RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [2017-20]

B.A./B.Sc. THIRD SEMESTER (July – December) 2018

Mid-Semester Examination, September 2018

Date : 25/09/2018 **CHEMISTRY (General)**

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

Answer **any five** questions**:** (5 × 5)

1. a) Why do the melting and the boiling points of noble gases increase with increasing atomic number? 2

   b) How xenon fluorides are prepared? Predict the structure of XeF_2. 2+1

2. a) Outline the preparation of the following compounds:

   (i) Potassium chlorate (ii) Bleaching powder. 2

   b) Why XeF_6 cannot be stored in glass vessel. 2

   c) State two applications of noble gases. 1

3. a) What happens when:

   (i) Chlorine water is added in drops to an aqueous solution of KI and shaken in presence of CCl_4?

   (ii) A mixture of calcium fluoride, sand and concentrated H_2SO_4 is warmed in a lead crucible and drop of water is held in the issuing vapor?

   (iii) AgCl precipitate is shaken with KI solution? 3

   b) Write short note on pseudo-halogen. 2

4. a) Arrange the following halogen hydracids according to their acid strength; HF, HCl, HBr and HI? Explain your answer. 3

   b) What are the reasons for exceptionally high reactivity of fluorine? 2

5. How will you prepare borazole and N-methyl borazole? Give a short description on the structure of borazole. 3+2

6. a) What is ‘inert-pair effect’? $SnCl_2$ is a strong reducing agent but $PbCl_2$ is not. Explain. 3

   b) NCl_3 and PCl_3 give different products on hydrolysis. Explain. 2

7. a) Give a brief description on phosphazene. 2

   b) Hydroxylamine has both oxidising and reducing properties. Explain with equations. 3

8. a) What is inorganic benzene? Draw a comparison between inorganic benzene and benzene. 3

   b) What happens when $NaBiO_3$ is added to an aqueous HNO_3 solution of $MnSO_4$? 2

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