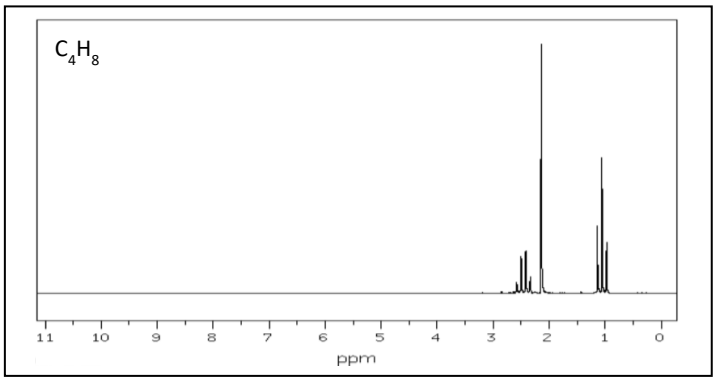
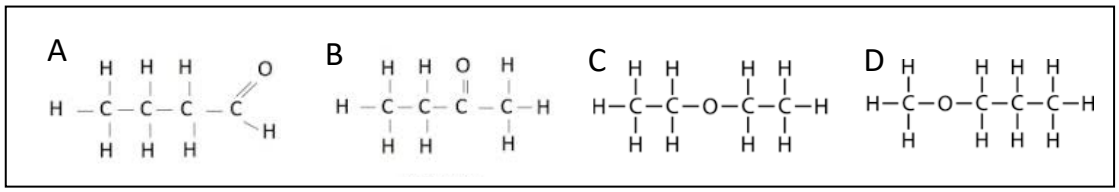
Worksheet – ^{1}H NMR Read the notes on ^{1}H NMR at this link





1. A bottle was labelled with the molecular formula C_4H_8O. Above are four isomers of the compound and its ^{1}HNMR spectrum also shown.

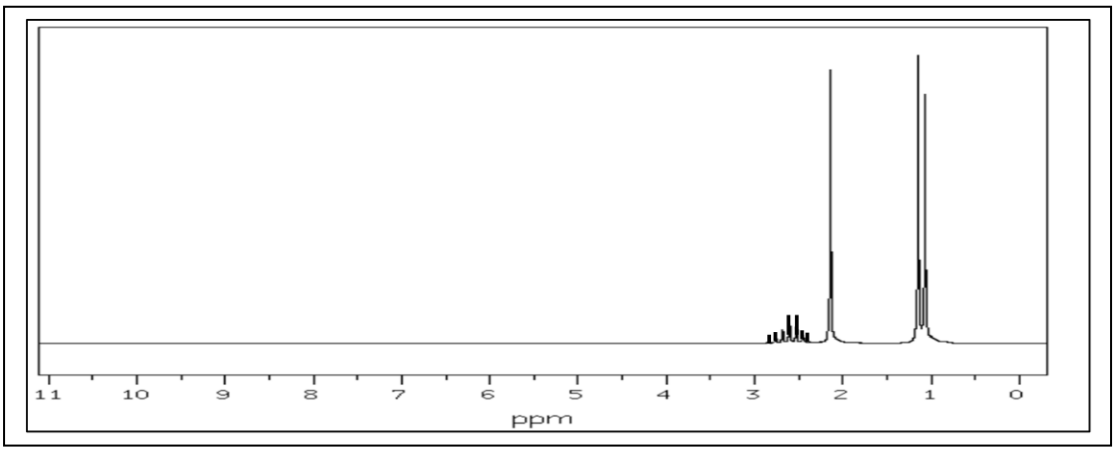
a. Identify the isomer present in the bottle and explain your reasoning for its selection.

b. To what class of compounds does this isomer belong?

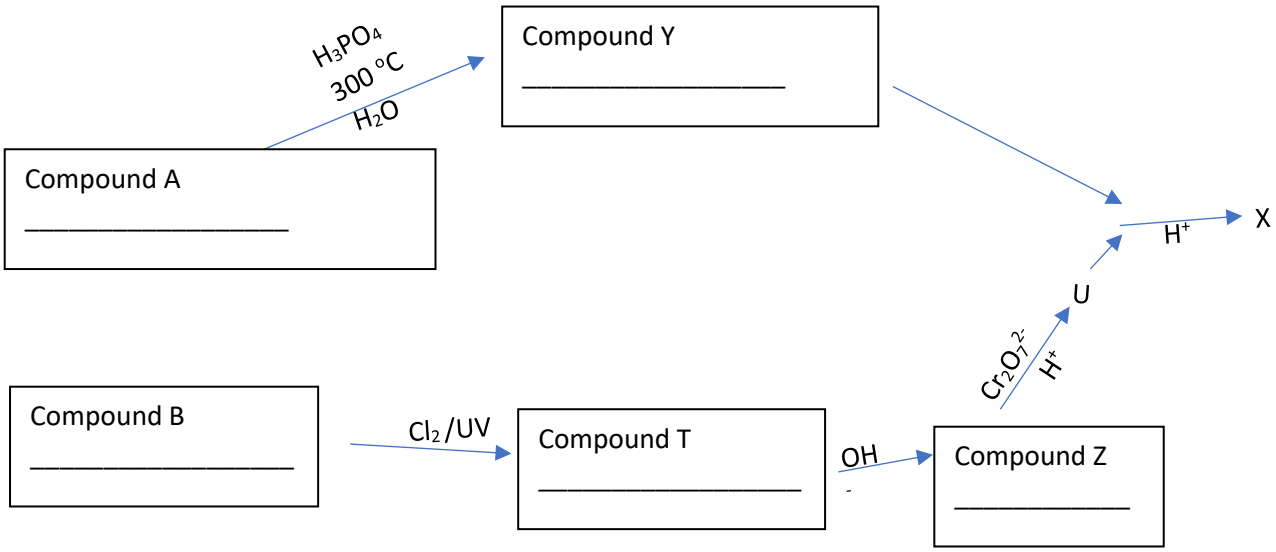
2. 4. A compound has the formula $C_5H_{10}O$ and has one carbonyl group in its molecular structure. Its ^{1}HNMR is shown below.

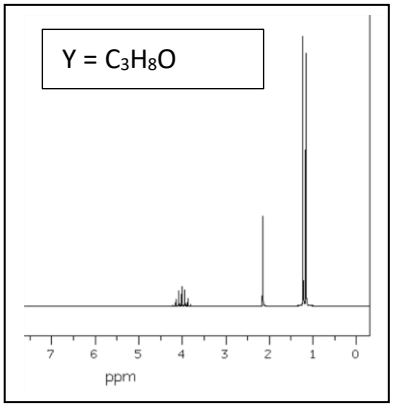
a. Draw its structure, using all the available information.

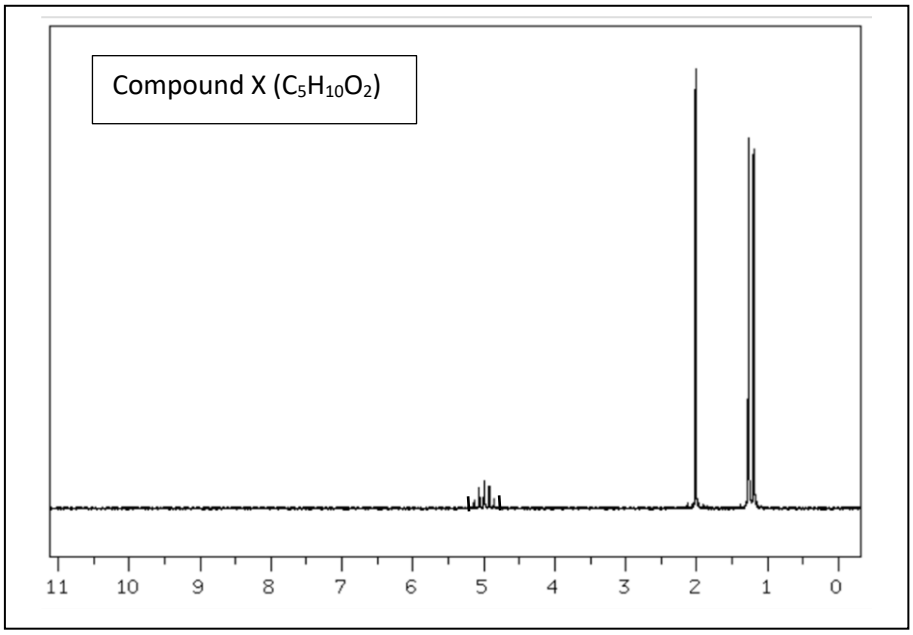
b. TO what class of compounds does this compound belong.



3. Below are two reaction pathways that lead to the formation of compound X. The ^{1}H NMR spectra for X and y are also given.

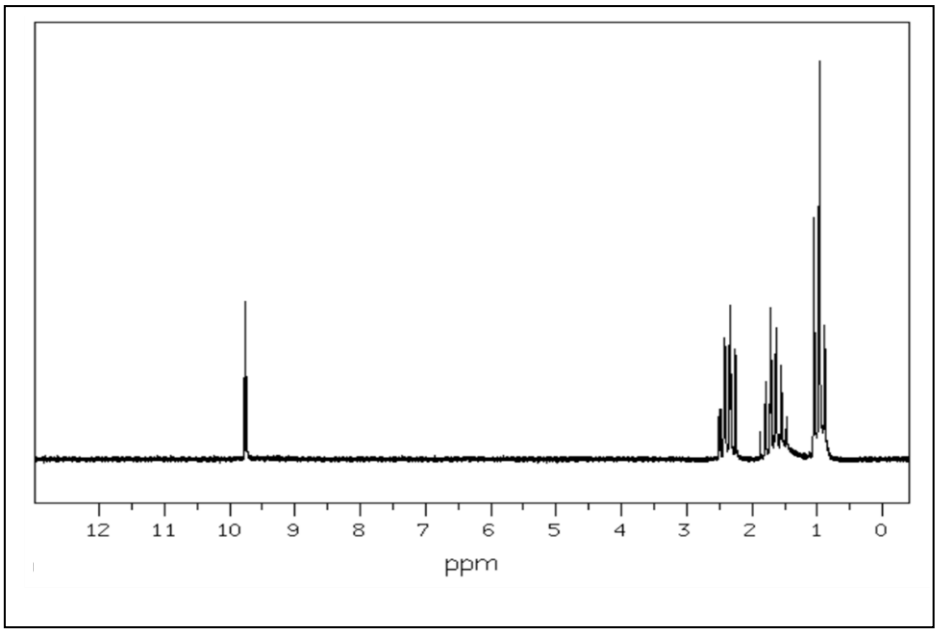




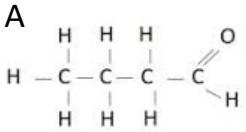


a. Name compounds:
   - A
   - B
   - Y
   - T

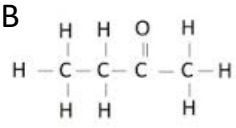
b. Draw the structural formula of compound X



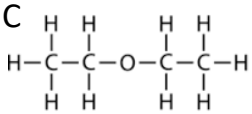
A



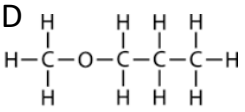
B



C



D



4. Consider the ^{1}H NMR and the structural formulae of four organic molecules shown above.

a. Identify which one of the isomers belongs to the ^{1}H NMR spectrum shown.

b. To what class of compounds does the isomer chosen in a. belong to?