1. (10 pts) Name the following:

a) 

b) 

2. (15 pts) Complete the following reactions

a) $\text{KCN} + \text{HO-CHBr}$ → 

b) $\text{Ph-CH}_2\text{I} + \text{CH}_3\text{CH}_2\text{SLi}$ → 

c) $\text{CH}_3\text{CH}=\text{CHCH}_3 + \text{Br}_2$ → 

3. (15 pts) Draw at least four of the isomers of $\text{C}_4\text{H}_8$ and circle the isomer which would exhibit three signals in the $\text{^{13}C}$-NMR and two signals in the $\text{^1H}$-NMR.