1. The infrared spectra of some polymeric films are shown below.
   - Assign a structure to each of them selected from the given choices and
   - label the distinguishing peaks showing the functional groups represented by each.

A. Polyamide (Nylon)

B. Polymethyl methacrylate

C. Polyethylene

D. Polystyrene

E. Polypropylene
2. Consider the MS of the following compound.

![Mass Spectrogram Image]

A. What information do you get from the molecular ion peak of this particular compound?

B. Identify any of the fragment peaks possible.

C. Propose a reasonable structure for this compound.

3. A. Give a mechanism for the McLafferty rearrangement of butyric acid showing the fragments produced.

B. The MS of butyric acid shows a large peak at 60 and smaller peaks at 73 and 45. Give an explanation for these peaks.
   - 73
   - 60
   - 45

C. Draw an example of what the IR of butyric acid would look like between 1400 and 4000 cm\(^{-1}\) and label the distinguishing functional group bands.