

(i) Printed Pages : 4]

Roll No.

(ii) Questions : 9]

Sub. Code :

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Exam. Code :

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

1047

CHEMISTRY

(Inorganic Chemistry-B)

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

Paper : XXI

Time : 3 Hours]

[Max. Marks : 22

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

Unit-I

1. (a) What are Silicones ? Discuss the structure and important properties of silicones.

(b) Name and explain three major classes of silicones elastomers.

2,2

2. (a) Discuss the Island Model of structure and bending in cyclic $(\text{NPCl}_2)_3$.

(b) Write brief notes on the following :

(i) Silicone oil

(ii) Silicone rubber

2,2

Unit-II

3. (a) What are hard and soft acids and bases ?

Explain HSAB principle with suitable examples.

(b) Hard-hard interactions are generally ionic while soft-soft interactions are covalent. Why is it so ? 2,2

4. (a) How electronegativity can be used to explain hardness and softness of acids and bases ?

(b) What is Symbiosis ? Give examples. What are its applications ? 2,2

Unit-III

5. (a) Draw and discuss the Orgel energy level diagrams for d^1 and d^9 tetrahedral systems. What are its limitations ?

(b) Determine ground state term symbols for Cu^{2+} and Ni^{2+} ions. 2,2

6. (a) Discuss under what conditions, the selection rules for electronic spectra of transition metal complexes are relaxed. Give examples.

(b) Write a brief note on spectro-chemical series.

What are its applications ?

2,2

Unit-IV

7. (a) What is Magnetic Susceptibility ? How does it vary with temperature ?

(b) What is meant by quenching of orbital angular momentum ? What are its consequences ?

2,2

8. (a) Give two main advantages and disadvantages of Gouy's method for measuring magnetic susceptibility.

(b) What is temperature independent paramagnetism (TIP) ? Explain with examples.

2,2

Unit-V

Compulsory Question

9. (a) Draw the structure of repeating unit in silicone.

(b) Which of the two Cu(I) or Cu(II) is diamagnetic ?

- (c) Why is pyridine a border line base while ammonia is a hard base ?
- (d) Write Mullipen symbols for spectroscopic terms in octahedral field.
- (e) Define Hard acid with example.
- (f) Why BeF_2 is more stable than BeI_2 ? $1 \times 6 = 6$

15 August

Q. No. Page no.