

INORGANIC CHEMISTRY - I

(Re-Appeal April 2012)

Time : Three Hours

Maximum Marks : 75

Note : Attempt one question each from Section A, B, C and D carrying 15 marks each, and the entire Section E consisting of 8 short answer type questions carrying 7×2+1 marks each.

Section-A

- (a) Explain and derive an expression for de-Broglie matter wave concept. How does it support Bohr's model ? 10
(b) Distinguish between ψ and ψ^2 . 5
- Define I.E. explain the factors on which it depends. How does it vary in 2nd period. 15
- (a) Explain the salient features of hydrides of s-block elements. 7
(b) Explain the structures of XeF_2 , XeF_4 , XeOF_4 . 8

Section-B

- (a) Explain the hybridisation in the following 9
(i) PF_6^- (ii) SnCl_6^{2-} (iii) BF_4^-

	(b) Explain the structures of the following on the basis of VSEPR theory.	6
	(i) H_2O (ii) SF_4 .	
5.	(a) Draw the M.O. diagrams for CO^\ominus and NO^\ominus and explain their characteristics.	10
	(b) Explain the bonding in diborane	5
6.	(a) Discuss the structure of Zinc blende diagrammatically.	8
	(b) Discuss the limitations of Radius ratio.	7
Section-C		
7.	(a) Define and explain Lattice energy. How will you determine it by Boron Haber's cycle ?	10
	(b) Explain H-bonding by giving suitable examples.	5
8.	Explain in detail, the following :	10
	(a) Interhalogen compounds and their characteristics.	
	(b) Explain the relative strength of $HClO_4$, $HClO_3$, $HClO_2$, $HClO$	
Section-D		
9.	Explain in brief. Do all the parts :	
	(i) Write electronic configuration of Fe^{+2} (26) and Cr^{+3} (24).	2
	(ii) Define Electronegativity with example.	2
	(iii) Define Hund's Rule, why half filled p-orbital is stable.	2
	(iv) Why Lithium resembles magnesium	2
	(v) Give the characteristics of Covalent bond.	2
	(vi) Define Polarising power.	2
	(vii) What do you mean by close packing (be brief)	2
	(viii) Draw the structure of Pyrophosphoric acid.	1