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

Total No. of Questions : 09

B.Sc(Non-Medical) (Sem.–5)

INORGANIC CHEMISTRY - IV

Subject Code : BSNM-501-18

M.Code : 78615

Date of Examination : 16-12-22

Time : 3 Hrs. **Max. Marks : 50**

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

1. Write briefly :

a) Mention one example of strong field ligand.

b) Which complex of the following pairs has a larger value of CFSE? $[Cr(H_2O)_6]^{3+}$ and $[Cr(H_2O)_6]^{3+}$

c) Calculate CFSE of $[CoFe]^{3-}$.

d) $[FeF_6]^{3-}$ is colourless but $[Fe(SCN)_6]^{3-}$ is intense red coloured. Explain.

e) Give an example of π-organometallic metal cluster and hexanuclear metal cluster.

f) Why the d8-system gives the most favourable situation for the square planar complex formation?

g) Calculate CFSE of d6 tetrahedral complex.

h) Show that $[Cr(NH_3)_6]^{3+}$ is paramagnetic.

i) What is EAN value of $[Fe(CO)_5]$?

j) Calculate term symbol for d^1 configuration.

SECTION-B

2. Explain $[CoF_6]^{3-}$ is paramagnetic while $[Co(CN)_6]^{3-}$ is diamagnetic.

3. Explain limitations of crystal field theory.

4. Explain why $Ni(CO)_4$ is diamagnetic but tetrahedral complex?

5. Calculate spin magnetic moment of $[Fe(NH_3)_6]^{2+}$.

6. What is β-elimination in transition metal alkyls? Mention one example.

SECTION-C

7. Derive term symbol for p^2 configuration.

8. Draw Orgel diagram of octahedral complex of metal ion having d^9 configuration.

9. Briefly discuss the mechanism of homogeneous hydrogenation reaction with suitable example.

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.