Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 19

M.Sc (chemistry) (Campus) (2015 to 2017) (Sem.-2)

ADVANCED INORGANIC CHEMISTRY

Subject Code : CHL-411

M.Code : 51148

Time : 3 Hrs. Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying FIVE marks each and students have to attempt ALL questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1) Define Bohr effect.

2) Draw the structure of a siderophore.

3) What role does the zinc ion play in the action of carboxypeptidase?

4) What are MRI contrast agents? Give examples.

5) How is ferrocene synthesised?

6) What are cross coupling reactions? Give two examples.

7) How is the binding of oxygen to haemoglobin affected by pH?

8) How is kinetic selectivity defined for a host guest complex?

9) Write the structure of the products formed in the following reactions, keeping in view of the 18 electron rule :

(a) $\eta^4 C_4H_6Fe(CO)_3 + HCl$

(b) $(\eta^5 cp)_2Fe + HBF_4$

10) How is Zeise salt synthesized? Draw its structure.

SECTION-B

11) State whether the carbonyls; $Fe_2(CO)_9$, $Fe_3(CO)_{12}$ and $Co_4(CO)_{12}$ follow 18 electron rule or not. What will be the number of electrons per metal atom without metal-metal bonds?

12) How can metal-alkyls be synthesized using oxidative-addition and transmetallation reactions? Give at least two examples for each reaction.

13) What are silicones? Give their preparation, characterization and uses.

14) What are green solvents? Are ionic liquids considered as green solvents?

15) Discuss the importance of High-Dilution synthesis in Supramolecular Chemistry.

16) Write a note on Dual host Salt extraction.

SECTION-C

17) Draw and discuss the structure, function and catalytic cycle of working of cytochrome P450.

18) Write a note on crown ethers, lariat ethers, podands and cryptands emphasizing on their synthesis and structural differences.

19) What is Hydroformylation reaction? What are the different catalysts used in this reaction? Explain the mechanistic cycle for each catalyst.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.