

RAMAKRISHNA MISSION VIDYAMANDIRA

(A Residential Autonomous College)

Belur Math, Howrah

B.A./B.Sc. 1st Semester (July – December 2010)

Mid-Semester Examination, September 2010

Date: 09.09.2010

Chemistry (General)

Full Marks 25

Time: 11 am – 12 noon

[Answer one question from each unit]

UNIT I (INORGANIC)

1. (a) Write down the main three basic postulates of Werner's theory. [4]
(b) Write the name of the following two compounds according to IUPAC nomenclature.
(i) $K_3[Cr(C_2O_4)_3]$ (ii) $Na_2[Fe(CN)_5NO]$ [2]
(c) Explain with examples the bond moment and dipole moment. [3]
(d) Between MgO and NaCl whose lattice is greater? [2]
(e) Covalent bond(s) is (are) directional. Comment. [2]
(f) Write the geometry and hybridization of the two molecules by VSEPR concept. (i) BH_4^- (ii) PF_5 [2]
2. (a) Explain the terms – (i) double salt, (ii) imperfect complex, and (iii) perfect complex. Correlate a relation among them [6]
(b) Dipole moment of a molecule helps to determine the geometry of the molecule – explain with examples. [3]
(c) Hydrogen bonding plays a very important role in sustaining our life. Comment on. [2]
(d) What do you mean by lattice energy and hydration energy? [4]

UNIT II (ORGANIC)

3. (a) Describe the tests for the detection of elements – N, S, and Cl in an organic compound and give the respective reactions. [6]
(b) What happens when benzoic acid treated with $NaHCO_3$ solution? [2]
(c) If N is present in a sample of organic compound, it is necessary to boil the Na-extract with conc. HNO_3 before the $AgNO_3$ test for Cl element – why? [2]
4. What happens when –
(i) Sodium ferrocyanide reacts with ferric sulfate.
(ii) Sodium sulfide reacts with sodium nitroprusside.
(iii) Alcoholic solution of phenol reacts with freshly prepared ferric chloride solution.
(iv) Benzophenone reacts with 2,4-dinitrophenyl hydrazine
(v) p-Hydroxy-m-methoxybenzaldehyde reacts with Tollen's reagent. [2 X 5]