

Section 3

Ans 1. Write a Note on Various Molecular Vibration involved in IR Spectroscopy.

Molecular vibration is a periodic motion of the atom of a molecule relative to each other, such that the center of mass of the molecule remains unchanged. Typical vibrational frequencies range from less than 10^5 Hz to approx 10^{14} Hz .

Infrared spectroscopy is the only method of studying molecular vibrational spectra.

Number of Vibrational Modes:

1. Symmetrical stretching \rightarrow ~~change in length of bond~~ C-H or C-C
2. Asymmetrical stretching \rightarrow ~~change in the angle b/w the bond.~~
3. Scissoring (Bending) \rightarrow ~~change in angle b/w any two groups of atom.~~
4. Rocking \rightarrow
5. Wagging
6. Twisting

01 = A change in length of a bond such as C-H or C-C

2.

03: A change in angle b/w group of a atom.

04: A change in angle b/w the plane of a group of atom.

5: A change in angle b/w two groups of atom.

6: A change in the angle b/w two groups of atom.