

(2½ hours)

Total marks: 60

- N.B.:** (1) All questions are **compulsory** Attempt all the questions.
 (2) **Figures** to the **right** indicate full **marks**.
 (3) Draw **neat** and **labeled diagrams** wherever necessary.

Q1. a With a labeled diagram describe the working of Time of Flight mass analyzer with reflectron. **12**

OR

Q1. b Using a neat diagram and explain the principle and working of APPI system. **12**

Q2. a “Deuterated internal standard have been preferred for analysis of bio-samples using LC-MS/MS”. Explain with suitable example. **12**

OR

Q2. b Explain the principle of ICP-MS. Add a note on its advantages. **12**

Q3. a Discuss the applications of thermal analysis with suitable examples. Add a note on thermo-gravimetric curve. **12**

OR

Q3. b What are the precautions and care to be taken to improve reliability of thermal analysis while analyzing *Bhasma* samples? **12**

Q4. a With a neat labeled diagram explain the working of a FID used in GC-MS system. Add a note on Headspace GC. **12**

OR

Q4. b Using suitable diagram explain different types of ionization techniques used in a GC-MS system **12**

Q5. Write short answers to the following (**ANY THREE**)

- a. Explain the “neutral loss” mode of analysis in MS with an example. **4**
- b. Explain how daughter ion analysis improves specificity of an MS quantitation. **4**
- c. Give the applications of GC-MS in prostanoid analysis. **4**
- d. Enumerate the application of library in a GC-MS. **4**
- e. What are the advantages of Fast Atom Bombardment? **4**
