(i) Printed Pages : 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0547

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B.A./B.Sc. (General) 6th Semester

(2053)

CHEMISTRY

(Same for B.Sc. Microbial and Food Technology)

Paper–XXI : Inorganic Chemistry–B

Time Allowed : Three Hours] **[Maximum Marks : 22**

Note :—Attempt **FIVE** questions in all, selecting **ONE** question from each Unit I—IV. Unit V is compulsory.

UNIT—I

1. (a) What are Silicones ? Give important properties of silicones.

   (b) How is cyclotriphosphazenes prepared ? Give an account of its nucleophilic susbstitution reaction. 2,2

2. (a) Discuss the Island model of bonding in cyclotriphosphazenes.

   (b) What are Silicon Oil and Silicon Rubber ? Explain. 2,2

UNIT—II

3. (a) While hard interactions are generally ionic and soft-soft interactions are covalent ? Why is it so ?

   (b) How does HSAB principle explain the validity of the following reactions ?

   $2CuF + CuI_2 \rightarrow CuF_2 + 2CuI$

   $CH_3F + CHF_3 \rightarrow CF_4 + CH_4$ 2,2

4. (a) Explain Symbiosis in detail.

   (b) Is there any relationship between electronegativity and hardness ? Explain. 2,2

UNIT—III

5. (a) Calculate ground state term symbol and number of microstates for d^3 octahedral system.

   (b) Write a short note on spectrochemical series. 2,2

6. (a) Explain Laporte allowed and forbidden transitions.

   (b) Draw a combined Orgel diagram for d^1 and d^9 tetrahedral complexes. 2,2

UNIT—IV

7. (a) What are the advantages and disadvantages of Gouy's method ?

   (b) Explain the following :—

   (i) Neel Temperature

   (ii) Antiferromagnetism. 2,2

8. (a) Derive relationship between magnetic susceptibility and magnetic moment.

(b) Explain quenching of Orbital angular momentum. 2,2

UNIT—V

9. (a) Explain Limitations of HSAB principle.

(b) Explain Russell Saunders Coupling.

(c) What is TIP ?

(d) Calculate the spin only magnetic moments for Co^{+2} and Cu^{+2} ions. 1.5×4