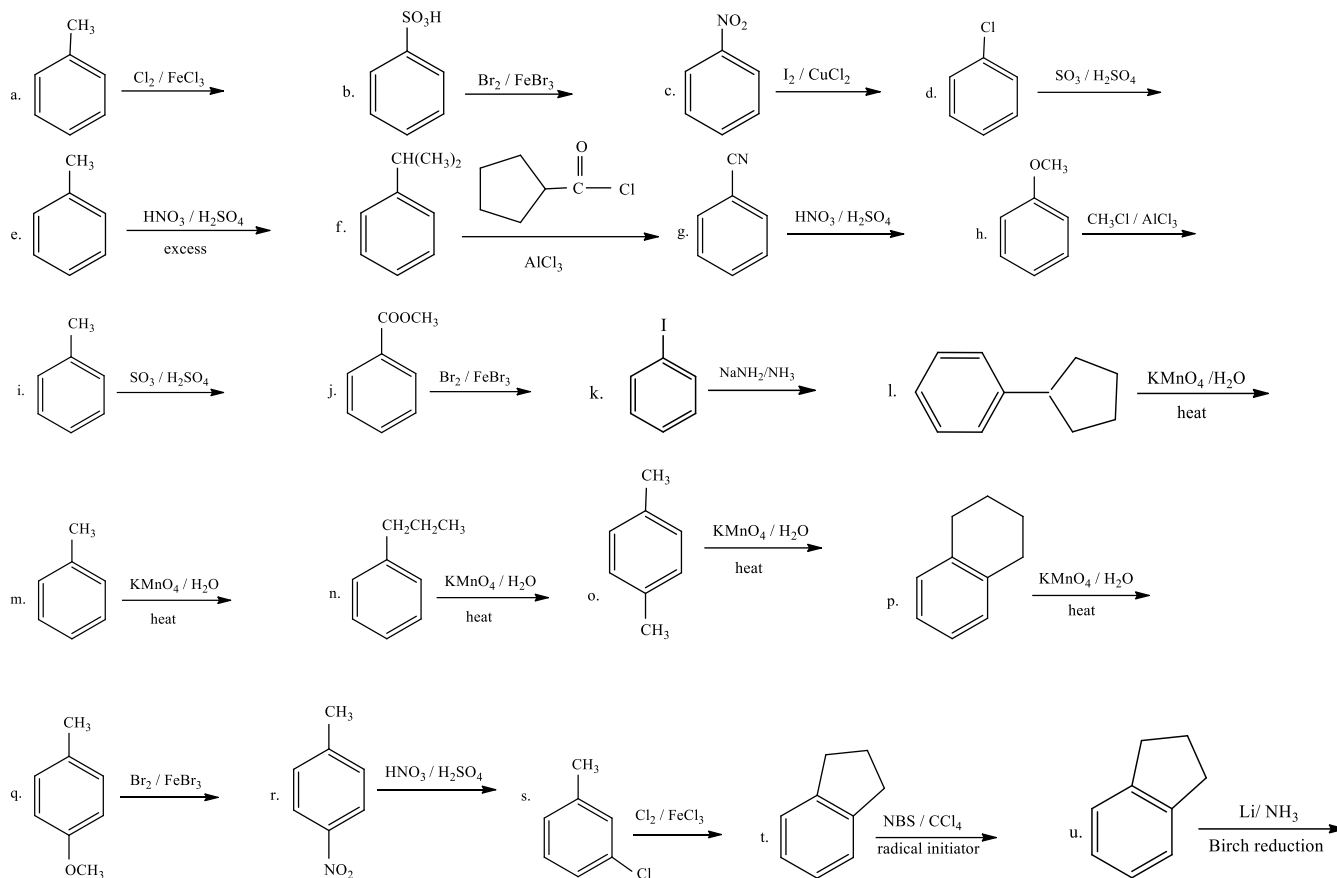
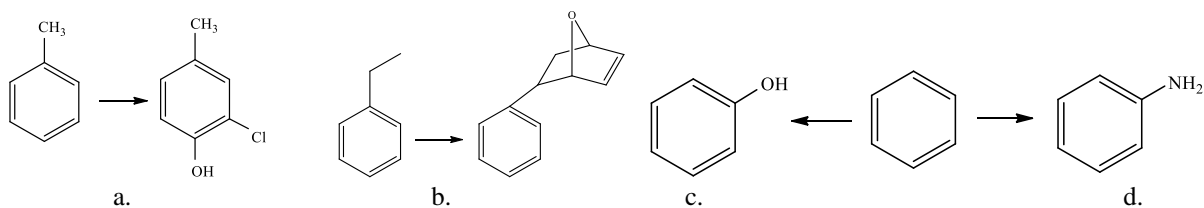


OBUC CHAPTER 16- (Benzene Derivatives -Practice Exercises) CHEM 2425
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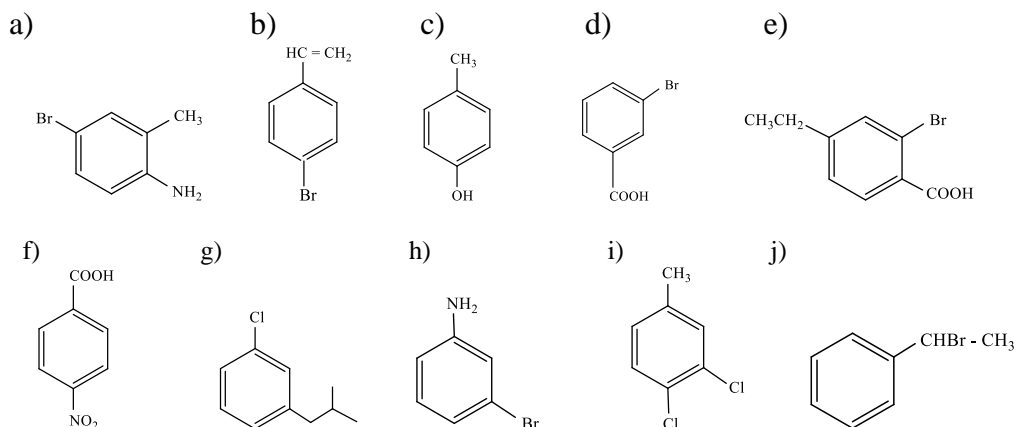
1. **Reactions**-Give the major product for each of the following electrophilic aromatic substitution (EAS) reactions.



2. **Synthesis**-beginning with the compound shown on the left, suggest a synthesis for each of the compounds shown below. Clearly show all intermediates and reaction conditions. Several steps are required for each synthesis conversion.



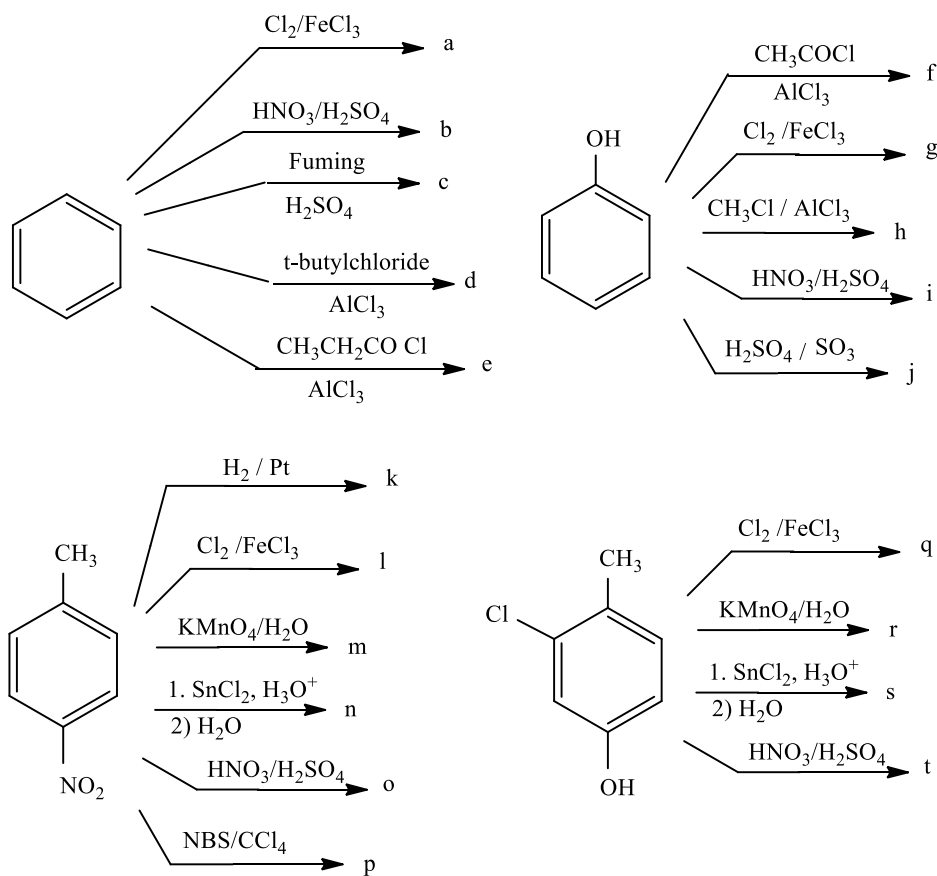
3. **Synthesis**-Beginning with **benzene**, suggest a synthesis for each of the compounds shown below. Clearly show all intermediates and reaction conditions. Several steps are required for each synthesis conversion.



4. Write an example of complete EAS mechanism for benzene.

- a. Chlorination b. Nitration c. Sulfonation d. Friedel–Crafts isopropylation
 e. Acylation f. Hydroxylation g. Allylic bromination h. Amination

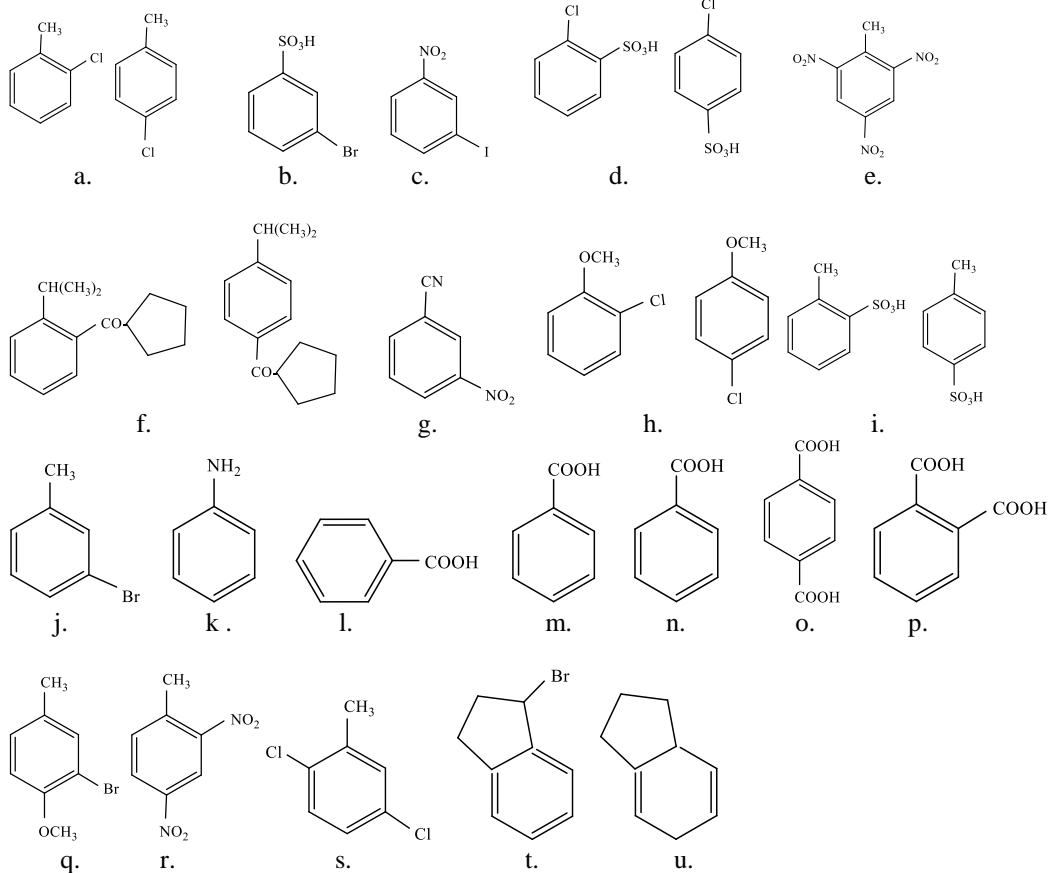
5. Complete the following reactions;



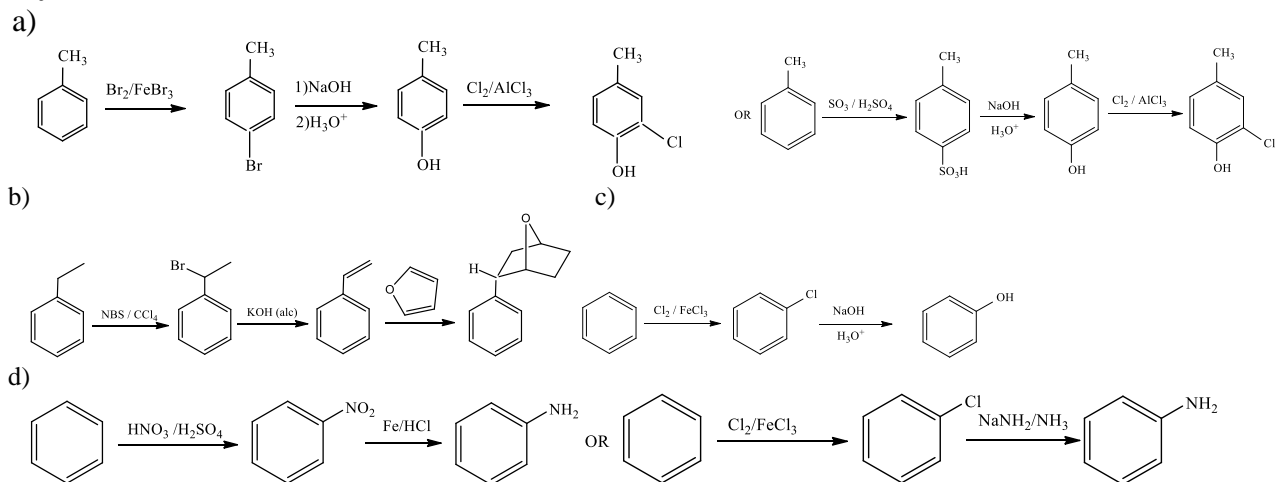
CHAPTER 16- (Benzene Derivatives -Practice Exercises) CHEM 2425

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1. Reactions



2. Synthesis



3. Synthesis

- a) 1) $\text{Br}_2 / \text{FeBr}_3$ 2) $\text{NaNH}_2 / \text{NH}_3$ 3) $\text{Br}_2 / \text{FeBr}_3$ 4) $\text{CH}_3\text{Cl} / \text{AlCl}_3$
- b) 1) $\text{Br}_2 / \text{FeBr}_3$ 2) $\text{CH}_3\text{CH}_2\text{Cl} / \text{AlCl}_3$ 3) $\text{NBS} / \text{CCl}_4$ 4) $\text{KOH} / (\text{alcohol})$
- c) 1) $\text{CH}_3\text{Cl} / \text{AlCl}_3$ 2) $\text{Cl}_2 / \text{FeCl}_3$ 3) 1) NaOH 2) H_3O^+

