

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2015

SECOND YEAR [BATCH 2014-17]

CHEMISTRY [General]

Date : 18/12/2015

Time : 11 am – 1 pm

Paper : III

Full Marks : 25

[Answer any one question from each Unit]

Unit - I

1. a) What is inorganic graphite? Compare inorganic graphite with graphite. [2]
b) NCl_3 and PCl_3 give different hydrolytic products. Explain with equations. [2]
c) Explain the role of inert pair effect in the chemistry of the elements C, Si, Ge, Sn and Pb. [3]
d) Explain the following :
i) Phosphorus acid (H_3PO_3) is a dibasic acid. [2]
ii) Boric acid is a weak acid but behaves like a strong acid in presence of glycerol. [2]
e) CO_2 is a gas but SiO_2 is a solid. Explain [2]
2. a) Give a comparative discussion of the properties and structures of trihydrides and trichlorides of the elements N, P, As, Sb and Bi. [3+3]
b) Write the preparation of borazine. Compare its reactivity with benzene. [3]
c) What happens when
i) Gold (III) chloride is warmed with tin(II) chloride. [2]
ii) Calcium fluoride is heated with sand and concentrated sulfuric acid. [2]

Unit - II

3. a) Write the structures of XeF_2 , XeF_4 and XeF_6 showing the state of hybridisation. [3]
b) How is peroxodisulfuric acid ($\text{H}_2\text{S}_2\text{O}_8$) prepared? What is its structure? State an important use of potassium peroxodisulfate. [2+1+1]
c) Give an account of the oxyacids of chlorine with reference to
(i) structure (ii) acid strength (iii) oxidising power [5]
4. a) What happens when
i) Sodium thiosulfate solution is slowly added to silver nitrate solution. [2]
ii) A mixture of potassium bromide and potassium bromate is acidified with dilute hydrochloric acid. [2]
b) Write a note on interhalogen compounds. [3]
c) What happens when XeF_6 is treated with water? [2]
d) Explain: Fluorine always shows an oxidation state of $-I$, other halogens can show oxidation states of $+I$, III , V and VII also. [3]

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