BACHELOR OF SCIENCE (CBCS-2018 COURSE)
T. Y. B. Sc. Sem-V : WINTER :- 2021
SUBJECT: CHEMISTRY : INORGANIC CHEMISTRY-I

Day : Friday
Date 21-01-2022 **W-18415-2021**

Time : 02:00 PM-05:00 PM
Max. Marks: 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Attempt **ANY TWO** of the following: **[12]**

a) Discuss the fundamental postulates of Werner's coordination theory?

b) What is corrosion? Explain atmospheric corrosion with example.

c) Write IUPAC Nomenclature for following compounds:

i) $K_4[Fe(CN)_6]$ **ii)** $[Co(NH_3)_4SO_4]NO_3$ **iii)** $[Pt(NH_3)_2Cl_4]$

Q.2 Attempt **ANY TWO** of the following: **[12]**

a) Explain the splitting of d-orbitals in a suquare planar complex on the basis of Crystal Field Theory.

b) Discuss the postulates of valence bond theory for complexes.

c) Explain following types of structural isomerism with suitable examples.

i) Ionization isomerism **iii)** Coordination isomerism

Q.3 Attempt **ANY TWO** of the following: **[12]**

a) What are different methods for prevention of corrosion?

b) Explain following types of geometrical isomers with suitable examples:

i) $[M(A-A)_2X_2]$ **ii)** $[M A_2 X_2]$

c) Write limitations of Crystal Field Theory.

Q.4 Attempt **ANY THREE** of the following: **[12]**

a) Discuss Sidgwick model for coordination compounds.

b) Using VBT, explain the bonding and geometry in following complexes:

i) $[NiCl_4]^{2-}$ **ii)** $[Fe F_6]^{-3}$

c) Calculate CFSE for following systems in a weak octahedral field:

i) d^7 system **ii)** d^5 system

d) Write a comparison between Double salt and Complex salt.

Q.5 Attempt **ANY FOUR** of the following: **[12]**

a) Define following terms:

i) Coordinate bond **ii)** Coordination number

iii) Bidentate ligand

b) What is EAN rule? Explain whether EAN rule is followed or not in following complex: $[Cu(CN)_4]^{-3}$

c) What will be the CFSE for d^8 system in strong and weak octahedral field?

d) Draw optical isomers for following type of complex using suitable example: $[M(A-A)_3]$

e) Explain how following factors affect corrosion:

i) Effect of moisture **ii)** Effect of pH

f) State the postulates of CFT.

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