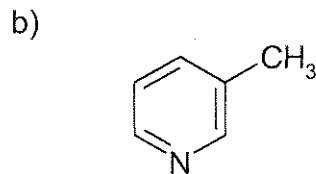
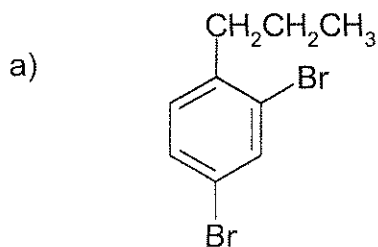
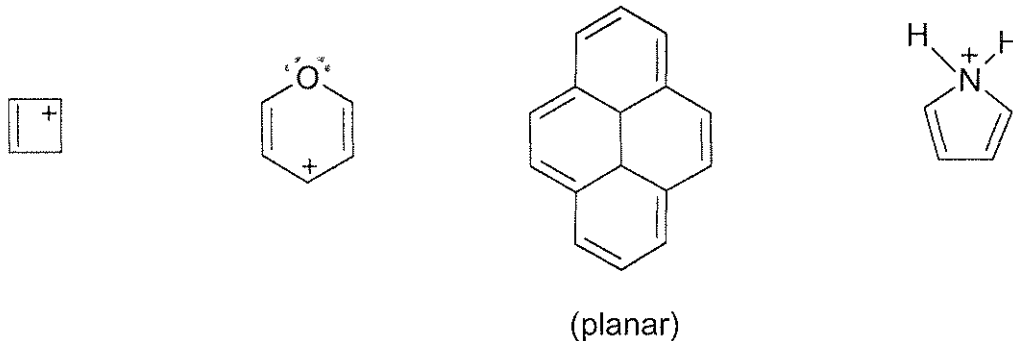


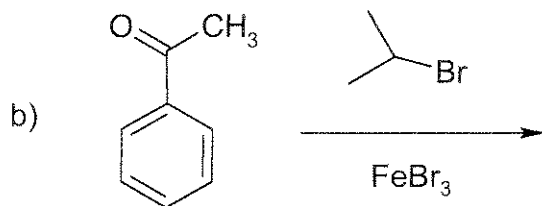
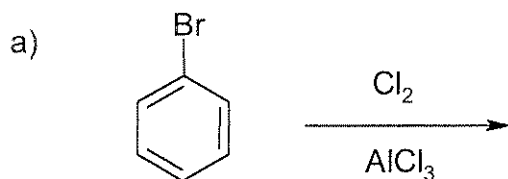
1. (4 pts, 2 each) Give the IUPAC name of the following compounds.



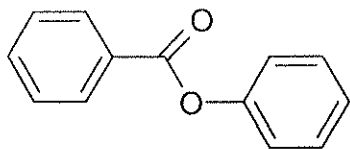
2. (8 pts) Circle which of the following compounds are aromatic. For those compounds that are **NOT** aromatic, briefly explain why they are not.



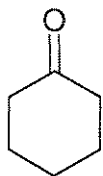
3. (6 pts, 3 each) Give the structures for the **MAJOR** product(s) formed for the following transformations. If no reaction occurs, write **NO RXN**.



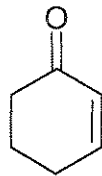
4. (3 pts) Which benzene ring in the following compound is more reactive to electrophilic aromatic substitution? (Circle your answer and briefly explain why you chose it).



5. (4 pts) Explain why the Infrared absorption of a carbonyl group shifts to lower frequency in an  $\alpha,\beta$ -unsaturated compound – a compound having a carbonyl group bonded directly to a carbon-carbon double bond. For example, the carbonyl absorption occurs at  $1720\text{ cm}^{-1}$  for cyclohexanone and at  $1685\text{ cm}^{-1}$  for 2-cyclohexenone.



cyclohexanone



2-cyclohexenone