

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – CHEMISTRY

SECOND SEMESTER – APRIL 2022

16/17/18UCH2MC02 – CHEMICAL BONDING AND MAIN GROUP ELEMENTS

Date: 18-06-2022

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

PART-A

Answer ALL the questions:

(10 x 2 = 20)

1. What are the factors favoring the formation of ionic compounds?
2. Mention any four properties of ionic compounds.
3. Define unit cell.
4. What do you mean by F-center?
5. What are Vander Waals forces?
6. Why does ice float on water?
7. What is borax bead test? Give one example.
8. Mention the types of boranes.
9. Define catenation.
10. Draw the structure of orthophosphoric acid.

PART-B

Answer ANY EIGHT questions

(8 x 5 = 40)

11. Give Born-Landé equation and expand the terms involved in it.
12. State and explain Fajan's rule.
13. Explain the solubility of ionic compounds in polar solvents.
14. Write short notes on Weiss and Miller indices.
15. Sketch and discuss the unit cell structures of CsCl.
16. Discuss in detail London forces and ion dipole-dipole interactions.
17. Comment on the variation of the boiling point of 15, 16 and 17 group hydrides.
18. Discuss the anomalous behavior of Lithium.
19. Explain the biological importance of Na-K pump.
20. Discuss the preparation, properties and structure of diborane.
21. Explain the classification of carbides.
22. Discuss the preparation, properties and any two uses of sodium nitroprusside.

PART-C

Answer ANY FOUR questions:

(4 x 10 = 40)

23. Define lattice energy. Explain Born-Haber cycle for MX formation. (10)
24. Explain the types of hydrogen bonding. (10)
25. (a) Draw and discuss the crystal structure of sodium chloride. (5)
(b) Write a note on stoichiometric defects in solids. (5)
26. Write short notes on the preparation, classification and uses of clathrates. (10)
27. (a) Write a note on crown ethers of alkali metals. (5)
(b) How to extract Beryllium from its ore? (5)
28. Describe the classification of silicates. (10)

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