synthesis: (12 points)
Synthesize the molecule below from cyclohexane, any alkenes, or alcohols of **three** cabons or less, and any inorganic reagents. (Please do not include mechanisms)