

Roll No.

Total Pages : 4

12968/N**K-8/2111****INORGANIC CHEMISTRY**

Paper-1101T

Semester-I

Time Allowed : 3 Hours] [Maximum Marks : 55

Note : The candidates are required to attempt **two** questions each from Section A carrying 8 marks each and Section B carrying 8½ marks each and the entire Section C consisting of 11 short answer type questions carrying 2 marks each.

SECTION—A

1. What is Linnet's double-quartet approach? How does it explain paramagnetic nature of Oxygen? 10

2. Discuss MOT of square planer complexes taking Π -bonding into account. 8
3. What are Π -acid ligands ? Discuss methods of synthesis and Chemical properties of metal Carbonyls. 8
4. Write notes on the following : 4,4
- (a) Angular overlap model
- (b) Π complexes of Enyl ligand.

SECTION—B

5. Describe the following :
- (a) [2Fe-2S] Ferredoxin. 4
- (b) [4Fe-4S] Protein. 4½
6. What is Cytochrome P-450 named so? Give an account of Cytochrome oxidase in living organism. 8½

7. (a) Draw and discuss Orgel diagram of $[V(H_2O_6)]^{3+}$.
Assign the transitions. 5

(b) What is Laporte orbital selection rule ? Discuss
its breakdown. $3\frac{1}{2}$

8. Write notes on the following :

(a) Spin Crossover. $4\frac{1}{2}$

(b) Ferromagnetism. 4

SECTION—C

9. Write in short on the following : $11 \times 2 = 22$

(i) What is Nephelauxetic effect?

(ii) Give examples of Dinitrogen complexes.

(iii) What are necessary conditions for the
formation of Ionic bond?

(iv) What is the ground state energy of Hydrogen
atom?

(v) What are Symmetric and Antisymmetric
energy states?

(vi) Discuss the Color of $K_2Cr_2O_7$.

(vii) Draw structure of Haemoglobin.

(viii) Cu, Zn superoxidase dismutase is being used
to remove Toxic superoxide ion. How?

(ix) What is Chelation therapy ?

(x) Write the term symbol of Fe^{2+} , Co^{2+} .

(xi) What is large multiplet separation ?