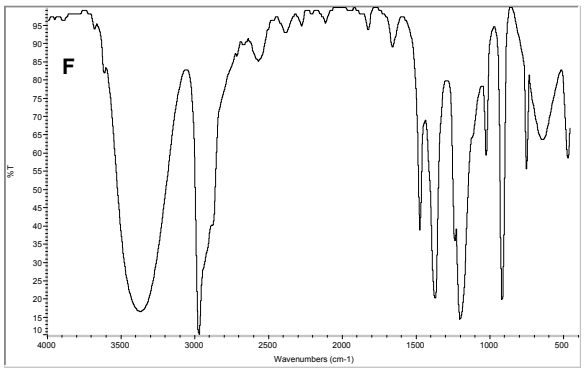
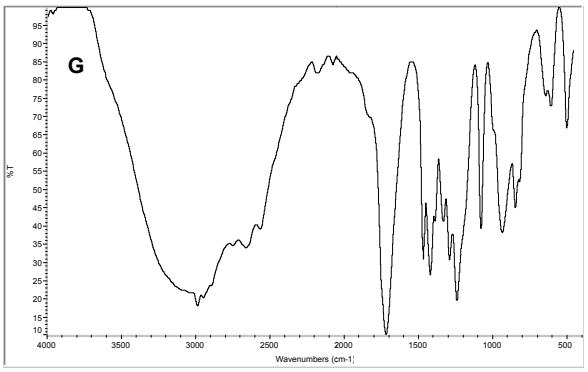
IR PROBLEMS 4

1) Compound **E**, which is a branched chain haloalkane, was found to have the composition by mass of 39.8% C, 7.3% H, and 52.9% Br. There were two peaks for the molecular ions in the spectrum at 150 and 152, of approximately equal intensity. **E** reacts with sodium hydroxide to form **F**, whose infra-red spectrum is shown. **F** does not undergo dehydration with concentrated sulphuric acid.

F reacts further with acidified potassium dichromate (VI) to form **G**, whose infra red spectrum is also shown. Draw the structures and name **E**, **F** and **G**. Identify the species responsible for the peaks at 150 and 152 in the mass spectrum of **E**.





2) Propene reacts with HBr to form **H**. **H** reacts with sodium hydroxide to form **I**, and **I** reacts with warm acidified potassium dichromate (VI) to form **J**. The infra-red spectra of **H**, **I** and **J** are given below, but it does indicate which is which. Identify the three compounds **H**, **I** and **J**, using the infra-red spectra below, and decide which spectrum belongs to which compound.