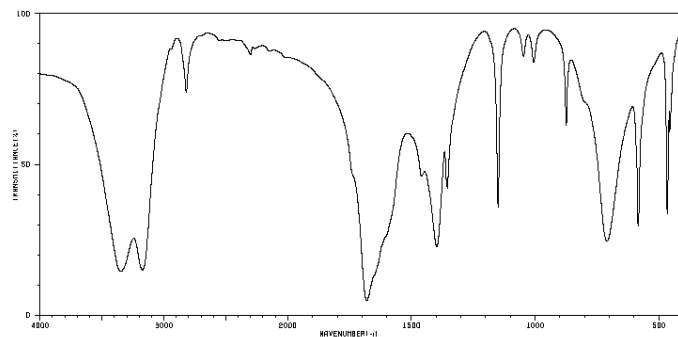
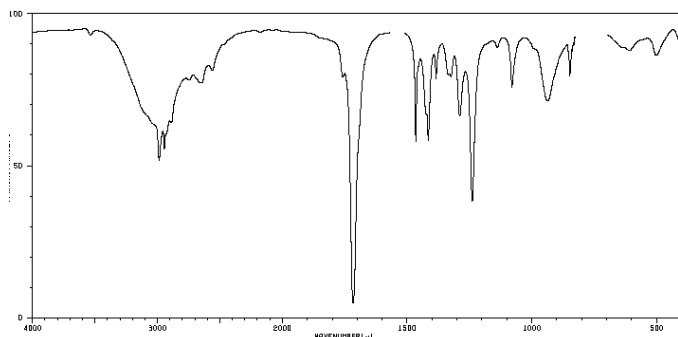
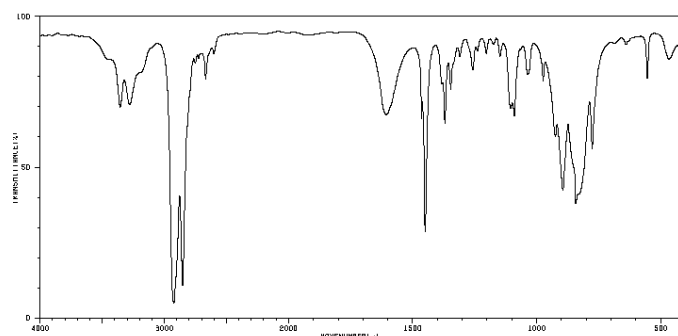
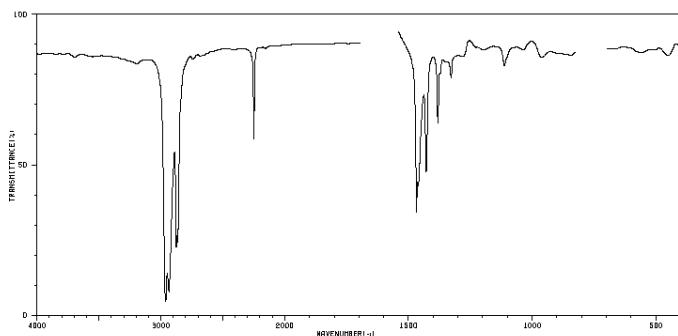
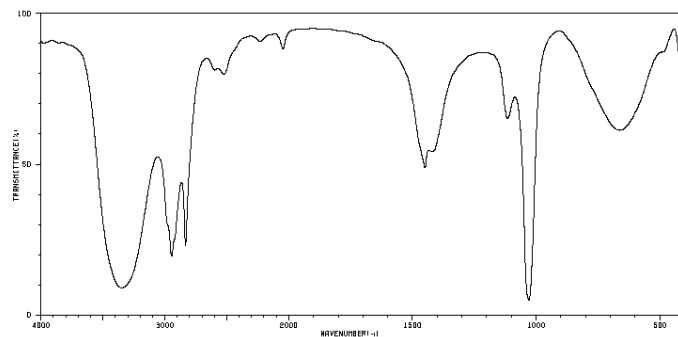
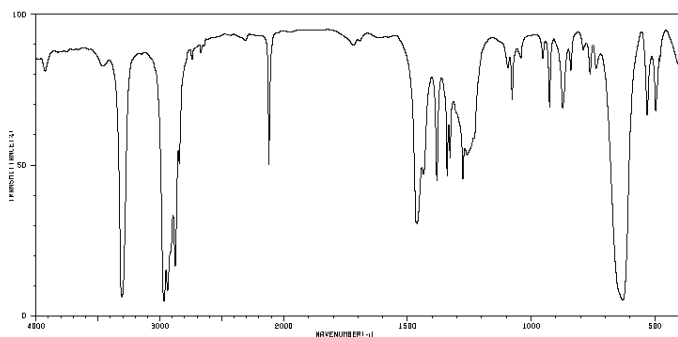
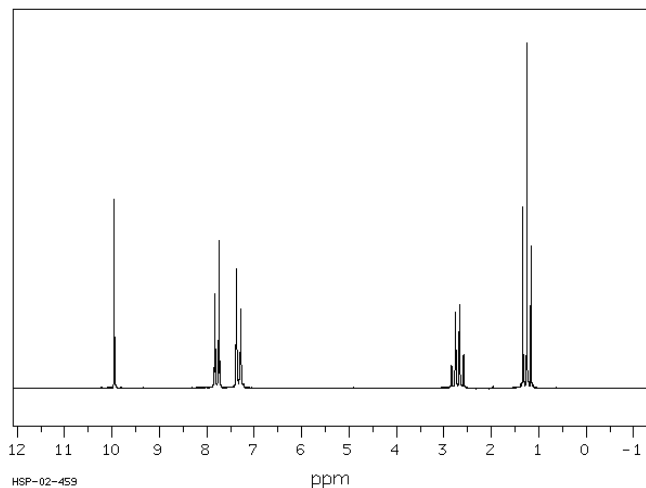


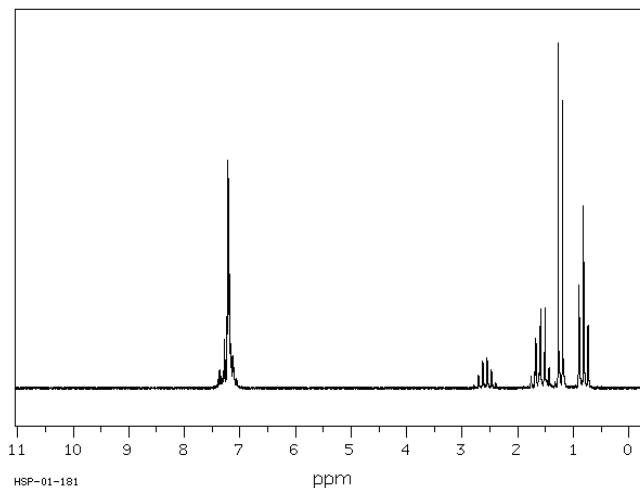
IR-Identify the following IR spectra by functional group. Only one functional group is present per spectrum. Possible functional groups: alkane, alkene, alkyne, nitrile, ketone, aldehyde, acid, ester, anhydride, alcohol, amine, amide. **You must label the major peaks used to make the determination to receive credit.**



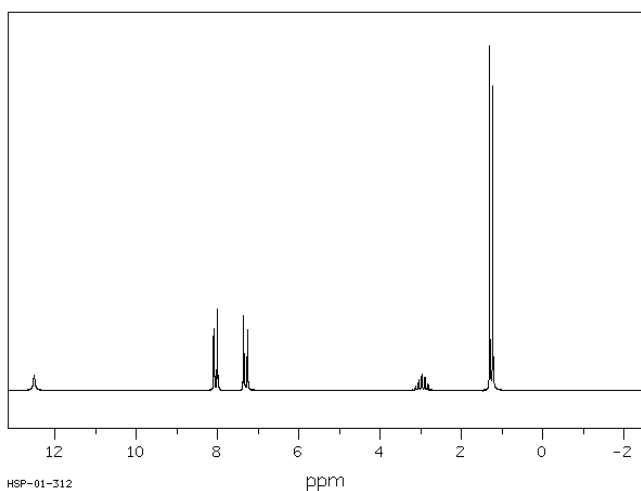
**NMR**-Determine the structure of the following compounds from their  $^1\text{H}$  NMR spectra. Show structural assignments to peaks used to make the identification. Additional info is provided with clues to functional groups, etc. present. Attach work showing structures tried that do not fit. **No credit if work is not shown.**



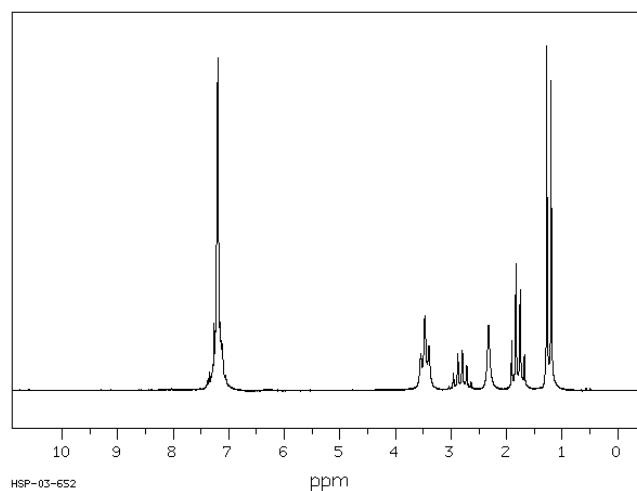
$\text{C}_9\text{H}_{10}\text{O}$  Aromatic peaks are a symmetrical pair of doublets, with an area corresponding to 4H's.



$\text{C}_{10}\text{H}_{14}$  Aromatic peak corresponds to 5 H's. Aliphatic split peaks are m(6x), m(5x), d, t.



$\text{C}_{10}\text{H}_{12}\text{O}_2$  Carboxylic acid. Aromatic peaks correspond to 5 H's. Aliphatic split peaks are m(7x), d.



$\text{C}_{10}\text{H}_{14}\text{O}$  Aromatic peak corresponds to 5Hs. IR shows broad, strong absorption at  $3300\text{-}3400\text{ cm}^{-1}$ . Aliphatic split peaks are t, m(6x), s, q, d.