



मैट्स विश्वविद्यालय मुक्त एवं दूरवर्ती शिक्षा कार्यक्रम आरंग, रायपुर (छ0ग0)

MATS UNIVERSITY OPEN & DISTANCE LEARNING CENTRE ARANG, RAIPUR (C.G.)

सत्रीय कार्य / Assignment Work – 2012-13

एम.एस.सी. (पूर्व) रसायन शास्त्र (M.Sc. Pre. Chemistry)

Max Marks – 30

Min Marks-12

निर्देश : सत्रीय कार्य के प्रत्येक विषय में कुल 30 अंक हैं। सभी प्रश्नों के अंक समान होंगे। सभी प्रश्न हल कीजिए। (Assignment Work of each paper carries 30 Marks. All questions carry equal marks. Attempt all questions.)

Paper-I : Inorganic Chemistry

1. What do you understand by Hybridisation. Describe characteristics of SP^2 -hybrid orbitals.
2. Write classification of co-ordination compounds. Write ligand field theory.
3. Describe metal to ligand charge transfer transitions. Write Inter-ligand transitions.
4. Write General characteristics of Inorganic polymers. Describe phospharenes.
5. Describe units of radioactivity. Describe nuclear reactor in India.

Paper-II : Organic Chemistry

1. Give brief account on the following:
 - (i) Alternant and non-alternant hydrocarbons.
 - (ii) Hyper conjugation
2. What do you understand by plane of symmetry. Describe Rejection Symmetry.
3. What are carbocations? How they are formed? Discuss their characteristics.
4. What are free radicals? Write notes on:
 - (a) Electrophilic free radicals
 - (b) Nucleophilic free radicals
5. Describe Aromatic Nucleophilic substitution.

Paper-III : Physical Chemistry

1. Describe Heisenberg's uncertainty principle.
2. State the first law of thermodynamics. Give the mathematical statement also.
3. State the second law of thermodynamics. Explain should the term 'entropy'. What are its units? Arrive at the conclusion that the entropy of the universe is increasing
4. Write a short note on energy distribution in molecules. What is the importance of energy distribution curves?
5. Explain the term adsorption. Discuss the various factors which affect the adsorption of a gas on a solid adsorbent.

Paper-IV : Group Theory Spectroscopy and Diffraction Methods

1. Describe the general features of the spectra of alkali-like atoms. How are they explained?
2. Write short notes on:
(a) Space quantization, (b) Spinning electron
3. State and explain Pauli's exclusion principle.
4. What do you understand by the term 'fine structure' of spectral lines. Describe the main features of the fine structure of the emission lines of the hydrogen atom. How are they explained.
5. What is Raman effect? Explain theoretically the observed characteristics of the Raman spectrum of a diatomic molecule. How is it used to explain the structure of a molecule?

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