

AS/2110

5191/NH

Paper - I
Inorganic Chemistry

Max. Marks : 26 Marks

Max. Time: 3 hrs

Min. Pass Marks : 35%

Candidates are required to attempt two questions (4 marks each) selecting each from section A & B. Section C is compulsory (2 marks each question).

SECTION - A

1. Derive Schrodinger wave equation and define each term involved in it?
2. Write a note on:
 - (a) Heisenberg uncertainty principle
 - (b) Aufbau principle and its limitations
3. Define electronegativity and ionization energy. How do these vary along a period and down the group in periodic table?
4. Discuss preparation, properties, structure and geometry of XeF_4 ?

SECTION - B

5. Discuss Valence bond theory and its limitations in detail?
6. Discuss hybridization? Discuss the shapes of the following molecules on the basis of hybridization: PF_6^- , SF_6 , BF_3
7. Draw molecular orbital energy level diagram of CN molecule. Discuss bond order and magnetic character of this molecule?
8. What are electron deficient compounds? Draw and discuss the structure of diborane in detail?

SECTION - C

9. (a) Write electronic configuration for Cr^{2+} and Cu^{2+} ?
- (b) What do you mean by periodicity of elements?
- (c) Why most of the noble gas compounds involve fluorine and oxygen?
- (d) Draw molecular orbital energy level diagram of O_2 molecule and show paramagnetism?
- (e) Using VSEPR theory describes the shape of H_3O^+ and H_2O ?