GROUP - C

6. a) Classify the ligands based on their denticity and cite one example for each case. 4

   b) Write the IUPAC nomenclature of the following complexes (any three) : 3

   $[Co(NH_3)Cl_3]$, $[Ni(CO)_4]$, $K_3[Fe(CN)_6]$, $Na[BH_4]$

   c) Draw all possible stereoisomers of $[Ce(en)_2Cl_2]^+$. 3

   d) Applying Valence Bond theory predict the geometry of the following diamagnetic compounds : 3

      i) $[Ni(CN)_4]^{2-}$

      ii) $[Co(H_2O)_6]^{3+}$

   e) What is ambidentate ligand ? Cite examples of complexes containing such ligands for both isomeric forms. 3

Ex/B.Sc./Chem/S/22/VIIS/62/2019(Old)

INTER B.SC. EXAMINATION, 2019

(2nd Semester, Old Syllabus)

CHEMISTRY (SUBSIDIARY)

PAPER - VII-S

Time : Two hours Full Marks : 50

Use a sepsrate Answer-script for each Group

GROUP - A

1. a) Define the molar conductance of an electrolyte solution and state its unit. $2\frac{1}{2}$

   b) Which one between DC and AC should be used in the measurement of conductance of an electrolyte solution and why ? $2\frac{1}{2}$

   c) The conductance of alkali metal ions in water follows the order $Li^+ < Na^+ < K^+ < Rb^+ \approx Cs^+$ – Explain. 3

   OR

   How does the molar conductance vary with the concentration for aqueous solutions of strong electrolytes?

   d) Show pictorially and explain how the conductance varies during conductometric titration of a solution of CH_3COOH with a solution of NaOH added from a burette. 3

2. a) Calculate the thermodynamic solubility product of AgI by forming a proper cell.

Given, $E^{o}_{AgI/Ag,I^-} = -0.152$ V and $E^{o}_{Ag^+/Ag} = 0.799$ V at 298 K. 3

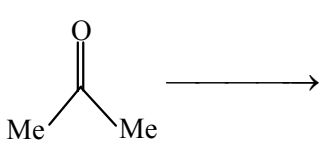
b) Write down the cell for which the overall reaction is

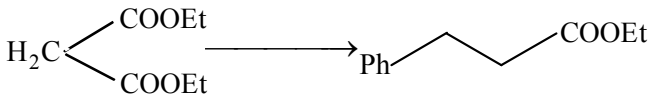
$Cd(s) + Cu^{2+}(a = 0.8) \rightleftharpoons Cd^{2}(a = 0.8) + Cu(s)$.

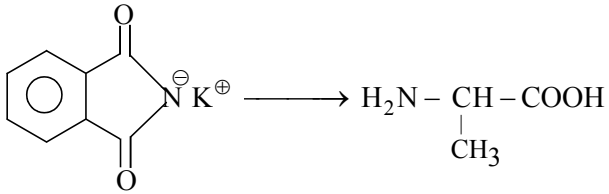
If $E^{o}_{Cd^{2+}/Cd} = -0.403$ V and $E^{o}_{Cu^{2+}/Cu} = 0.337$ V at 298 K, calculate the cell emf. 3

GROUP - B

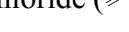
3. a) How will you carry out the following trasformations ? 2×3

i) 

ii) 

iii) 

b) Enol content of $PhCH_2–\underset{\underset{O}{\|}}{C}–CH_3$ is more than $CH_3–CH_2–\overset{\overset{O}{\|}}{C}–CH_3$ – explain. 2

4. a) Describe the steps involved in polymerisation of vinyl chloride () via free radical mechanism. 3

b) What is Ziegler - Natta catalyst ? 2

5. a) Draw the structure of Val-Tyr dipeptide at pH 7.0. 2

b) Determine the Isoelectric point of aspartic acid from the following data.

$[(pk_a)_1 = 1{\cdot}88, (pk_a)_2 = 9{\cdot}60, (pk_a)_3 = 3{\cdot}65]$ 2