RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

SECOND YEAR

B.A./B.SC. THIRD SEMESTER (July – December), 2012

Mid-Semester Examination, September 2012

Date : 11/09/2012 **CHEMISTRY (General)**

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

[*Answer **any one** question from each unit*]

Unit – I

1. a) Why is ortho– and para– hydrogen is viewed as nuclear spin isomers? Write briefly about ortho and para hydrogen. [1+3]
   b) What do you mean by hydride? Write a short note about the different types of hydrides. [1+4]
   c) Write down the principle applied for the isolation of noble gases from liquid air. Describe the isolation of noble gases from liquid air with a flow chart diagram. [3]
   d) Why is Lithium has a more tendency to form complex compounds among the all alkali metals? — Explain. [2]

2. a) Write down the name and formula of two important ores of lithium. [2]
   b) How will you obtained pure lithium from its natural source? [4]
   c) Write a short note about heavy water. [3]
   d) Heat of reaction ($\Delta H°$) for KrF_2 and XeF_2 is different. —Comment on. [2]
   e) Explain the oxidising properties of XeF_2 with a suitable reaction. [2]

Unit – II

3. a) What is pseudohalogens? CN^-, SCN^- and N_3^- is called pseudohalogens, explain with reasons. [1+3]
   b) Write short notes on interhalogens. [4]
   c) Why is He, Ne, Ar, Kr and Xe called noble gases? [2]
   d) How the idea that xenon can form compound developed? —Explain. [2]

4. a) Write the autoionisation product of BrF_3 and ClF. [2]
   b) Both BrF_3 and SbF_5 are non conductor but mixture of this is good conductors. Explain with reasons. [2]
   c) Complete the following reactions [1+1]
   $NOF + AsF_5 \longrightarrow$
   $ClF + SbF_5 \longrightarrow$
   d) Solubility of iodine in water increases in presence of KI. Explain with reasons. [2]
   e) Write the special properties of helium. [3]
   f) Write one use of helium gases. [1]