Sub Code : 0547 (1048)   Exam Code : 0006

Exam : B.A./B.Sc. (General), 6th Semester

Subject : Chemistry

Paper : Paper-XXI: Inorganic Chemistry-B (Same for B.Sc. Microbial and food Technology)

Time : 3 Hours   ***Maximum Marks : 22***

Note: Attempt **five** questions in all, selecting **one** question from each **Unit. Unit-V** is compulsory.

UNIT - I

1. (a) What is Polymeric backbone in silicone and Phosphazenes ?   2

   (b) What are Homomorphic and Heteromorphic T1– system. Explain with examples.

   2

2. (a) How is Cyclic $(NPCl_2)_3$ prepared ? Give an account of its Nucleophilic substitution reactions.   2

   (b) What are silicone oils and silicone Rubbers. Explain with **one** example each.   2

UNIT - II

3. (a) Define HSAB Principle. Discuss the applications and limitations of this Principle. 2

(b) What is relationship between Electronegativity and Hardness. Give example.

2

4. (a) What lead to hard – hard and soft – soft interactions. Give evidences in support. What are its consequences ? 2

(b) How will you determine the relative strength of Hard and Soft Acids and Bases ? 2

UNIT - III

5. (a) What are Orgel Diagrams ? Draw Orgel energy level diagram for d^1 configuration in tetrahedral system. What are the limitations of these diagrams ? 2

(b) State and explain two selection rules for Electronic Absorption spectrum of transition metal complexes. 2

6. (a) Why do tetrahedral complexes of transition metal elements give much more intense d-d electronic spectra than in octahedral complexes ? 2

(b) How Russell Saunders states get splitted in octahedral fields ? Explain with diagram.

2

UNIT - IV

7. (a) What is Origin of magnetism ? How is magnetic susceptibility measured ?

2

(b) Calculate spin only magnetic moment for :

2

   (i) Ni^{2+}

   (ii) Cu^{2+}

   (iii) Co^{3+}

   (iv) Cr^{2+}

8. (a) Write short notes on the following : 2

   (i) Diamagnetic Correction

   (ii) Ferromagnetism and Antiferromagetism

(b) Explain spin and Orbital contribution to magnetic mements. Give example.

2

UNIT – V
Compulsory Questions

9. (a) What is Absolute Hardness.

6

(b) What is Curie's Point and Neel Temperature

(c) Write Mulliken symbol for spectroscopic terms D and F in Tetrahedral fields.

(d) Define soft base with one example.

(e) Name one ion which shows Temperature independent Paramagnetism.

(f) Give one important use of silicone Rubber

4   9,000