RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

FIRST YEAR [2016-19]

B.A./B.Sc. FIRST SEMESTER (July – December) 2016

Mid-Semester Examination, September 2016

Date : 16/09/2016 **CHEMISTRY (General)**

Time : 12 noon – 1 pm Paper : I Full Marks : 25

[***Answer <u>any five</u> questions***]

1. a) What is electronegativity? Electronegativity is not an inherent property of the element, explain with example. [1+2]
   b) Calculate the electronegativity of chlorine from the following data : bond energies (K cal/mole) for H_2 (104), Cl_2 (57), HCl (102) and $\chi_H = 2{\cdot}1$. [2]

2. a) Define electron affinity and successive electron affinity, give example. [1+1+1]
   b) Explain the following electron affinity value ($KJmol^{-1}$) [2]

Li	Be	B	C	N	O	F	Ne
59·8	$\simeq 0$	83·0	127·5	$\simeq 0$	140·9	327·9	$\simeq 0$

3. According to VSEPR theory predict the shape of the following species—
   XeO_3, $POCl_3$, I_3^-, ICl_4^-, NH_4^+. [5×1]

4. Define nuclear binding energy? From nuclear binding energy curve, how can you explain
   a) nuclear fission and b) Nuclear fusion reactions. [1+2+2]

5. a) What would be the size of B^{4+} ion according to the Bohr model? [2]
   b) Compare the wave length of first three lines of Balmer Series of 'H' and Li^{2+}. [3]

6. a) What are the origin and significance of Magnetic quantum number. [1·5+1·5]
   b) Between NaI and CuI which one is more ionic? Explain with reason. [2]

7. a) Define with example—
      i) Atomic radii
      ii) Ionic radii [1·5+1·5]
   b) Explain nuclear stability interms of n/p ratio. [2]

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