

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

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

b) Iodine, HNO_3

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

2. Predict the major products of the following reactions.

a) Isopropoxybenzene + t-butyl chloride + AlCl_3

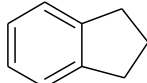
b) Nitrobenzene + fuming sulfuric acid

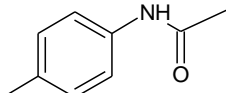
c) Nitrobenzene + acetyl chloride + AlCl_3

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

e) $\text{PhC}(=\text{O})\text{NHPh} + \text{CH}_3\text{CH}_2\text{C}(=\text{O})\text{Cl}, \text{AlCl}_3$

f) p-ethylbenzenesulfonic acid + HNO_3 , H_2SO_4

g)  + hot KMnO_4

h)  + acetyl chloride + AlCl_3

3. 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

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

