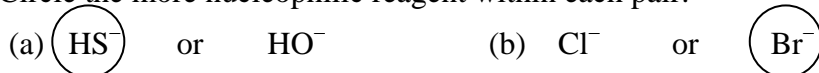


Section 5 (Chapters 11,12 and 14)

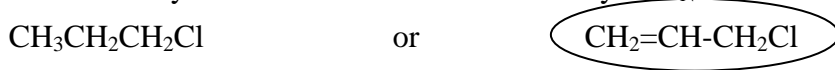
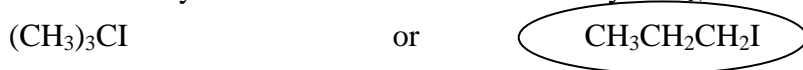
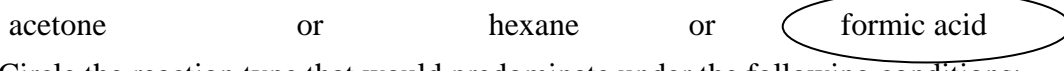
30 points

Everyone must do this section!

1. (2) Circle the more nucleophilic reagent within each pair:



2. (2) Circle the better leaving group within each pair:

3. (2) Circle the alkyl halide that would react faster by an $\text{S}_{\text{N}}1$ mechanism:4. (2) Circle the alkyl halide that would react faster by an $\text{S}_{\text{N}}2$ mechanism:5. (2) Circle the solvent that promotes $\text{S}_{\text{N}}1$ mechanisms by its high dielectric constant:

6. (2) Circle the reaction type that would predominate under the following conditions:

2°R-Cl , $\text{Na}^+ \text{SCH}_3^-$, DMF solvent, 0°C

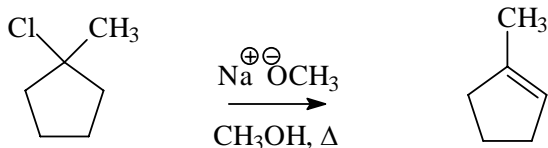
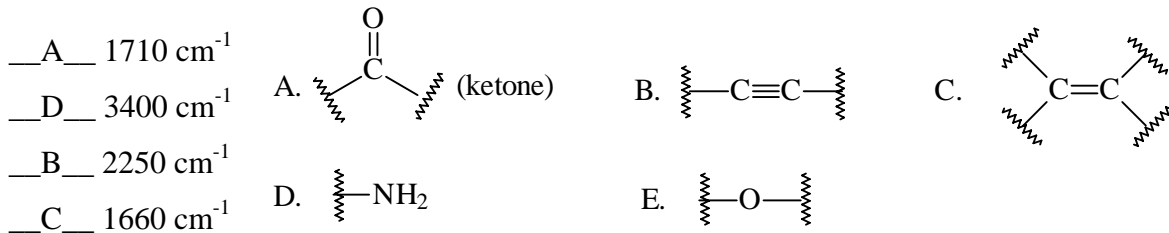
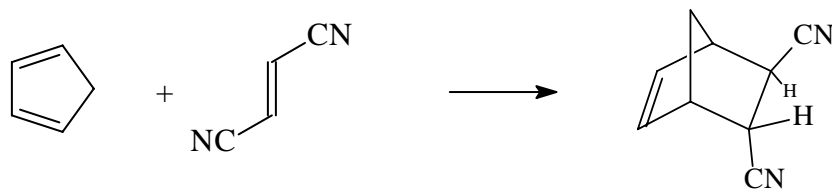
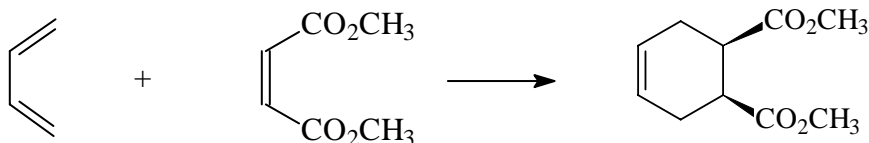


7. (2) Circle the reaction type that would predominate under the following conditions:

3°R-I , 50% $\text{CH}_3\text{OH}/50\% \text{H}_2\text{O}$ solvent, 0°C



8. (2) Draw the structure of the major organic product of the following reaction:

9. (2) Put the letter of the appropriate functional group next to its infrared frequency:10. (4) Draw the structure of the major product of each of the following, showing all aspects of the stereochemistry:

11. (2) Kinetic control of a reaction leads to the predominance of the (fastest formed, most stable, least stable, nonconjugated) product. [circle the best choice]
12. (2) Thermodynamically controlled reactions are (reversible, not reversible). [circle the best choice]
13. (2) Describe two special properties of conjugated dienes as compared to isolated dienes.
1. *They are more stable than isomeric isolated dienes.*
 2. *The 'single' bond between the two double bonds is shorter than a typical single bond.*
 3. *They undergo different reactions. For example, they can provide the diene in a Diels-Alder cycloaddition, and they can undergo both 1,2- and 1,4- addition of HBr.*
14. (2) Draw the structure of both the 1,2- and the 1,4-addition products of HBr to 1,3-butadiene.

