

Roll No. ....

**94177**

**B. Sc. Biotechnology 6th Semester (New Scheme) Examination – May, 2023**

**INORGANIC CHEMISTRY**

Paper : BT-607/BIN-605

*Time : Three hours ]*

*[ Maximum Marks : 40*

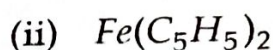
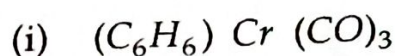
*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory.*

1.  (a) Name two  $\pi$ -acid ligand
- (b) Define symbiosis
- (c) Write conjugate acid of  $HSO_4^-$
- (d) What is porphin ?
- (e) What is oxidation state of nitrogen and phosphorus in phosphazene. 1 × 5 = 5

### SECTION - A

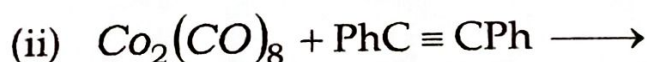
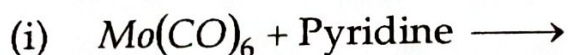
2. (a) Write IUPAC names of following : 3



(b) Describe application of Organotin and organo mercury compounds. 3

3. (a) What is Zeise's salt ? Draw its structure and discuss its salient features. 4

(b) Complete the reactions : 2



### SECTION - B

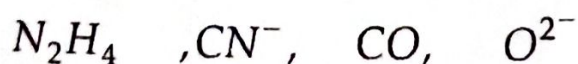
4. (a) What's HSAB principle ? Explain the application and limitations of HSAB principle. 4

(b) Write short note on Usanovich concept of acid & base. 2

5. (a) What's relationship between electronegativity and hardness ? Give example. 2

(b) What is symbiosis ? Give its application. 2

(c) Classify following as soft and hard bases : 2



## SECTION – C

6. (a) What is meant by essential and trace elements ?  
Discuss the role of any *two* trace elements. 3
- (b) Explain basic structural features of haemoglobin and myoglobin. 3
7. (a) Explain cooperativity in haemoglobin. Discuss its mechanism. 3
- (b) What is meant by nitrogen fixation Explain fundamental requirement of biological nitrogen fixation. 3

## SECTION – D

8. (a) Write IUPAC names of : 2
- (i)  $[Si(CH_3)C_6H_5O]$
- (ii)  $(CH_3)_3 - Si - O - Si(CH_3)_3$
- (b) Discuss the island model of structure and bonding in cyclic  $(NPCl_2)_3$ . 4
9. (a) Complete the following : 3
- (i)  $(NPCl_2)_3 + 6CH_3MgI \longrightarrow$
- (ii)  $SiHCl_3 + C_6H_6 \longrightarrow$
- (iii)  $(NPCl_2)_3 + 6KSO_2F \longrightarrow$



(b) What are silicones ? How are they prepared ?  
Which factors affect the nature of Silicone  
polymers ?

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