

Section: A-Hudson B-Katz Name _____

Question 1. Circle the weakest acid from the list below.

HI CH₃OH CH₃NH₂ CH₃CH₃ H₃PO₄

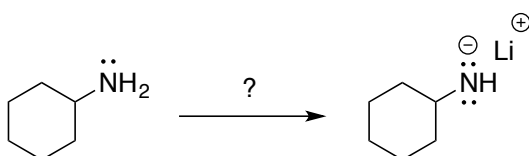
Question 2. Circle the strongest nucleophile from the list below.

HO⁻ *t*BuO⁻ *i*PrO⁻ F⁻ H₂O

Question 3. Circle the compound with the least angle strain from the list below.

cyclobutane cyclopentane cyclooctane cyclohexane cycloheptane

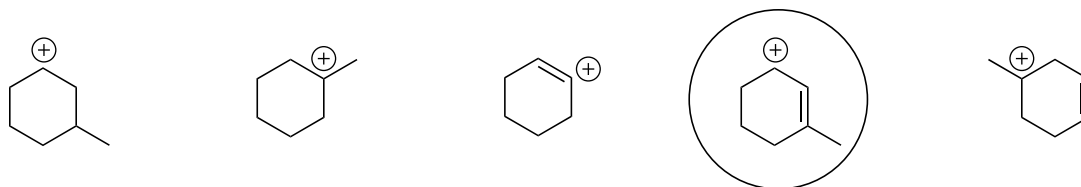
Question 4. Consider the following reaction:



From the list below, circle the best reagent to cause the above transformation:



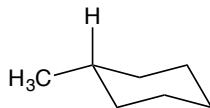
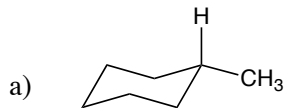
Question 5. Circle the most stable carbocation.



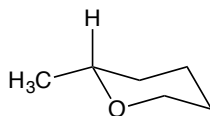
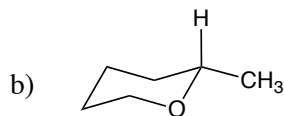
Question 6. Draw *trans*-1-chloro-4-iodocyclohexane in its most stable chair form.



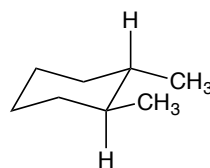
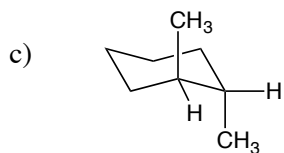
Question 7. Label each of the following pairs of molecules as **identical**, **structural isomers**, **conformational isomers**, **enantiomers** or **diastereomers** (*Note: if the 2 compounds can be interconverted via allowed bond rotation(s), then you should pick "conformational isomer"*)



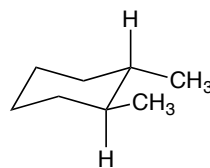
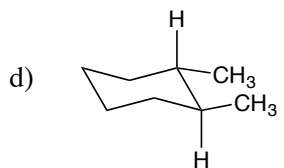
Answer:

identical

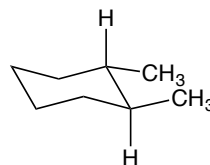
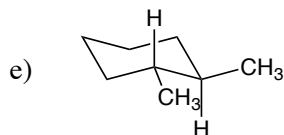
Answer:

enantiomers

Answer:

conformational isomers

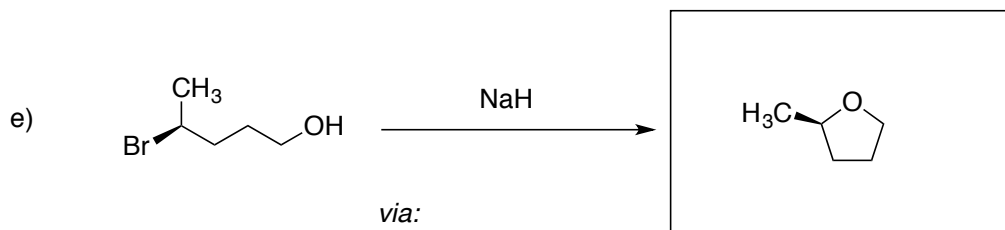
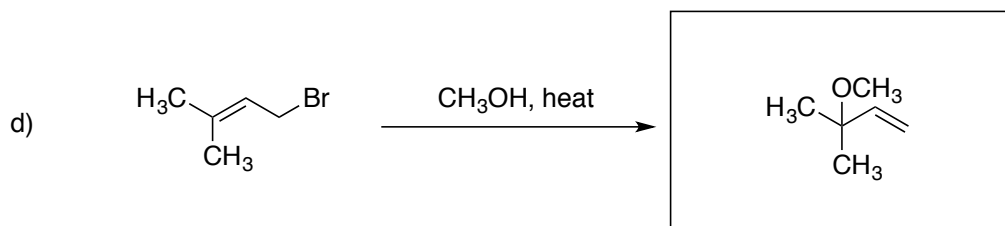
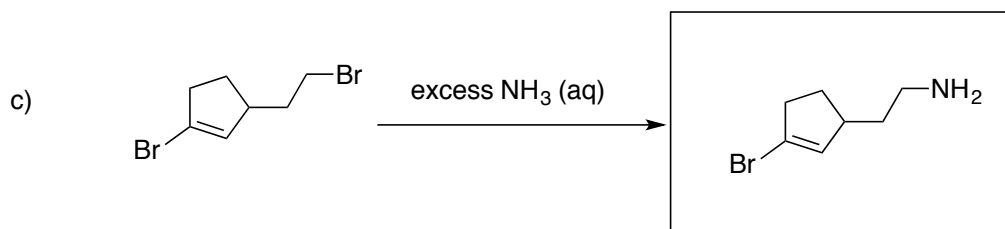
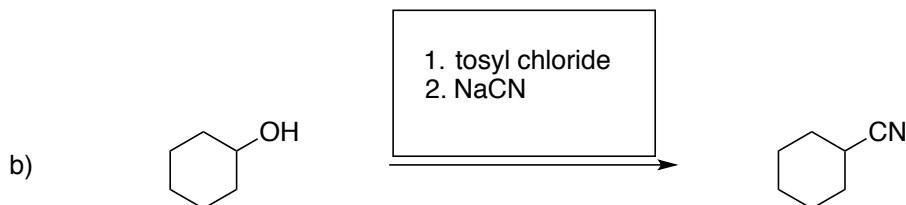
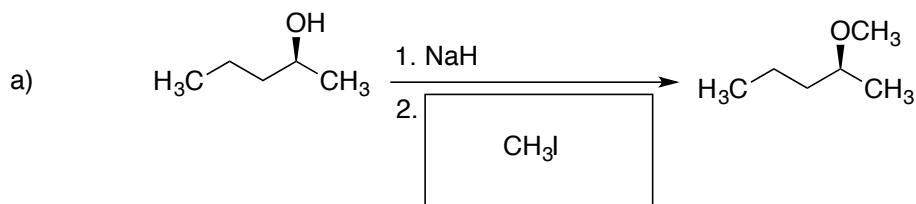
Answer:

identical

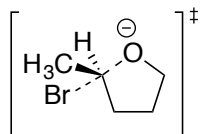
Answer:

enantiomers

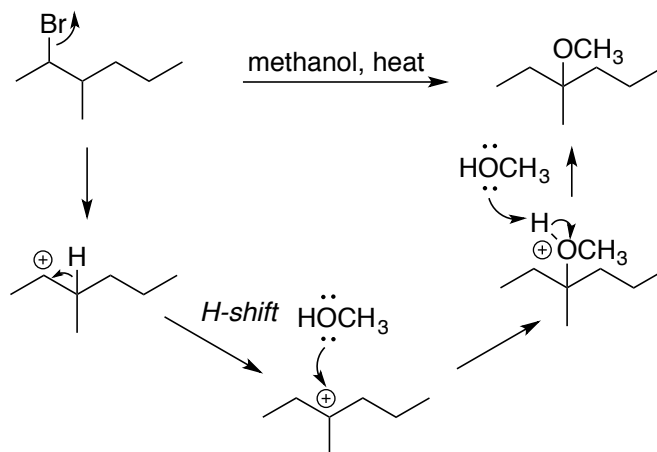
Question 8. Supply the missing reagent(s) or major product to most efficiently complete the following reactions. *Note: Multiple reagents/steps may be needed. If no reaction occurs, then write "no reaction" in the product box.*



via:



Question 9. Provide a complete mechanism for the following transformation. *Don't skip any mechanistic steps, including protonation/deprotonation. Draw all intermediates and resonance structures.*



Extra Credit. [*finish the rest of the test first!*] Starting with the following reagents, show how you can synthesize the target compound. Multiple steps will be needed. Show the synthesis of any carbon-containing reagent(s) that you use (do not show the synthesis of solvents). *Mechanisms are not necessary.*

Your starting materials: bromomethane, 1-bromopropane, propyne

Your target: 2-hexyne

