T. Y. B. Sc. SEM – V (CBCS – 2016 COURSE) : WINTER – 2018
SUBJECT : CHEMISTRY INORGANIC CHEMISTRY – I

Day : Friday
Date : 12/10/2018

Time : 03.00 P.M. To 06.00 P.M
Max. Marks : 60

W-2018-0744

N. B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labelled diagram **WHEREVER** necessary.
4) Use of non-programmable calculator and log table is **ALLOWED**.

Q. 1 Attempt **ANY TWO** of the following: **(12)**

a) What are fundamental postulates of Valence Bond Theory

b) Write IUPAC Nomenclature for following compounds:

i) $[Co(NH_3)_6]\ Cl_3$

ii) $[Pb(OH)_4]^{-2}$

iii) $[Co(NH_3)_3(NO_2)_3]$

c) What is Corrosion? Explain Immersed corrosion.

Q. 2 Attempt **ANY TWO** of the following: **(12)**

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

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

i) Linkage isomerism

ii) Coordination isomerism

iii) Ionization Isomerism

c) Describe Assumptions of Werner's Coordination Theory.

Q. 3 Attempt **ANY TWO** of the following: **(12)**

a) Discuss the Sidgwick theory of bonding in complexes and write its merits and demerits.

b) Explain following types of Geomertical isomers with suitable example:

i) $[MA_2X_2]$ **ii)** $[MA_3X_3]$

c) Write limitations of Crystal Field Theory.

P. T. O.

Q. 4 Attempt **ANY THREE** of the following: **(12)**

a) Explain following types of Corrosion

i) Soil Corrosion **ii)** Pitting Corrosion **iii)** Stress Corrosion

b) Explain the bonding in $[MnBr_4]^{-2}$ on the basis of VBT.

c) Calculate CFSE for following systems in strong Octahetral field.

i) d^4 system **ii)** d^6 system

d) Differentiate between 'Complex' and 'Chelate' on the basis of coordination theory.

Q. 5 Attempt **ANY FOUR** of the following: **(12)**

a) How following factors affect Corrosion?

i) Physical state of metal

ii) Purity of metal

b) Draw and explain primary and secondary valences in $CoCl_3 \cdot 6NH_3$ on the basis of coordination chemistry.

c) Write cis-trans isomers for following metal complexes.

i) $[Pt(NH_3)_2(Cl)(Br)]$

ii) $[Co(NH_3)_4 Cl_2]^{+1}$

d) Define following terms:

i) Coordination number

ii) Polydentate ligand

iii) Coordinate bond

e) Calculate CFSE for d^5 system in weak Octahedral field.

f) What is EAN rule? Whether EAN rule is followed in $[Fe(CN)_6]^{-4}$ or not?

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