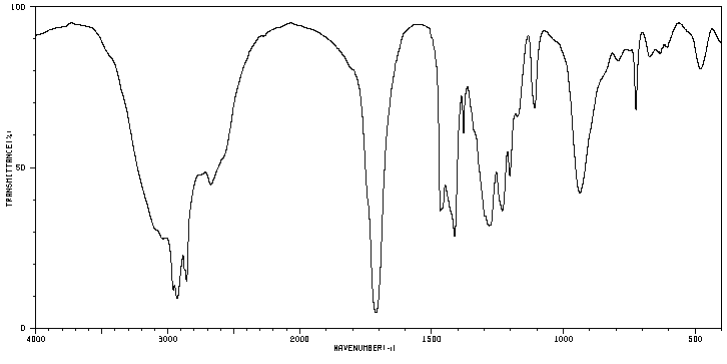
Chem 220 IR Worksheet

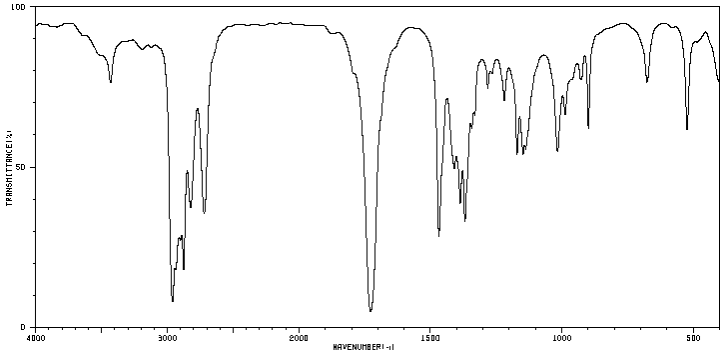
Name_____

1. For the following spectra (a-d), there is a choice of three possible functional groups for each. For each spectrum, choose the most appropriate class of compound, and explain your reasoning by noting the presence or absence of characteristic peaks.



a. Alcohol, carboxylic acid or ether

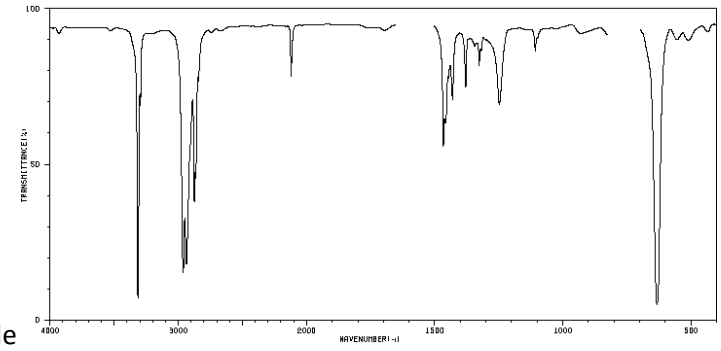
Reasoning:



b. Aldehyde, ester or ketone

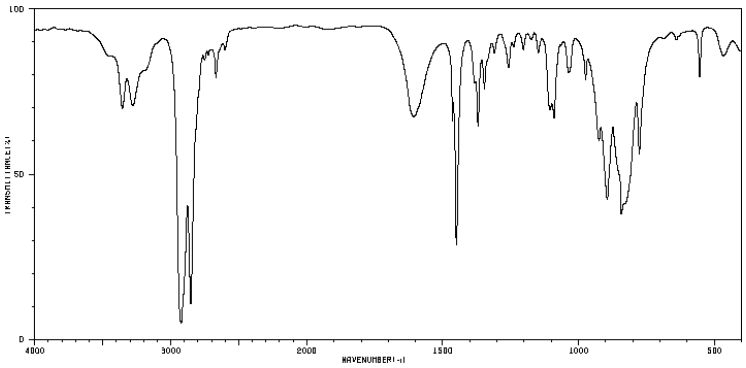
Reasoning:

c. terminal alkyne, alkene, or nitrile



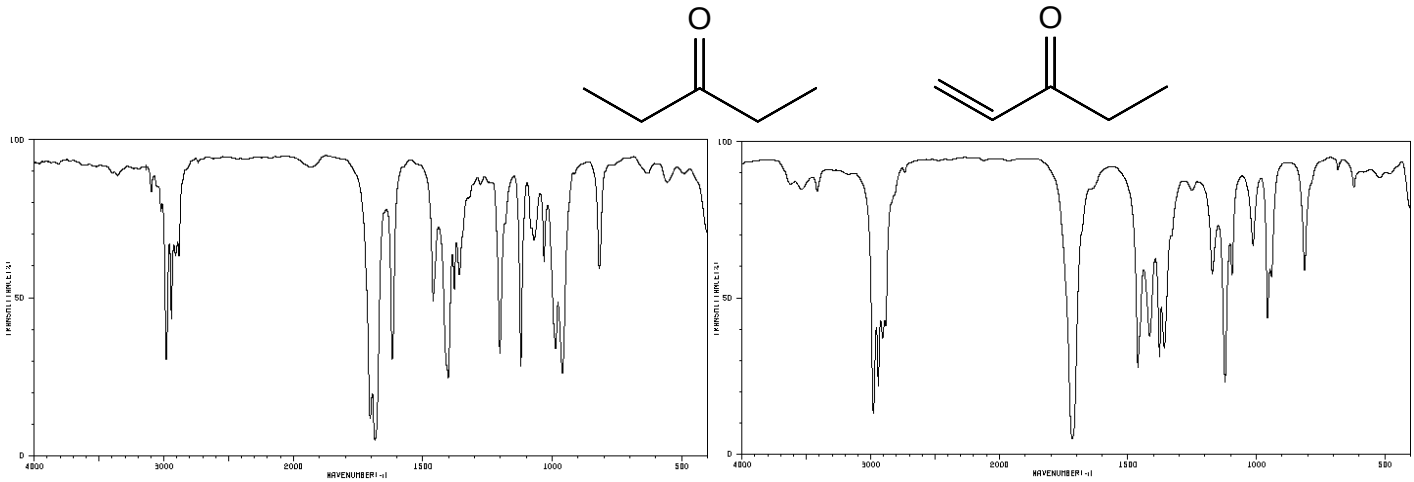
Reasoning:

d. Primary amide, primary amine or nitro

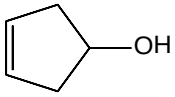
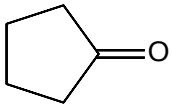
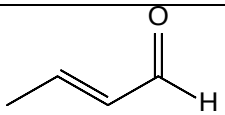
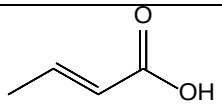
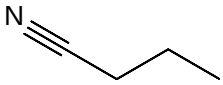
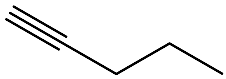


Reasoning:

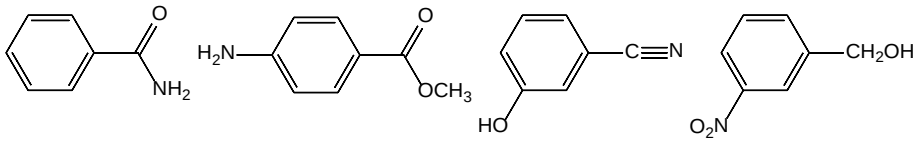
2. Identify which compound corresponds to each spectrum below. Provide your reasoning with a few short phrases which include the diagnostic bands on the IRs you used to differentiate between the compounds.

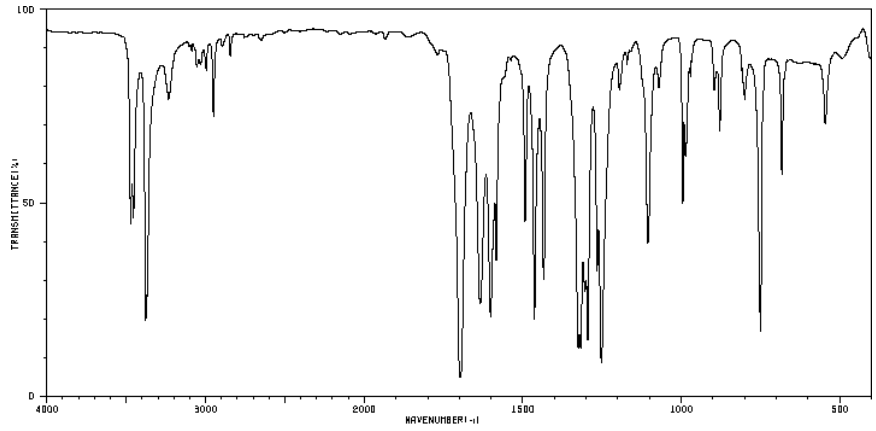


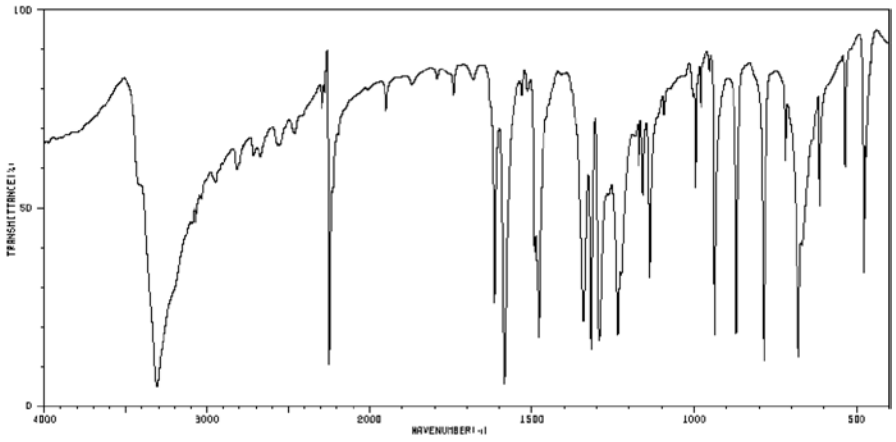
3. Provide absorbances (and label them) that can be used to distinguish between the compounds in each pair.

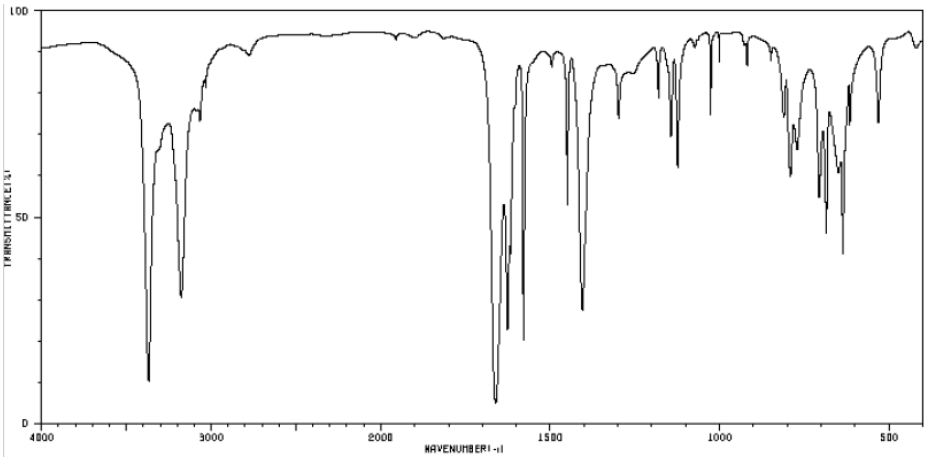
Compound	Peaks?	Compound	Peaks?
a. 			
b. 			
c. 			

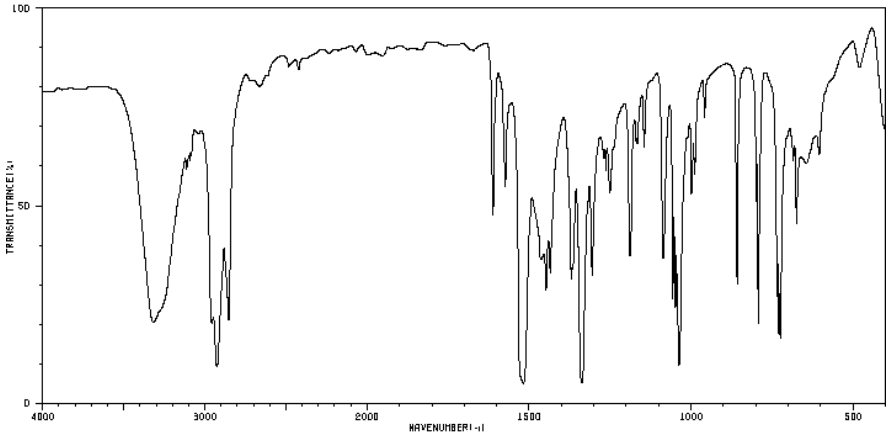
4. Below are four IR spectra for the following compounds. Determine which IRs are for which structures. Indicate the diagnostic bands on the IRs you used to differentiate between the compounds, draw your answer in the box on the right. (8 points)



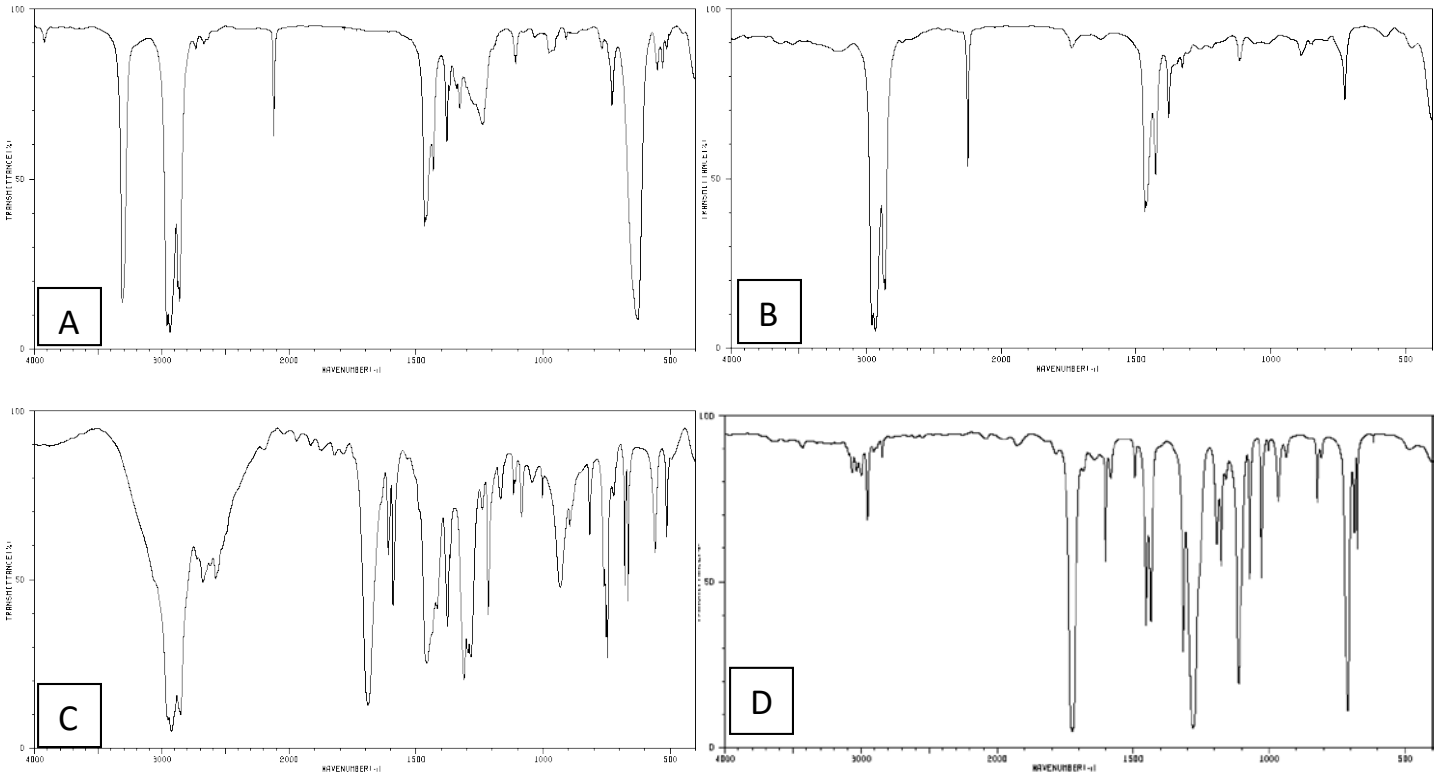


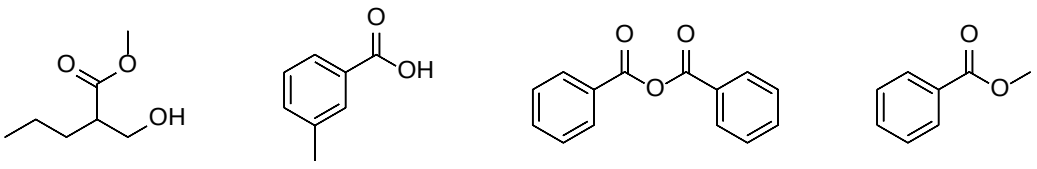




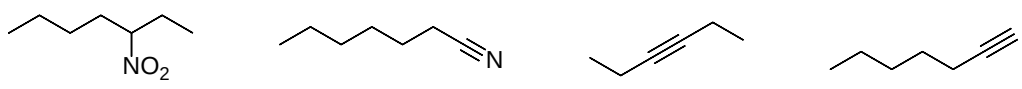


5. Determine the compounds for each spectrum, **A-D**, among compounds **1-8** and provide your reasoning by labeling the diagnostic bands on the IRs you used to differentiate between the compounds.





1 2 3 4



5 6 7 8