647510 **23MSC2InoC201x** **Seat No :_____**

M.Sc.(Chem.) Semester - 2 (*CBCS*) Examination
March/April – 2025 (As Per Syllabus Year-2023)
Inorganic Chemistry (Core)

Time: 2:30 Hours **Marks: 70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1(A) **Answer the following.** **(04)**

(1) What is 18 electron rule? Calculate 18 electrons for following complexes.

a) $[Sc(n^5\text{-}CP)_2(CH_3)]$

b) $[Ti(n^1\text{-}CP)_2(n^5\text{-}CP)_2]$

Que-1(B) **Answer any two questions out of three.** **(10)**

(1) Discuss the bonding and structure in alkene, alkyne and allyl complexes.

(2) Write a note on organometallic compounds and classify them with example.

(3) Explain the metal complexes carbenes, carbynes, carbides ligands.

Oue-2(A) **Answer the following.** **(04)**

(1) What is catalytic deuteration?

Que-2(B) **Answer any two questions out of three.** **(10)**

(1) Explain the reaction involving modification of ligands in OMC.

(2) Discuss the oxidative addition, C-H bond activation reaction in OMC.

(3) Write mechanism of hydroformylation reaction with Co and Rh catalyst.

Que-3(A) **Answer the following.** **(04)**

(1) Briefly explain bonding in carbon family with suitable example.

Que-3(B) **Answer any two questions out of three.** **(10)**

(1) Discuss the chemical properties of boron family.

(2) Give detailed information on catenation and allotropes of Carbon.

(3) Discuss the reactivity of group-15 compounds.

Que-4(A) **Answer the following.** **(04)**

(1) Briefly discuss bioinorganic chemistry. Give classification, distribution and of elements in biological system.

Que-4(B) **Answer any two questions out of three.** **(10)**

(1) What is iron-sulphur protein? Discuss in detail.

(2) Write a detail note on metalloporphyrin.

(3) Discuss term “toxicity” and “toxic effect” of certain metal ion.

Que-5(A) **Answer the following.** **(04)**

(1) Define the following terminology:

(a) Excipients and Additives (c) Antacids

(b) Adjuvant (d) Laxatives.

Que-5(B) **Answer any two questions out of three.** **(10)**

(1) Discuss the detoxification and chelating agents in medicine.

(2) Explain the clinical application of Mg as drug.

(3) Discuss the medicinal use of Iron.

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