Third Exam

Chemistry 3331

November 20, 2009

Name:_____

Signature:_____

ID#_____

PLEASE CIRCLE CLASS TIME!

10:00 AM
1:00 PM
4:00 PM

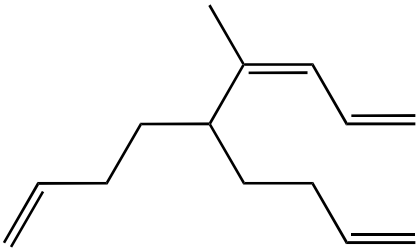
Page #	Score
1. 16 pt	
2. 24 pt	
3. 18 pt	
4. 18 pt	
5. 12 pt	
6 12 pt	

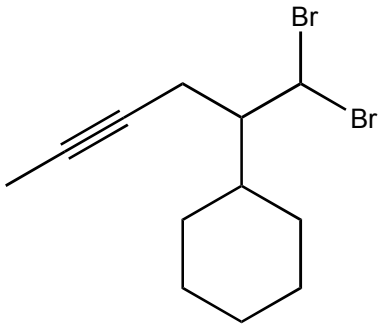
Total:_____

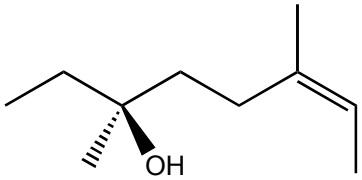
NOTE: Present your ID when you return the exam booklet

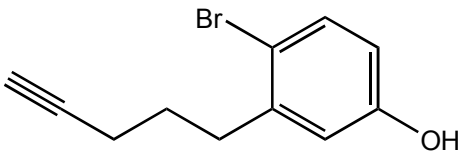
A. Nomenclature: (16 Points)

Give an acceptable name for each of the following compounds. Be sure to note stereochemistry where appropriate.









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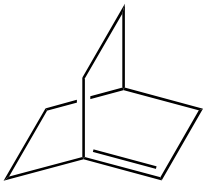
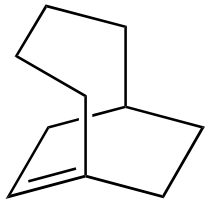
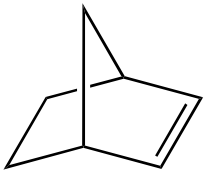
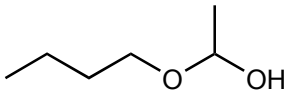
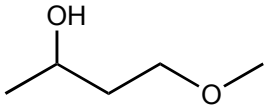
B. Facts: Total = 24 points

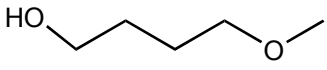
1. Label the alkenes as stable (s) or unstable (u). 6 points

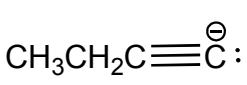
2. Place the alcohols below in order of increasing reactivity by acid catalyzed dehydration.
(1 = least reactive, 3=most reactive) 6 points

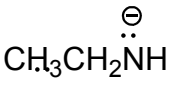


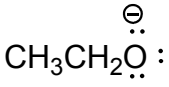




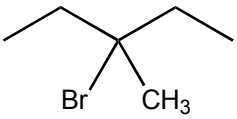
3. Place the anions in order of increasing basicity. (1 = weakest base, 3 = strongest) 6 points

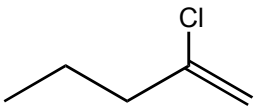


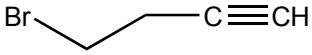


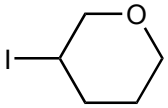


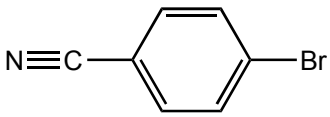
4. Place a "Y" in the box below ana halide that will not produce a useful Grignard reagent. Place an "N" in the box below any that will not. 6 points

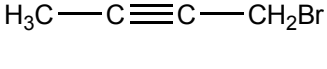












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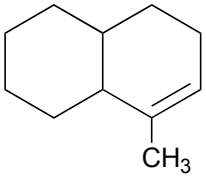
C. Reactions: Total = 36 points, 6 points each

Please provide the major product or the reagents 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.

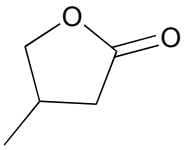
1.



1. $KMnO_4$ (warm, conc.)
2. $NaBH_4$ / EtOH

→

2.

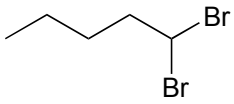


1. $LiAL_4$, then H_3O^+
2. PCC / CH_2Cl_2

→

3. CH_3CC^- Na^+ (2 eq.)
4. Then H_3O^+

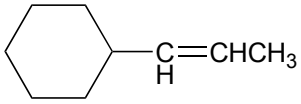
3.



1. KOH / 200°C\
2. H_2, Pd($BaSO_4$), quinoline

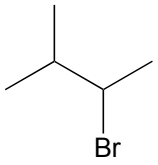
→

3. m-chloroperbenzoic acid

4. 

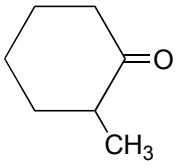
1. Br_2/ CH_2CL_2
2. $NaNH_2$ / 150C, then H_3O^+

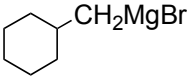
3. Sia_2BH
4. H_2O_2/OH^-

5. 

1. $(CH_3CH_2)_3N$
2. Br_2/ H_2O

3. $Na_2Cr_2O_7$ / H_2SO_4 / H_2O

6. 

1.  , then H_3O^+

2. H_2SO_4 / heat

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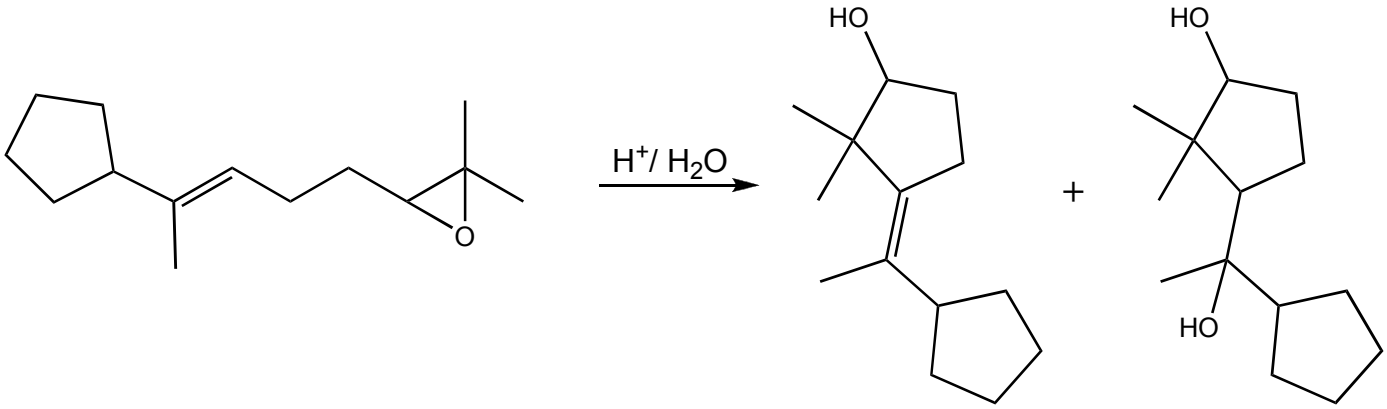
D. Mechanism (12 points)
Provide a clear mechanism to explain the formation of the product. Use curved arrows to indicate 'electron flow'. Remember to show only one step at a time. **Show all intermediates and all formal charges. When more than one resonance contributor may be drawn, be sure to draw the most stable contributor.**



E. Synthesis (12 points)
Synthesize the molecule below from alkanes or alkenes of **three** carbons or less and any inorganic reagents. (Please do not include mechanisms!)