

Spectroscopy questions-2008

Question 1

Pyrethrins belong to a naturally occurring group of insecticides produced by the chrysanthemum daisy. The formula of one such compound, pyrethrin I, is $C_{21}H_{28}O_3$.

The analytical technique that would not provide information that is useful in determining the structure of pyrethrin I is

- A. mass spectroscopy.
- B. infrared spectroscopy.
- C. atomic absorption spectroscopy.
- D. nuclear magnetic resonance spectroscopy.

[Solution](#)

Question 2

A sample of a hydrocarbon for analysis is placed in a strong magnetic field and irradiated with electromagnetic radiation of radio wave frequency.

This is most likely to result in

- A. ionisation and fragmentation of molecules.
- B. an increase in bond vibrations of molecules.
- C. the promotion of electrons to higher energy levels.
- D. a change in the energy of the nuclei of the hydrogen atoms.

[Solution](#)

Question 3

The mass spectrum of ethanol is given on the right.

What fragment must have been lost from the molecular ion to account for the high peak at m/z 45?

[Solution](#)

[Click to see the spectrum.](#)

