

Aromatic Reactions**Name:**

1. Predict the major products formed when benzene reacts with the following reagents.

a) t-butyl chloride, AlCl_3

b) 1-chlorobutane, AlCl_3

c) bromine, iron

d) fuming sulfuric acid

e) 1,2-dichloroethane, AlCl_3
(with 2 mols benzene)

f) benzoyl chloride ($\text{C}_6\text{H}_5\text{COCl}$), AlCl_3

g) Iodine, HNO_3

h) nitric acid + sulfuric acid

i) Carbon monoxide, HCl and AlCl_3

j) 1-chloro-2,2-dimethylpropane, AlCl_3

2. Predict the major products formed when isopropyl benzene reacts with the following reagents.

a) 1 eq of bromine and light

b) bromine and FeBr_3

c) SO_3 and H_2SO_4

d) hot conc. KMnO_4

e) acetyl chloride (CH_3COCl), AlCl_3

f) n-propyl chloride, AlCl_3

3. Predict the major products of the following reactions.

a) Isopropoxybenzene + t-butyl chloride + AlCl_3

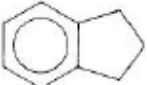
b) Nitrobenzene + fuming sulfuric acid

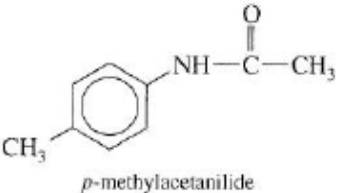
c) Nitrobenzene + acetyl chloride + AlCl_3

d) 1,2-dichloro-4-nitrobenzene + NaNH_2

e) $\text{Ph}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NHPh} + \text{CH}_3\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{Cl}, \text{AlCl}_3$

f) p-ethylbenzenesulfonic acid + $\text{HNO}_3, \text{H}_2\text{SO}_4$

g)  + hot, concd. KMnO_4

h)  + acetyl chloride + AlCl_3
p-methylacetanilide

4. Show how you would synthesize the following compounds, starting with benzene or toluene and any necessary acyclic reagents.

a) 1-phenyl-1-bromobutane

b) 1-phenyl-1-methoxybutane

c) 3-phenyl-1-propanol

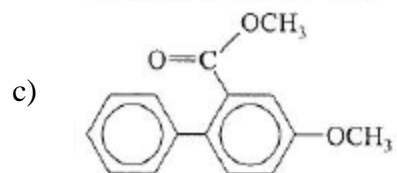
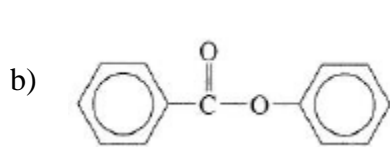
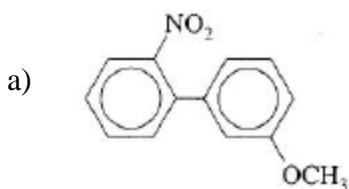
d) Ethoxybenzene

e) 1,2-dichloro-4-nitrobenzene

f) 1-phenyl-2-propanol

g) 3,4-dibromobenzoic acid

5. Predict the major products of bromination of the following compounds, using Br_2 and FeBr_3 in the dark.



6. Give the structures of compounds A through H of the following series of reactions.

