

Roll No. ....

Total Pages : 03

**LMDQ/D-23**

**6531**

INORGANIC CHEMISTRY (GENERAL)

CHEM-301

(CBCS-LOCF)

Time : Three Hours]

[Maximum Marks : 45

**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

**(Compulsory Question)**

1. (a) Explain the structure and function of Hemerythrin. **3**
- (b) Write and explain the ilkovic equation. **2**
- (c) What is the interference of O<sub>2</sub> in the determination of Metal ion in polarography ? **2**
- (d) Define the terms vertical and adiabatic ionization. **2**

**Unit I**

2. (a) Describe the basic structural features of hemoglobin and myoglobin and explain their biological functions. **5**
- (b) Explain that cytochrome p-450 is a monooxygenase. **4**

(5-12/3) L-6531

P.T.O.

3. (a) What are the electron carriers ? Describe the role of iron-Sulphur proteins as electron carrier in biological system. 5
- (b) Write a short note on model synthetic complexes of cobalt. 4

### Unit II

4. (a) Explain the determination of coordination number of complexes with the help of  $E_{1/2}$ . 4
- (b) Describe the term hydrogen volume and explain its volume, Erdy and Gruss theory. 5
5. (a) Determine and depict the IR active modes of  $SF_4$  ( $AX_4$  type) by using group theoretic approach. 5
- (b) On the basis of IR spectroscopy, explain the coordination behavior of  $\beta$ -diketones with transition metal ions. 4

### Unit III

6. (a) Explain the term isomer shift and quadrupole splitting in Mossbauer. 4
- (b) Define photoelectric effect. Draw and explain the possible peaks for  $N_2$  molecule in photoelectron spectrum. 5

7. (a) Give the principle of ESCA. What chemical information is obtained from ESCA ? 5
- (b) Explain the adiabatic and vibrational ionization energies in PES by using vibrational structure for a molecule. 4