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**TOPICS FOR INTERNAL ASSESSMENT ASSIGNMENTS: 2018-19**  
**Course: M.Sc. CHEMISTRY (Final)**

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*Important Notes: (1) Students are advised to read the separate enclosed instructions before beginning the writing of assignments. (2) Out of 15 Internal Assignment marks per paper, 5 marks will be awarded for regularity (attendance) to Counseling/ Contact Programme classes pertaining to the paper. Therefore, the topics given below are only for 10 marks each paper.*

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**Answer ANY ONE Question (1 or 2) from Each Paper. Each question carries TEN marks.**

Paper V: Analytical Chemistry

- Explain the mechanism of hyperfine interaction in the ESR spectra. Explain with examples.
  - Explain the modes of fragmentation in mass spectrometry. Give suitable examples.
- Explain the application of group theory in spectroscopy.
  - Discuss the principle and instrumentation of electronic spectroscopy.

Paper VI: Inorganic Chemistry

- Discuss the theory and applications of Mossbauer spectroscopy.
  - Explain the mechanism of hydrogenation of olefins using Wilkinson catalyst.
- Describe the role of alkali and alkaline earth metals in biological system.
  - What are electron transfer reactions? Explain the mechanism of inner and outer sphere electron transfer reactions with example.

Paper VII: Organic Chemistry

- Discuss the mechanism and application of ,  
(i) Reimer-Tiemann reaction (ii) Friedel craft's alkylation.
  - Explain the structure and synthesis of nucleotides.
- Discuss the various types of photochemical reactions occurring in organic compounds.
  - Write a note on electrocyclic reactions.

Paper VIII: Physical Chemistry

- Discuss the basic theory and instrumentation of IR spectroscopic technique.
  - Discuss the importance and applications of nuclear models.
- Explain the different methods for the grafting of polymers. Give example.
  - Discuss the principle and instrumentation of Differential Scanning calorimetry (DSC).

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