6. (a) Explain the following terms :

(i) EI

(ii) FAB

(iii) MALDI. **15**

(b) Explain the evaluation of heat of sublimation of high melting solids by mass spectrometery. **5**

Unit IV

7. Explain the principle and instrumentation of UV-Visible molecular absorption spectrometry. Discuss the various types of electronic transitions observed in organic and inorganic molecules. **20**

8. (a) Discuss Franck-Condon principle for electronic transition. **10**

(b) Explain Phosphoresence with the help of Jablonski diagram. **10**

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CC291

M. Sc. EXAMINATION, May 2019

(Third Semester)

(B Scheme) (Re-appear)

CHEMISTRY

CH601B

Inorganic Special–I (Spectroscopic Techniques)

Time : 3 *Hours*] [*Maximum Marks :* 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Explain the Sensitivity and Detection limits of Atomic Absorption Spectorsocopy ? **5**

(b) Discuss the various types of interferences observed in AAS and their elimination. **15**

2. Dicsuss Instrumentation and Principle of AES. Give any *three* advantages of AES over AAS. **20**

Unit II

3. (a) Explain the hyperfine spliting observed in the ESR spectroscopy using illustrative example. **7**

(b) Briefly explain the study of electron exchange reactions in ESR. **3**

(c) Explain the EPR spectra of Cu-Salen complex. **10**

4. (a) Calculate the number of hyperfine lines in the following :

(i) Anthracene radical

(ii) Quninone radical

(iii) Methyl radical

(iv) Cu^{2+}

(v) Benzene radical anion. **15**

(b) What is *g*-anisotropy ? **5**

Unit III

5. (a) Arrange the following in ascending order with respect to isomer shift in :

(i) Fe(II) Low spin

(ii) Fe(II) High spin

(iii) Fe(II) Low and High spin. **10**

(b) What is meant by recoil free transition ? Explain the tuning of energy in Mossbauer Spectroscopy with the help of Doppler's effect. **10**