

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2019

SECOND YEAR [BATCH 2018-21]

CHEMISTRY [General]

Paper : III

Date : 17/12/2019

Time : 11 am – 1 pm

Full Marks : 25

(Attempt one question from each Unit)

Unit - I

[13 marks]

1. a) Compare the hydrides of gr 15 elements in regard to
(i) Basicity (ii) Reducing properties. [2]
b) Why CO_2 is gas but SiO_2 is solid? [2]
c) Give the structure of azide ion. [1]
d) How hydroxylamine is prepared? Mention its uses. [2+1]
e) AlCl_3 is covalent where as AlF_3 is ionic — Explain. [2]
f) What happens when a mixture of Silica, Calcium fluoride and concentrate H_2SO_4 is heated in a lead-crucible, then a drop of water is held in the issuing gas. [3]
2. a) Write the Borax Bead test of Co^{2+} salt. How will you distinguish the Borax salt and Boric Acid? [3]
b) What is difference between calcium carbide and aluminium carbide? [2]
c) Compare H_3PO_3 and H_3PO_2 with respect to
(i) strength as acid (ii) Reducing property. [3]
d) PbCl_4 is very unstable and oxidising- Why? [2]
e) Write down the preparation and uses of hydrazine (N_2H_4). [3]

Unit – II

[12 marks]

3. a) How will you detect Br^- in presence of I^- . Give equation. [3]
b) What happens when AgNO_3 is added to an aqueous solution of sodium thiosulfate. [2]
c) Compare the acid strength of the hydrides of halogens with explanation. [3]
d) How is XeF_6 prepared? Discuss its structure. [1+2]
e) H_2SiF_6 is a stable compound but H_2SiCl_6 is non-existent. Explain. [1]
4. a) i) Give the structure of XeF_2 and XeF_4 .
ii) Complete the following $\text{XeF}_6 + \text{SiO}_2$ [3]
b) Discuss the basic properties of Iodine. [2]
c) What are inter halogen compounds? Why they are more reactive than halogens? [3]
d) Discuss and compare the characteristics of H_2M ($\text{M} = \text{S and Se}$) in terms of
i) acidic behaviour and ii) reducing property. [2+2]

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