INORGANIC CHEMISTRY - III (Common with B.Sc. Biotechnology-Part-III) - Paper-A (Re-appear April-2013)

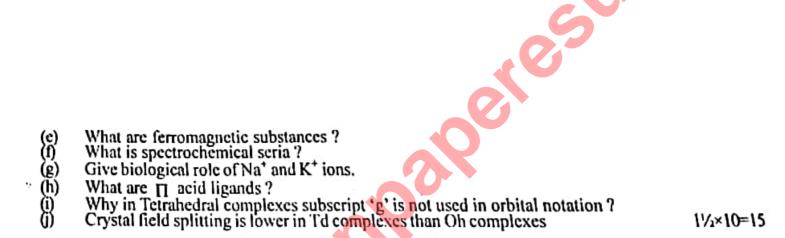
Time Allowed: Three Hours

Calculate CFSE for [Fe(H,O)]³⁴.
What are inert and labile complexes?

What are important properties of silicones?

Note: The candidates are required to attempt at least one question each from Sections, A, B and C and not more than two questions carrying 15 marks each and the entire Section D consisting of 10 short answer type questions carrying 1½ marks. Attempt five questions in all. Section - A Discuss the factors affecting the magnitude of CFSE.
Compare crystal field theory and valence band theory.
Discuss crystal field splitting of d-orbitals in case of Tetrahedral Complexes.
What is the origin of Paramagnetism and Diamagnetism. 1. Calculate magnetic moments of following ions from spin only formula Cr3+, Fe2+, Cu+1 What is magnetic susceptibility, how does it vary with Temp?
What is trans effect? Explain taking suitable example. Explain Polarization Theory of Trans effect. What is difference between Thermodynamic and Kinetic stability. Section - B Differentiate hard bases and soft bases. Explain HSAB principle and its applications. How electronegativity is related to hardness and softness? Explain Biological role of Ca²⁺ ion.
What is Nitrogen fixation? Discuss Biological Nitrogen fixation.
Discuss the role of Haemoglobin and Myoglobin. Section - C What is EAN rule? Give its significance in case of organometallics. Calculate EAN for following: Fe(CO), Ni(CO), CH, Mn(CO), Discuss bonding in metal Carbonyls. Give structures of Fe₂ (CO), and Mn₂ (CO)₁₀. Determine term symbols for P² confg. Discuss L-S coupling.
What are Orgel diagrams? What information is conveyned by these diagrams? Explain Homogeneous Hydrogenation of Alkenes. Give applications of organotin compounds. Explain brief notes on the following What are High Spin and Low Spin Complexes?

Maximum Marks: 75



11/3×10=15