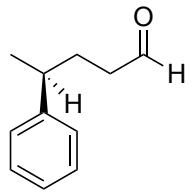
bjm

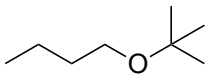
CHEM 2521 Exam 1 March 4, 2026 Name Key

1. (14 points) Provide the name or structure of each of the molecules shown below (14 points)

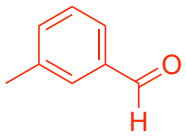


(*S*)-4-phenylpentanal

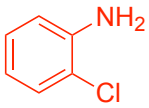
note stereochemistry



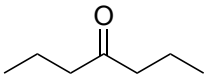
1-(*tert*-butoxy)butane
or
tert-butyl butyl ether



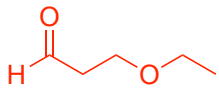
meta-methylbenzaldehyde



ortho-chloroaniline

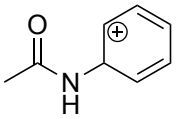


4-heptanone
or
dipropyl ketone

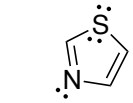


3-ethoxypropanal

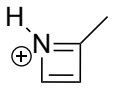
2. (10 points) Assuming the compounds below are flat and atoms that have a lone pair (drawn or not drawn) are sp^2 or sp hybridized, indicate whether the compounds are aromatic, antiaromatic, or neither.



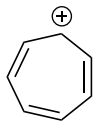
aromatic
antiaromatic
neither



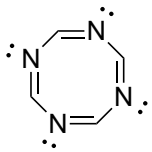
aromatic
antiaromatic
neither



aromatic
antiaromatic
neither

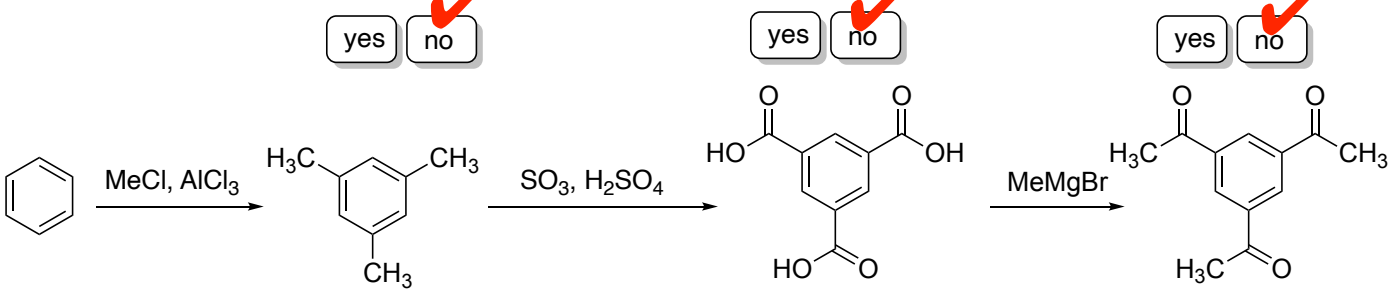


aromatic
antiaromatic
neither



aromatic
antiaromatic
neither

3. (12 pts) Indicate with a checkmark (✔) whether the 6 reactions below will proceed as written.



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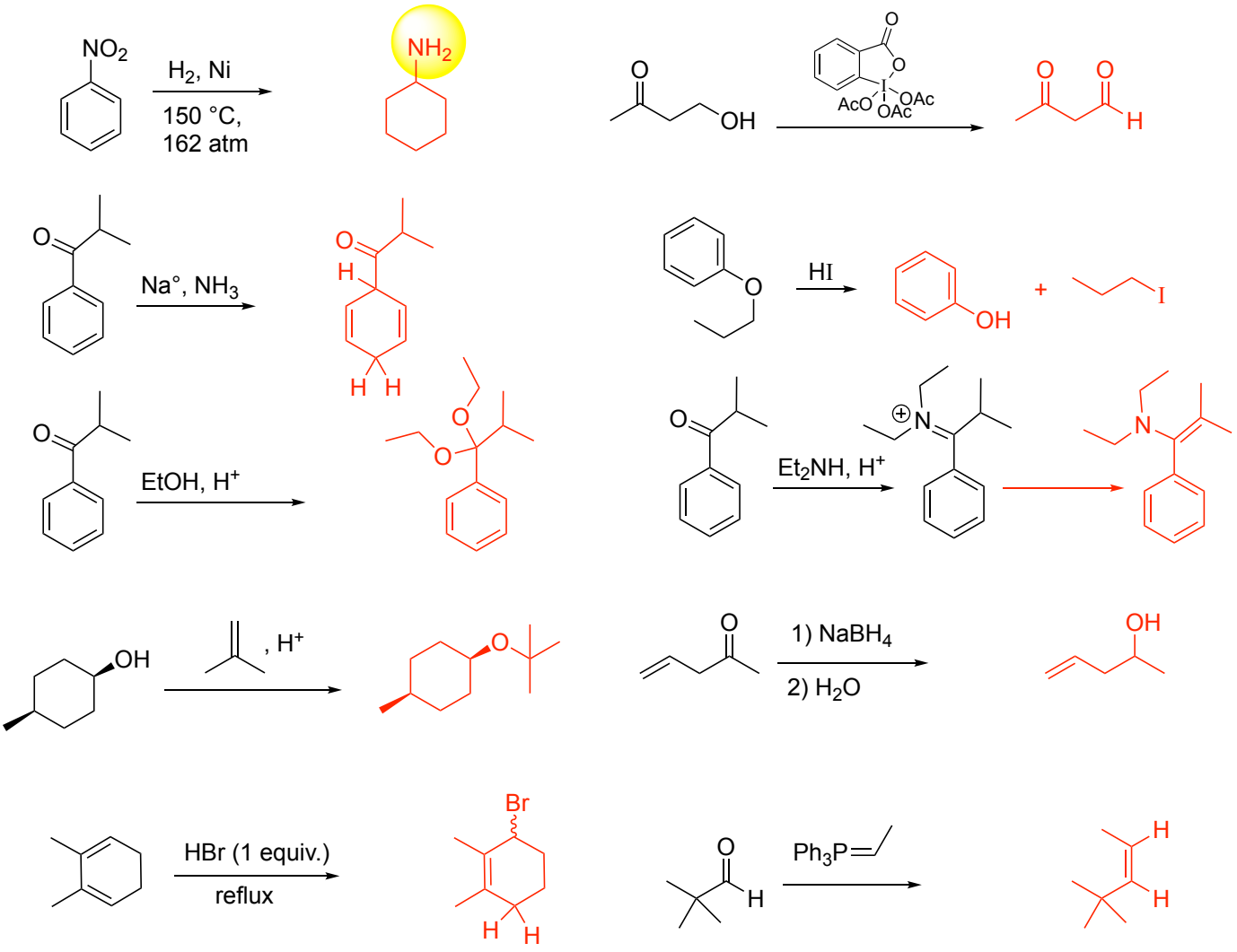
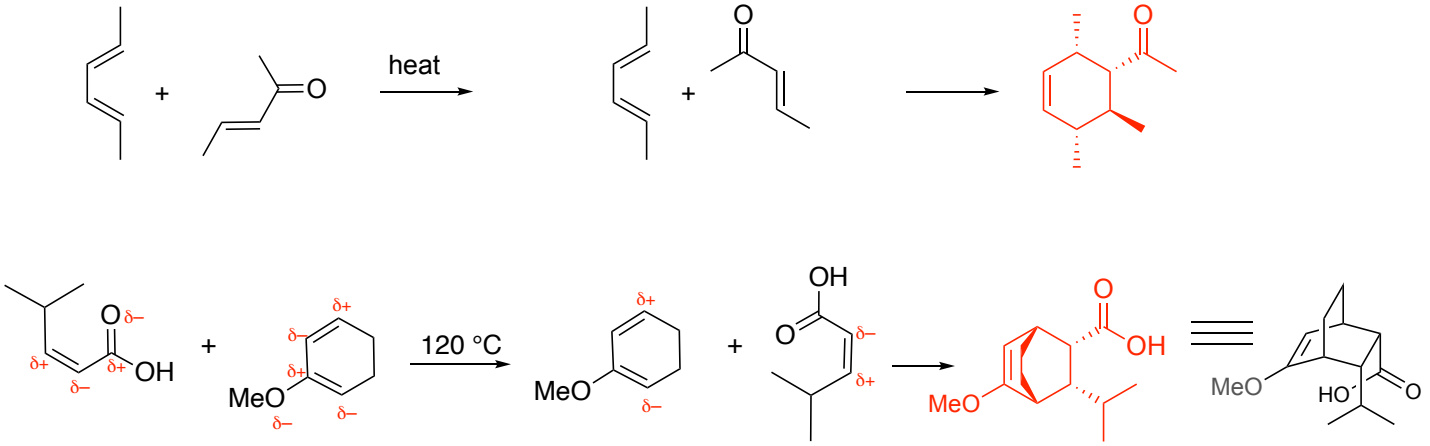
4. (40 points) Provide the major product for each of the following reactions. Be careful to account for the regiochemistry and stereochemistry in each transformation.



5. (8 points) Provide the major product for the following Diels-Alder reactions. Relative stereochemistry and regiochemistry is very important.



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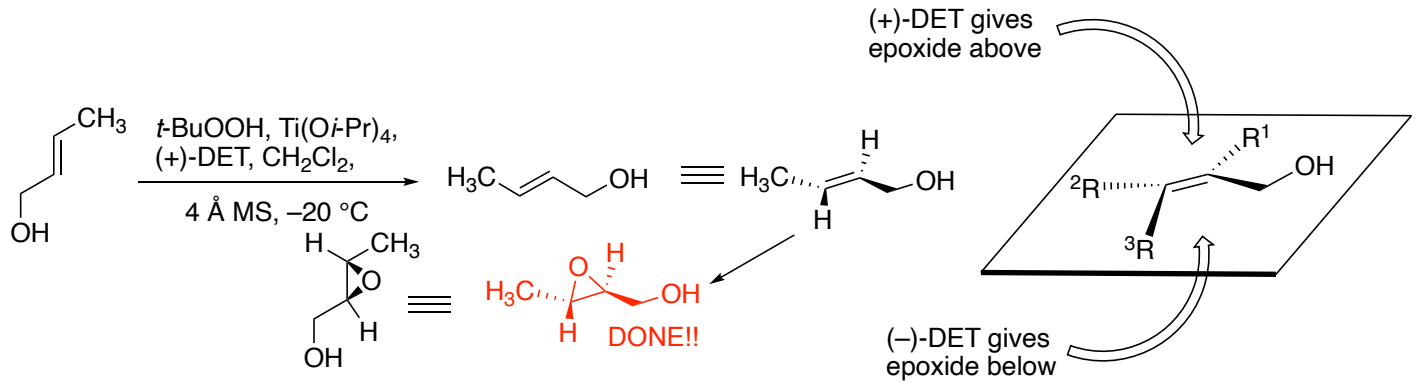
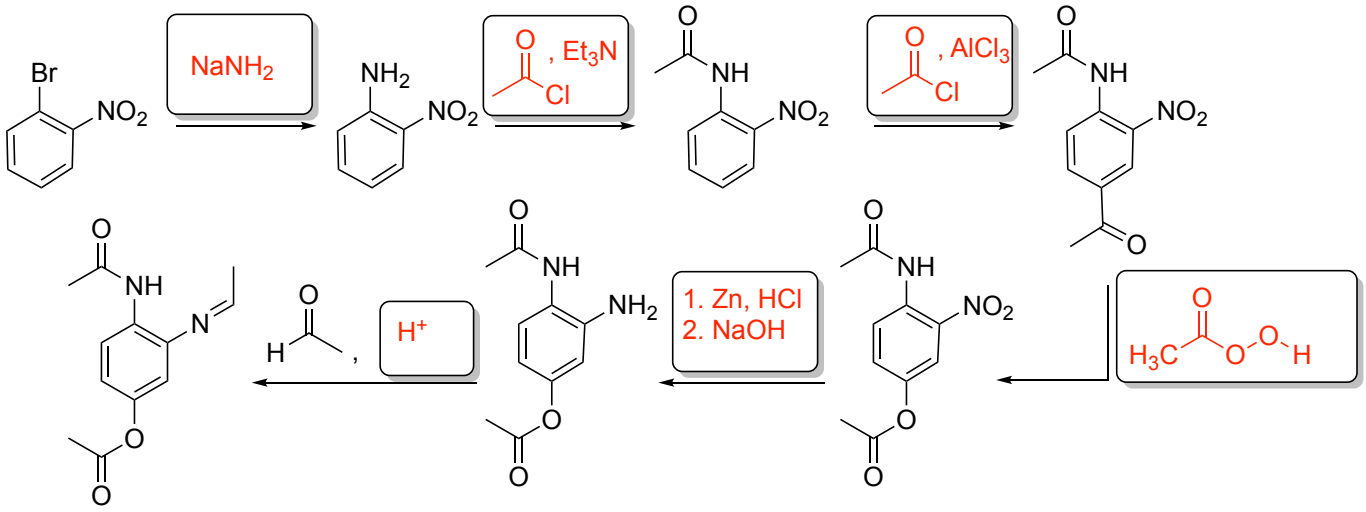
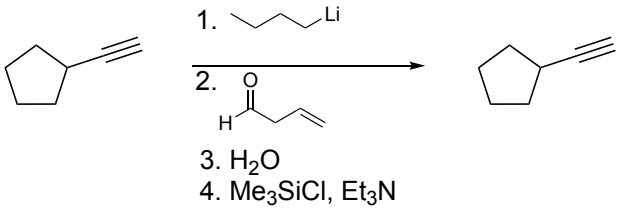
6. (4 points) Use the diagram below to give the product of the the following reaction.

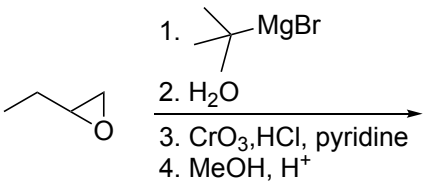


7. (12 points) Provide reagents for the following reactions.



8. (12 points) Provide the products for the following multistep reactions. Show intermediate products for partial credit. You will likely find your use of arrows (although I will not be grading them) especially helpful to get the most points.





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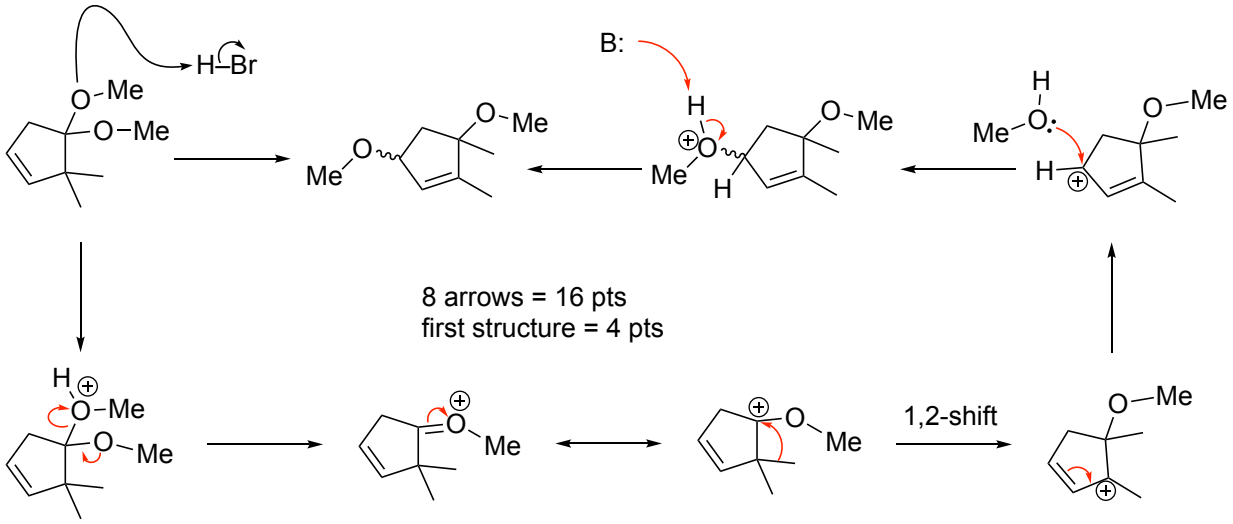
9. (20 points) Complete the mechanism below by first drawing the product of the first two arrows then subsequent intermediates, resonance structures, and curly arrows.



10. (9 points) Provide a retrosynthetic analysis for the following molecule. You may use any source of carbon that contains 6 or less carbons. To receive full credit, you must work backwards, and you must include reagents.