

J-13/2110

INORGANIC CHEMISTRY

Paper-101

(Semester-I)

Time : Three Hours]

[Maximum Marks : 55

Note : Attempt *two* questions each from Section A and B
Section C will be compulsory.

SECTION-A

- I. Discuss energy distribution in hydrogen molecule ion. 8
- II. Discuss synthesis and properties of alkene and alkyne complexes. 8
- III. Discuss MOT of octahedral complexes. Also draw energy level diagram. 8
- IV. Write notes on the following :
 - (a) Three center bond. 4
 - (b) Linnet double Quartet approach. 4

SECTION-B

- V. Explain the role of haemoglobin and myoglobin in transport and storage of oxygen in vertebrates. 8½
- VI. (a) Describe the role of lithium in mental health. 4
(b) Write a note on antimicrobial and antitumour activity of metal complexes. 4½
- VII. (a) Draw and discuss Orgel diagram of $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$. Assign the transitions. 5
(b) What is spin selection rule ? Discuss its breakdown. 3½
- VIII. Write notes on the following :
- (a) Magnetic Susceptibility. 4
(b) Jahn Teller effect. 4½

SECTION-C (Compulsory Question)

- IX. Write short notes on the following :
- (a) Give principle of variation method. 2
(b) Give example of complexes containing isocyanide and CS ligands. 2
(c) Discuss the formation of covalent bond using orbital overlap concept. 2
(d) What is Pauli's exclusion principle ? 2

- (e) What are limitation of CFT ? 2
- (f) What is haemocyanin ? 2
- (g) What is carboxypeptidase ? 2
- (h) What is the role of Ferritin in living organism ? 2
- (i) What do you mean by small multiplet separations ? 2
- (j) Write term symbol of Cu^{2+} , Ti^{2+} . 2
- (k) Discuss colour of KMnO_4 . 2
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