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**TOPICS FOR INTERNAL ASSESSMENT ASSIGNMENTS (2010-11)**

**Course: M.Sc. CHEMISTRY (Final)**

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*Note: Students are advised to read the separate enclosed instructions before beginning the writing of assignments.*

*Out of 15 Internal Assignment marks per paper, 5 marks will be awarded for regularity (attendance) to Counseling/ Contact Programme/ Practical classes pertaining to the paper. Therefore, the topics given below are only for 10 marks each paper.*

*Answer **any one** Question from each paper. (i.e., either 1 or 2) Each Question carries 10 Marks.*

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**Paper V: Analytical Chemistry**

- What is spin-spin coupling? Discuss the factors influencing the spin-spin coupling in NMR spectroscopy.
  - Explain the modes of fragmentation in mass spectrometry.
- Discuss the basic principle of ESR spectroscopy.
  - Compare and contrast fluorescence with phosphorescence.
  - Give the qualitative and quantitative applications of electronic spectroscopy.

**Paper VI: Inorganic Chemistry**

- Discuss the structure and bonding in ferrocenes.
  - Discuss the mechanism in hydrogenation of olefins using Wilkinson's catalyst.
- Discuss the isomerism in co-ordination compounds.
  - Discuss the theory of Mossbauer spectroscopy.

**Paper VII: Organic Chemistry**

- Write a note on Jablonaski diagram.
  - Explain the mechanism and synthetic application of Reimer-Tiemann reaction.
- Write a note on electrocyclic reactions.
  - Describe double helical structure of DNA.

**Paper VIII: Physical Chemistry**

- Discuss the principle and instrumentation of Differential Scanning calorimetry (DSC)
  - Explain the concept of Entropy in reversible and irreversible processes.
- Discuss the basic principle and application of vibrational spectroscopy.
  - Explain the kinetics of free radical polymerization.