Third Exam

Chemistry 3331

November 16, 2007

Name (PRINT) _____
Last, First

Signature _____

ID# _____

Please circle class time.

10:00 AM

1:00 PM

4:00 PM

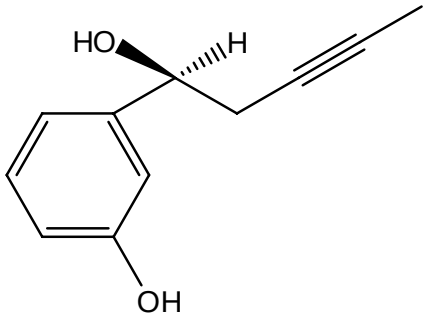
Page #	Score	
1. 16 pts.	____	____
2. 24 pts.	____	____
3. 18 pts.	____	____
4. 18 pts.	____	____
5. 12 pts.	____	____
6. 12 pts.		

TOTAL _____

Note: Present your student 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.



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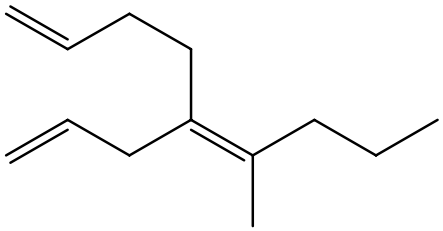

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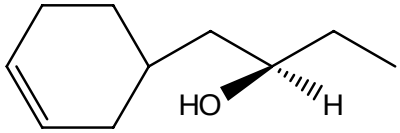

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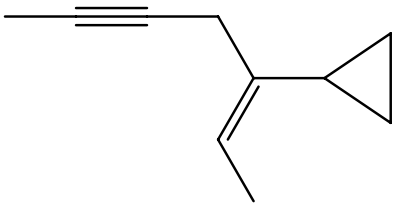
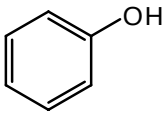


B. Facts: (24 points total)

1. Place the following compounds in order of increasing acidity. (1 = least acidic, 3 = most acidic) (6 pts.)



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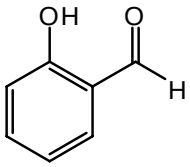

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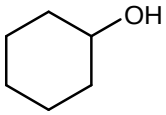

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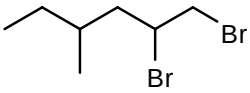
2. Place an "X" in the box below any dihalide that will not yield the terminal alkyne as the major product on treatment with $NaNH_2$ at 150 °C. (6 pts.)



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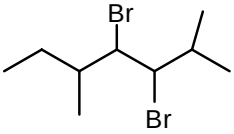

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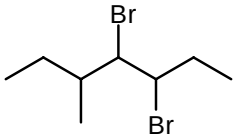

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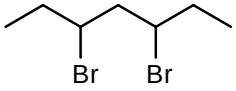

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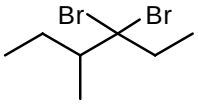

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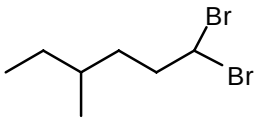

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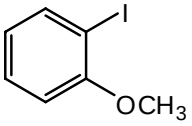
3. Place an "X" in the box below any halide that will not produce a useful Grignard reagent on treatment with Mg in ether. (6 pts.)



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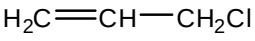

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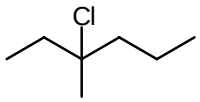

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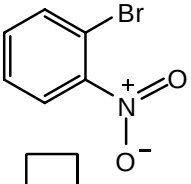

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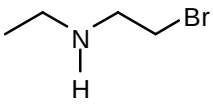

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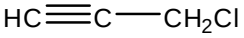

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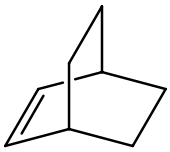
4. Label each alkene as stable (**S**) or unstable (**U**). (6 pts.)



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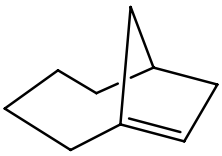

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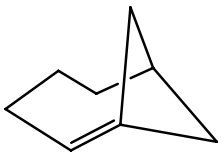

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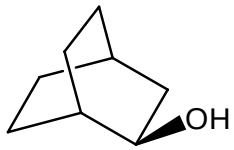
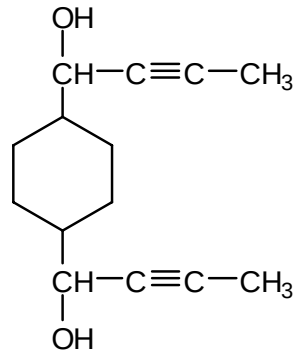
C. Reactions: Total = 36 points, 6 points each
Please provide the starting material, reagents or major product in the answer box. Be sure your drawing indicates **stereochemistry** if applicable. Partial credit is awarded only when intermediate products in a multi-step reaction are shown below the reaction.

1.





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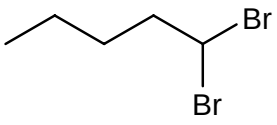
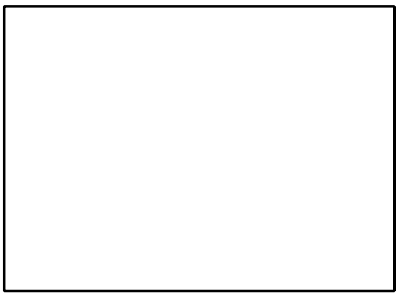


1. KOH / 200°C
2. Na / NH_3
3. CH_2N_2 / heat



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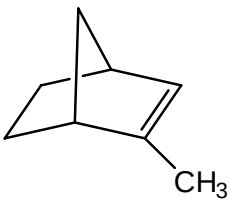
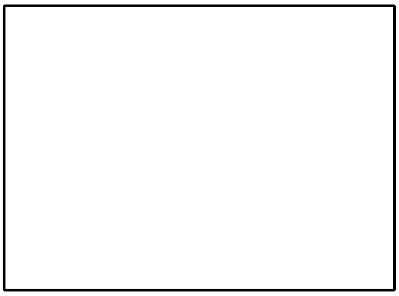


1. BH_3 THF
2. H_2O_2 / OH^-
3. PBr_3



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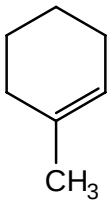
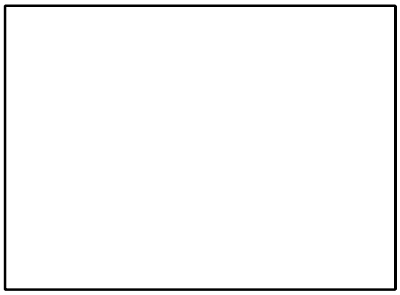
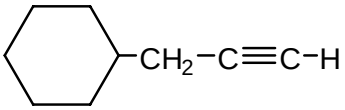


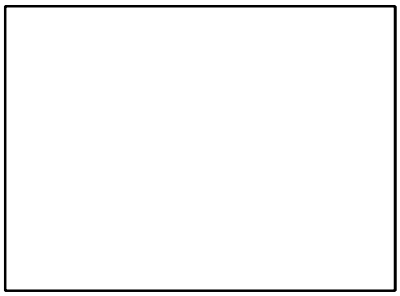
1. $KMnO_4$, warm, conc.
2. $NaBH_4$, EtOH



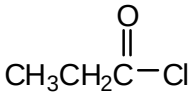
5.



1. Sia_2BH
2. H_2O_2 / OH^-
3.  then H_3O^+
4. $Na_2Cr_2O_7/H_2SO_4/H_2O$



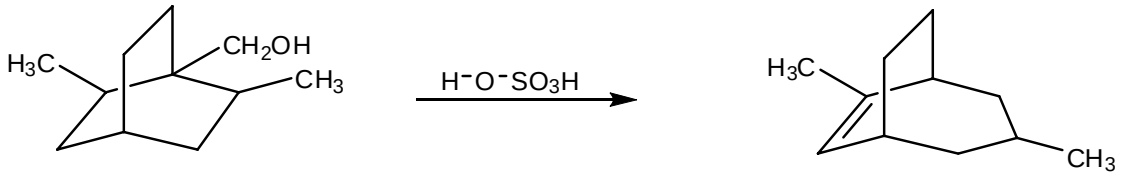
6.



1. CH_3MgBr (XS)
2. H_2O
3. HCl, ether, 0°C

D. Mechanisms: (12 points)

Provide a clear mechanism to explain the formation of the product shown. Use curved arrows to indicate "electron flow". Remember to show only one step at a time. **Show all intermediates and all formal charges. Do not show transition states.**



E. Synthesis: 12 Points

Synthesize the molecule below using any of the following reagents: alkanes or alkenes of **three carbons or less**, cyclohexane, any inorganic reagents, any oxidizing or reducing agents, and any peroxyacids.