Help! The computer has gone crazy and mixed up all my spectra. Can you use the infra-red spectra together with the empirical formula to help me identify the compounds A - D below:

**Compound A, C₂H₄O₂**

**Compound B, C₂H₆O**

**Compound C, Empirical formula C₃H₆O**

**Compound D, Empirical formula C₄H₈O₂**

**BONUS MARKS**

There is more than one possible structure for compounds C and D. Can you suggest an alternative structure for each which is still compatible with the infra-red spectrum provided?
10.2 Infra-red spectroscopy

*Compound A* = ethanoic acid (1 mark for molecule with C-H, O-H and C=O, 1 mark for correct structure)

*Compound B* = ethanol (1 mark for molecule with C-H and O-H, 1 mark for correct structure)

*Compound C* = propanone (1 mark for molecule with C-H and C=O, 1 mark for correct structure)

*Compound D* = ethyl ethanoate (1 mark for molecule with C-H and C=O, 1 mark for correct structure)

Possible alternative structures for:

*Compound C* = propanal (1 mark)

*Compound D* = methyl propanoate, propyl methanoate or isopropyl methanoate (1 mark)