2026

Chemistry (Core)

Paper Code : CH-CE-6324

Paper Name : Inorganic Chemistry - III

Time : 2 hours ***Full Marks : 50***

The figures in the margin indicate full marks for the questions.

1. Answer the following questions : 1×4=4

   a) Give an example of compound of gold used in medicine.

   b) Name the catalyst which is used in the hydroformylation reaction.

   c) What is Zeigler - Natta catalyst ?

   d) Write a preparative method of Grignard reagent.

2. Answer the following questions : 2×3=6

   a) Name the proteins used for transport and storage of iron in higher animals. 1+1=2

   b) What are silicones ? Mention a few uses of silicones. 1+1=2

   c) How zeolites are helpful in the petroleum industry ? 2

3. Answer the following questions ***(any two)*** : 5×2=10

   a) i) Why is CO a π - acceptor ligand ? Explain the π - acceptor behaviour of CO in the light of MO diagram. 2+3=5

   b) What is carboxypeptidase ? What is the requirement for its formation ? Describe its active site. 1+2+2=5

   c) Discuss the structure of trialkylaluminium (dimer). 5

Contd..

d) Write a short note on (***any one***) : 5

i) Alkene hydrogenation

ii) Wacker process

4. Answer the following questions ***(any three)*** : 10×3=30

a) i) Write a preparative method of ferrocene. Discuss the bonding nature of ferrocene with the help of molecular orbital energy level diagrams. 1+6=7

ii) Compare the aromaticity and reactivity of ferrocene to that of benezene. 3

b) i) Name the cheif heme proteins used during dioxygen management of living systems. 2

ii) What is hemoglobin and myoglobin ? Explain the function of hemoglobin. Give the structural aspects of deoxy Hemoglobin and oxyhemoglobin. 2+2+4=8

c) i) What is Zeise's salt ? Give one method of its preparation. Draw its structure and discuss the salient features of the structure. 1+1+5=7

ii) Write a brief about Schlenk equilibrium. 3

d) i) Explain the structural arrangement of ferritin protein. 5

ii) What is the classification of elements according to their action in the biological system ? Give examples. 3

iii) State the toxicity due to the following metal ion (***any one***): 2

Hg, Cd, As

e) i) What is chelation therapy ? Explain how BAL acts as removing agents of arsenic metal from the body. 1+2=3

ii) Discuss the general pinciple of the Na^+/K^+ pump utilized in active transport of alkali metal ions across cell membranes ? 5

iii) Name the first discovered Zinc metalloenzymes. What is its function ? 2

f) i) Make a list of comparisons between organic polymers and inorganic polymers. 3

ii) Write a brief including synthesis, structure aspects and applications of polyphosphazenes. 1+4+2=7

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