

SECTION – II

- Q-4** **Attempt the Following questions** **(07)**
- a. What is linear molecules? **01**
 - b. Write specific condition for prolate symmetric top and oblate symmetric top. **01**
 - c. Which types of information are derived from rotational spectra? **01**
 - d. What Morse curve represents? **01**
 - e. Divide the region wise IR spectroscopy. **01**
 - f. Write the principle of microwave detectors. **01**
 - g. Write the expression for fundamental frequency of vibration. **01**
- Q-5** **Attempt all questions** **(14)**
- a. Explain rotational spectra of rigid diatomic molecules. **05**
 - b. Explain rotational spectra of non-rigid rotator. **05**
 - c. What is isotope effect in rotational spectra? Explain. **04**
- OR**
- Q-5** **Attempt all questions** **(14)**
- a. Explain vibrating diatomic molecule. **05**
 - b. Discuss normal vibrations of CO_2 and H_2O molecules. **05**
 - c. Explain linear polyatomic molecules. **04**
- Q-6** **Attempt all questions** **(14)**
- a. Explain Stark effect. **07**
 - b. Discuss Microwave spectrometer with schematic diagram. **07**
- OR**
- Q-6** **Attempt all Questions** **(14)**
- a. Discuss diatomic vibrating rotator with spectrum analysis. **07**
 - b. Explain IR spectrometer with schematic diagram. **07**

