

## Chemistry 2, HW 19

Summary of the chemical reactions typical for unsaturated and aromatic hydrocarbons:

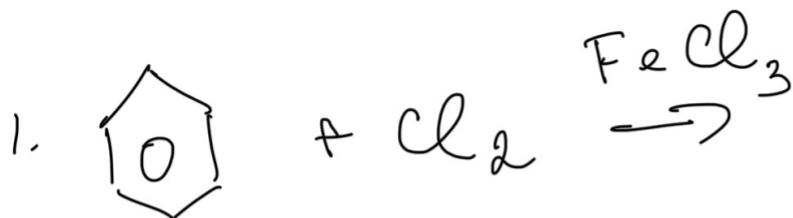
Unsaturated Hydrocarbons				
Alkenes		Alkynes		Aromatic compounds
C=C		Triple bond		Benzene ring
polymerization	Addition reactions: Halogenation (for example + Cl <sub>2</sub> ) → haloalkanes; Hydrogenation (+H <sub>2</sub> ) → alkanes; Hydration (+H <sub>2</sub> O) → Alcohols; Hydrohalogenation (for example +HCl) → haloalkanes	Addition reactions: Halogenation (+ Cl <sub>2</sub> ) → haloalkenes, haloalkanes; Hydrogenation (+H <sub>2</sub> ) → alkenes, alkanes; Hydration (+H <sub>2</sub> O) → Alcohols; Hydrohalogenation (+HCl) → Haloalkenes, haloalkanes	Substitution reactions For example Halogenation, Nitration, Sulfonation	

### Questions:

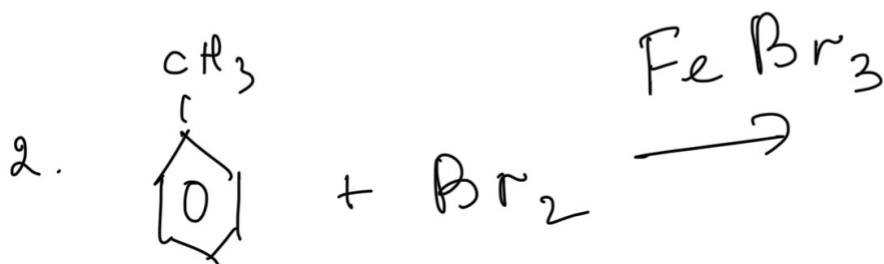
Write the following reactions:

1. addition of HCl to cyclopentene.
2. addition of Br<sub>2</sub> to 2-pentene
3. hydration of propene
4. addition of chlorine to 2-butyne
5. hydration of 1-methylcyclobutene
6. hydrogenation of 3-hexene
7. addition of HBr to 2-methyl-2-butene

Finish the following reactions (if they are possible):



Benzene



Toluene

