RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2014

SECOND YEAR

Date : 19/12/2014 **CHEMISTRY (General)**

Time : 11 am – 12 noon **Paper :** III Full Marks : 25

[Answer <u>one question</u> from each Unit]

Unit – I

1. a) Give a comparative account of C, Si, Ge, Sn and Pb with reference to their electronic configuration, oxidation states and oxides. [1+2½+2½]

   b) Why $B_3N_3H_6$ is called inorganic benzene? Give a comparative study between $B_3N_3H_6$ and benzene specially to their reactivity. [3]

   c) Give the preparation and two uses of silica gel. [2]

   d) "Sn (II) is reducing but Pb(IV) behaves as an oxidising agent." Explain. [2]

2. a) "Ortho-boric acid is a very weak acid but in presence of glycerol, it acts as a strong acid." Explain [3]

   b) Compare hydrolysis products of NCl_3 and PCl_3. [3]

   c) Justify the formulation of $T\ell I_3$. [3]

   d) Show the structures of hypophosphoric acid and pyrophosphoric acid. [2]

   e) "SiO_2 is a solid whereas CO_2 is a gas at room temperature." Explain [2]

Unit – II

3. a) Compare thermal stability and reducing properties of the hydrides of O, S and Se. [4]

   b) KHF_2 is known but not $KHCl_2$. Explain [2]

   c) Why xenon is the first element among the noble gases that formed true chemical compounds? [2]

   d) Why dithionic acid is not considered as a member of polythionic acid group having the general formula $H_2S_nO_6$? [2]

   e) "SF_6 is inert to hydrolysis but TeF_6 does it readily." Explain [2]

4. a) How XeF_2 and XeF_4 are prepared in laboratory? Show the structure of XeF_2 and discuss the bonding in it. [2+3]

   b) Write a short not on "interhalogen compounds." [3]

   c) He, Ne, At, Kr and Xe are now called noble gases not inert gases. Comment on. [2]

   d) State with equations what happens when $Na_2S_2O_3$ solution is added to a $AgNO_3$ solution dropwise and finally in excess amount. [2]

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