(i) Printed Pages: 2 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 0 4 9

Exam. Code : 0 0 0 1

B.A./B.Sc. (General) I[st] Semester

(2122)

CHEMISTRY (Same for B.Sc. Microbial & Food Tech.)

Paper : I (Inorganic Chemistry-A)

Time Allowed : Three Hours] [Maximum Marks : 22

Note :— Attempt FIVE questions in all, by selecting ONE question each from Units-I-IV and compulsory question (Question-9)

UNIT—I

1. (a) Derive Schrodinger wave equation starting from basic equation $\psi = A\sin 2\pi x/\lambda$.

   (b) Write electronic configuration of Cr and Cu. Justify your answer. 2,2

2. (a) Draw radial distribution curves for 4s and 3d.

   (b) Write short note on azimuthal quantum number and magnetic quantum number. 2,2

UNIT—II

3. (a) Why 4s electron is removed first followed by 3d in d orbital elements ? Explain on the basis of Slater's rule.

   (b) Discuss variation of oxidation states in group 14. 2,2

4. (a) What is electron affinity ? Why noble gases have zero electron affinity ?

(b) Discuss one method to determine electronegativity. 2,2

UNIT—III

5. (a) Discuss chemistry of alkali metals in liquid ammonia.

(b) Write a note on the anomalous behavior of Be. 2,2

6. (a) Give chemical equations for the reaction of :

(i) $XeOF_4$ and SiO_2

(ii) XeO_2F_2 with SbF_5.

(b) Draw and discuss the structures of $XeOF_2$ and $XeFe_6$. 2,2

UNIT—IV

7. (a) Explain hybridization in case of $SnCl_2$ and BF_4^-.

(b) Write various postulates of VSEPR theory. Draw geometries of ClF_3 and ICl_2^-. 2,2

8. (a) How do dipole moment and electronegativity difference affect percent ionic character in a molecule ?

(b) Draw molecular orbital energy level diagram for N_2 molecule. Comment on its bond order and magnetic properties. 2,2

(Compulsory Question)

9. (a) State n+1 rule. Give one example.

(b) Discuss variation in ionization enthalpy in 2nd period.

(c) Define isoelectronic species. Give two examples.

(d) Which alkali metal form peroxide and why ?

(e) Write various conditions for hybridization.

(f) Give two difference in bonding and antibonding molecular orbitals. 1×6