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Exam. Code : 103201
Subject Code : 1292

B.A./B.Sc. Semester–I

CHEMISTRY

(Inorganic Chemistry–I)

Time Allowed—3 Hours] [Maximum Marks—35

PART–A :– Attempt **ALL** questions. Each question carries 1 mark.

1. Write the general form of Schrodinger wave equation.
2. Draw the radial wave function for 3p and 3d orbitals.
3. What is the reason for the decrease in the first ionization energy from N to O and P to S ?
4. What are the rules for the linear combination of atomic orbitals ?
5. Predict the shape of $SnCl_2$ on the basis of valence bond theory.
6. Write the electronic configuration of CN^-.
7. What is the coordination no. of Na in NaCl ?
8. How are properties of NH_3 affected by hydrogen bonding ?

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PART–B :– Attempt **TWO** questions from each Section. Each question carries 4½ marks.

SECTION–I

9. Explain Hunds multiplicity rule and Pauli's exclusion principle.

10. Explain the variation in ionization energies along a group and a period with the help of examples.

11. What do you mean by an Effective Nuclear Charge ? How would you calculate for a given ion ? Explain with the help of an example.

SECTION–II

12. Explain the shapes of BF_3, IF_7 and PF_5 on the basis of hybridization.

13. What is a Covalent Bond ? Discuss the formation of a covalent bond with the help of an example. How is it different from an ionic bond ?

14. Show that CO and NO^+ are isoelectronic. Draw their molecular orbital energy level diagrams exhibiting the electronic configuration.

SECTION–III

15. Outline a Born-Haber cycle for the formation of an ionic compound MCl. Define the terms used in that.

16. Describe the crystal structure of Zinc blende and Wurtzite. Give the coordination numbers of the ions.

17. What are Ionic Solids ? Discuss in detail their conducting behaviour with an example.

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