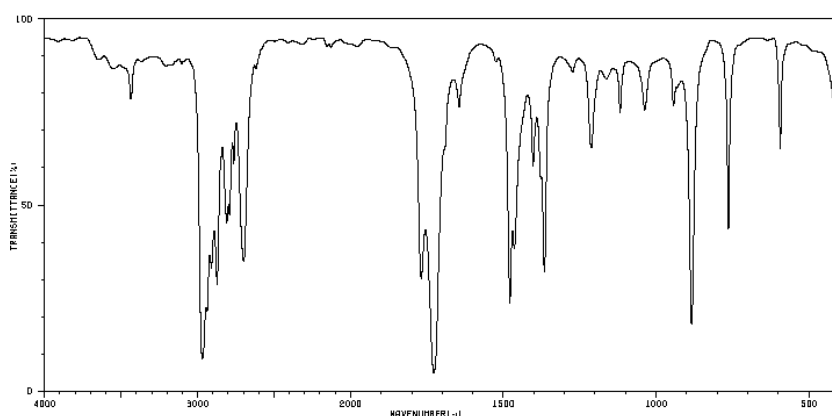


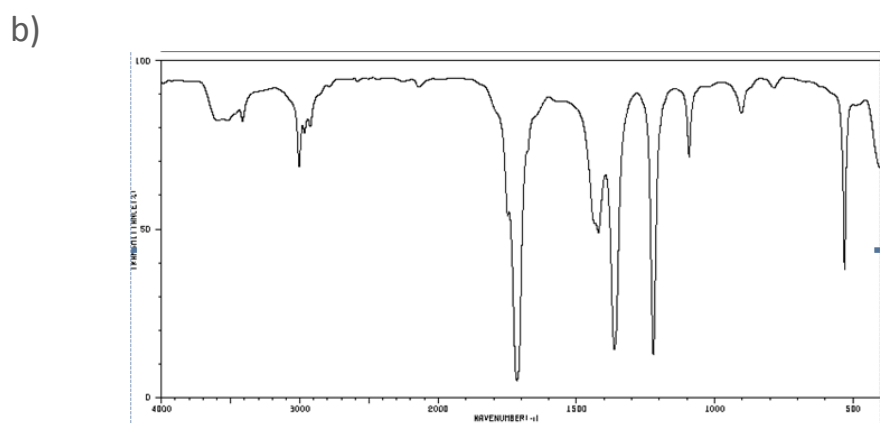
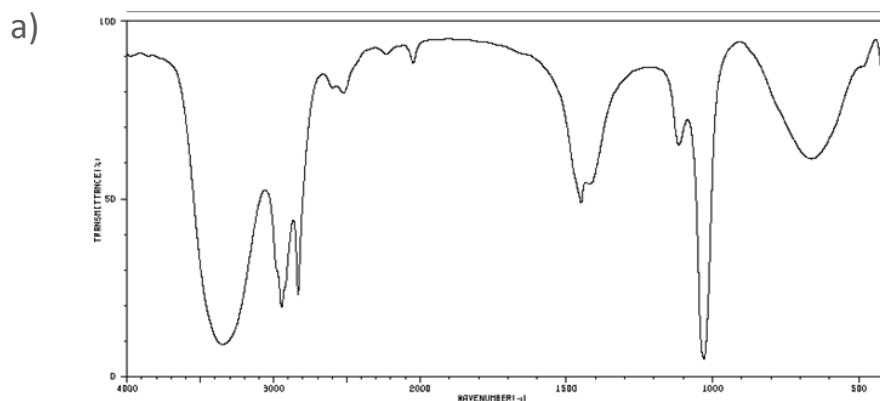
# INFRARED QUESTIONS

**Exercise 1** The following IR spectrum has been produced from a sample of one of the following compounds – an ester, alcohol, carboxylic acid, aldehyde or ketone.

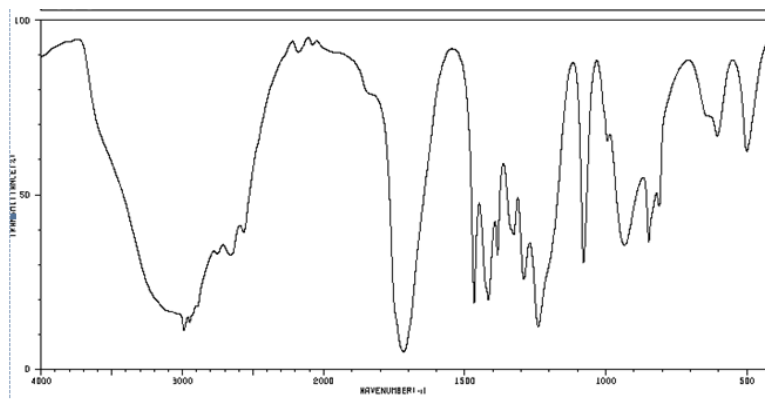
Identify which class of compound this spectrum belongs to. Explain your answer in terms of the presence (or absence) of specific absorption bands



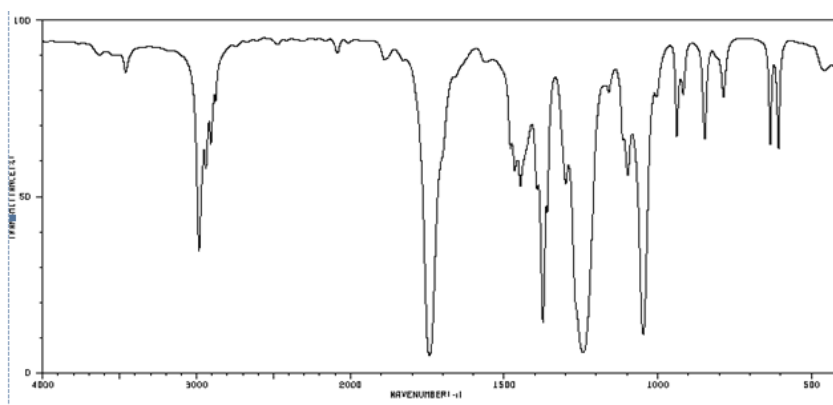
**Exercise 2** Identify the bonds responsible for all the peaks in the non-fingerprint region of the following infra-red spectra, and hence state the functional group present:



c)



d)



### Exercise 3

Three compounds A, B and C, all with molecular formula  $C_4H_8O_2$ , are found to have very different infra-red spectra. All three spectra contain a sharp peak at  $1700\text{ cm}^{-1}$ , but the infra-red spectrum of A contains a broad peak at  $2500 - 3000\text{ cm}^{-1}$ , the infra-red spectrum of B contains no broad peaks, and the infra-red spectrum of C contains a broad peak at  $3000 - 3300\text{ cm}^{-1}$ . Suggest possible structures for A, B and C.