**BSc II Sem 4 (Organic Chemisty)**

 **Unit I**

1.(a ) Calculate number fundamental vibrations mode in CO2 molecule.

 (b) Define rocking and scissoring vibrations.

 (c) Give important applications of IR spectroscopy.

**2.** (a) Explain principle of IR spectroscopy.

 (b) Define and explain Hooke`s Law.

 (c) Differentiate the following compounds on the basis of IR spectroscopy.

 (i) HCHO & CH3COCH3

 (ii) CH3OH & CH3COOH

3. (a) What are wagging and twisting vibrations?

 (b) What are the factors upon which vibrational frequency depend?

 (c) Calculate the number of fundamental vibration bands in NH3.

4. (a) Define coupling peaks in IR spectroscopy.

 (b) How inductive effects affect the absorption frequency?

 (c) What are overtones?

Ans. 1(a) CO2 Number of fundamental vibrations: 3x3-5=4

 3(c) NH3 Number of fundamental vibrations: 3x4-6=6