

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – November 2009

CH 3503 - MAIN GROUP ELEMENTS & SOLID STATE CHEMISTRY

Date & Time: 6/11/2009 / 9:00 - 12:00

Dept. No.

Max. : 100 Marks

PART –A

Answer ALL the questions.

(10 x 2 = 20 marks)

1. Name the oxo salt of sodium.
2. Explain the reaction of Na,K with oxygen.
3. What is allotropy? Give the allotropes of Carbon.
4. Explain the amphoteric nature of Aluminium.
5. Give the use of sodium bismuthate and hydrazine.
6. Mention the oxides of nitrogen and phosphorous.
7. Draw the structure of BrF_3 .
8. What are pseudohalogens?
9. Draw the structure of CsCl .
10. What are Miller indices?

PART –B

Answer any EIGHT questions

(8 x 5 = 40 marks)

11. Discuss the biological importance of crown ethers.
12. How is beryllium extracted from its ore?
13. a. What is hydroboration reaction
b. Discuss the structure of diborane. (2 +3)
14. How are carbides classified?
15. Explain the properties and uses of a. hydroxylamine b. phosphene
16. Write a note on the oxides and oxyacids of sulphur.
17. Discuss the structure of halides of phosphorous.
18. How is available chlorine in bleaching powder determined?
19. Discuss the strength of oxoacids of halogens.
20. Explain the Schottky and Frenkel defects of crystals.
21. How is X-ray diffraction technique used to study the structure of crystals?
22. How are crystals classified? Give an example each.

PART –C

Answer any FOUR questions

(4 x 10 = 40 marks)

23. Describe the preparation and properties of oxides, hydroxides, peroxides and superoxides of alkali metals.
24. What are silicates? How are they classified?
25. Discuss the preparation, properties and structure of oxoacids of Phosphorous.
26. How is ozone prepared? Discuss its properties, structure and uses.
27. Discuss the structure of a. IF_5 b. ClF_3 c. ICl d. BrF_5 using VSEPR theory.
28. Explain limiting radius ratio. How is it used to determine the geometry of ionic crystals?