LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

THIRD SEMESTER – **NOVEMBER 2017**

CH 3507 / CH 3503– MAIN GROUP ELEMENTS & SOLID STATE CHEMISTRY

Date: 07-11-2017 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

PART –A

Answer **ALL** the questions**.** **(10 x 2 = 20 marks)**

1. Alkali metals are good reducing agents. Explain
2. How do alkali metals react with water?
3. What is hydroboration reaction?
4. What is C_{60}?
5. How is sodium bismuthate prepared? Mention its use.
6. List the oxyacids of sulphur.
7. What is dry ice?
8. Give the structure of IF_5
9. If the radius ratio is 0.85. Determine the coordination number and geometry of the crystal.
10. Give the composition of pyrex and soda glass.

PART -B

Answer any **EIGHT** questions **(8x5 =40 marks)**

11. Describe the biological importance of complexes of alkali metals.
12. Give the preparation, properties and uses of hydroxylamine.
13. The structure of BN is comparable to graphite. Explain.
14. Give a detailed account of carbides.
15. The strength of the oxy acids of halogens are of the order $HXO_4 > HXO_3 > HXO_2 > HOX$.
    Give reason
16. How are the following prepared?
    a. ClO_2 b.OF_2 c. I_2O_5
17. Explain limiting radius ratio. How is it used to determine the geometry of the crystal?
18. Discuss the principle of X-ray diffraction.
19. Describe the preparation, properties and structure of $H_2S_2O_8$
20. a)What is borax bead test?
    b. Explain the amphoteric nature of aluminium with suitable examples
21. Give any two uses for the following i.white lead ii. lead carbonate iii. silica gel
22. a. Nitrogen forms NCl_3 whereas phosphorous forms PCl_3 and PCl_5
    b. Write briefly on polythionic acids.

PART -C

Answer any **FOUR** questions **(4x10=40 marks)**

23. a)What are silicates? Discuss the classification with an example each.

    b) Which allotrope of carbon is a non conductor of electricity and why?

24. Give a comparative account of the oxides, carbonates, and hydroxides of alkali metals.

25. Discuss the scottky and Frenkel defects of crystals. Diborane.

26. How are oxides classified? Explain giving an example each.

27. Discuss the structure of i. cesium chloride ii. Zinc Blende

28. a) Give evidences to show that iodine behaves as cation.

    b) I_2 is insoluble in water. It dissolves readily in a solution of KI. Discuss the structure of the complex.

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