

Hemchandracharya North Gujarat University. Patan.

B.Sc.

Semester : IV

HGVZ_! # YL

Chemistry (CC CH – 401)

Unit:–I

(A) Application of CFT :

- Application of C.F.T.
 - 1) For determination of color of complex.
 - 2) Use of C.F.S.E. value.
- Limitation of C.F.T.
- Isomerism in complexes.

(B) Magnetic properties of Co-Ordination Compound :

- Type of magnetic behavior.
- Method of determining magnetic susceptibility.
- Spin only formula.
- Magnetic properties for 3rd metal complexes.

Unit:–II

(A) Heterocyclic Compound :

- Introduction.
- Nomenclature.
- Molecular orbital picture and aromatic characteristics of Pyrrole, Furan, Thiophene and Pyridine.
- Methods of synthesis for Pyrrole, Furan, Thiophene and Pyridine.
- Chemical reactions for Pyrrole, Furan and Thiophene.
- Electrophilic and Nucleophilic substitution reactions of pyridine.
- Basicity of Pyridine, Piperidine and pyrrole.

(B) Carbohydrates :

HjGvZ_! # YL

- Introduction
- Definition.
- Classification of Mono Sacharides.
- Nomenclature.
- Reactions of Glucose and Fructose.
(Methylation, Acetylation, Oxidation with Br₂ water and Conc.HNO₃ ,
Reaction with HCN, NH₂OH, Osazone formation and Epimerisation.)
- Lengthening of carbon chain of aldoses.
- Shortening of carbon chain of aldoses.

Unit:–III Ionic Equilibrium:

- Only Introduction.
Electrolysis, Ionic Equilibrium, Resistance, Conductance, Specific conductance, Equivalent Conductance, Molar Conductance, Equivalent Conductance at Infinite Dilution.
- Type of Conductrometric Titration.
Acid-Base Titration.
 - 1) Strong Acid Vs Strong Base.
 - 2) Strong Acid Vs Weak Base
 - 3) Weak Acid Vs Strong Base
 - 4) Weak Acid Vs Weak Base
 - 5) Strong Acid + Weak Acid Vs Strong Base.
- Transport number.
Determination of Transport Number.
 - 1) Hittorf's Method.
 - 2) Moving Boundary Method.
- Hydrolysis of Salt.
Classification of Salt.
 - 1) Strong Acid & Strong Base.
 - 2) Strong Acid & Weak Base.
 - 3) Weak Acid & Strong Base.
 - 4) Weak Acid & Weak Base.
- Numericals.

#####02/07/2013#####

Hemchandracharya North Gujarat University. Patan.

B.Sc.

Semester : IV

HGvZ_! # YL

Chemistry (CC CH – 402)

Unit:–I Boron Hydride :

- Introduction.
- Classification of hydrides.
- Preparation, properties structure and use of Diborane.
- Bridge bonding in B_2H_6 (M.O. and sp^3 approach.).
- Structure of higher Boranes : B_4H_{10} , B_5H_9 , B_5H_{11} , B_6H_{10} , $B_{10}H_{14}$.

Unit:–II Ultraviolet Spectroscopy :

- Type of electronic transitions.
- Effect of conjugation.
- Concept of Chromophore and Auxochrome.
- Bathochromic, Hypsochromic, Hyperchromic, and Hypochromic shifts.
- Woodward –fisher rules.
- Problems of conjugated enes, enones and aromatic ketones, aldehydes, acids and esters using empirical rules.

Unit:–III Electro Chemistry:

- Introduction of terms.
- Oxidation, Reduction, Redox, Anode, Cathode, Electrode, Half Cell, Oxidation & Reduction Potential.
- Electrochemical cell (Galvanic Cell) & Representation cell.
- Electrochemical Series and its Significance.

02/07/2013

- Nernst Equation of Cell EMF and single electrode potential.
- Describe the Electrode.
 - 1) Metal-Metal ion Electrode.
 - 2) Standard Hydrogen Electrode.
 - 3) Calomel Electrode.
 - 4) Weston standard Electrode.
 - 5) Glass Electrode.
 - 6) Quienhydron Electrode.
- Application of cell potential.
 - 1) Equilibrium constant.
 - 2) Free energy.
 - 3) pH.
- Numerical.

REF:-

❖ **Inorganic Chemistry**

1. Advance Inorganic chemistry – Satya Prakash . G.D.Tuli, S.K.Basu, R.D.Madan, S.Chand Voll-II.
2. Advance Inorganic chemistry – Satya Prakash, S.Chand Voll-I. Page No-819-828.

❖ **Organic Chemistry**

1. Organic Chemistry by Morrison and Boyd.4th ed. Pearson Education-2003
2. Organic Chemistry by pine, Hendrickson, Cram and Hammond 4th ed. By P.S.Kalsi.
3. Advance Organic Chemistry by Jerry March.
4. Advance Organic Chemistry by Arun Bahal and B.S.Bahal.
5. Organic Chemistry Vol. I & II by S.M.Mukherji, S.P.Sing, R.P.Kapoor.
6. Reaction mechanism and Reagents in Organic Chemistry by Gurdeep R.Chatwal 4th ed. Himalaya public House.
7. Text book of Organic Chemistry by Arun Bahal, B.S.Bhal, S.Chand.
8. Spectroscopy of Organic Compounds 6th ed. by P.S.Kalsi.

9. Organic Chemistry by I.R.Finar.
10. Organic Spectroscopy by Williams and Kemp.
11. Spectroscopic Methods in Organic Chemistry by Dudley H. Williams and Ian Fleming.

❖ **Physical Chemistry**

1. Advance Physical Chemistry by Gurdeep Raj
2. Physical Chemistry (Question and Answers) by R.N.Madan, G.D.Tully, S.Chand.
3. Principal of Physical Chemistry by Puri, Sharma, Pathania.
4. Chemical Thermodynamics by R.P.Rastogy and R.R.Misra.
5. Essentials of Physical Chemistry by B.S.Bahal, Arun Bahal, G.D.Tully.
6. Physical Chemistry by P.W.Atkins, 5th ed. , Oxferd, 1994, 7th ed. ,2002
7. Physical Chemistry by R.A.Alberty and R.J.Silbey, John Wiley, 1995.
8. Physical Chemistry by G.H.Barrow, 5th ed.Mac Graw Hill,1998,6th ed.
9. Physical Chemistry by W.J.Moore, 4th ed. , Orient Longmans, 1969.

#####

Semester: IV HJGVZ_! # YL
Laboratory Course-I (Chemistry)

Section: A Inorganic Chemistry (4 hours per practical)

- Inorganic qualitative analysis: (Any 7 Mixture out of 10)
Mixture Containing 4 Radicals
(Except PO_4^{-3} , BO_3^{-3} , ASO_4^{-3} , ASO_3^{-3} , O^{-2})
-

Hemchandracharya North Gujarat University. Patan.

B.Sc.

Semester: IV

Laboratory Course-II (Chemistry)

Analytical Chemistry (4 hours per practical)

A. Volumetric Analysis of Cu, Zn, Ni (Any Three)

1. To determine the amount of Zn by EDTA Method.
2. To determine the amount of Ni by EDTA Method.
3. To determine the amount of Cu by Iodometry Method.
4. To determine the amount of Cu by EDTA titration.

B. Estimation of Glucose/Aniline/Phenol (Any Two)

1. To determine the amount of Aniline by Brominating Method.
2. To determine the amount of Phenol by Brominating Method.
3. To determine the amount of Glucose by oxidation Method.

C. Paper Chromatography 1st & 3rd Group Radicals

02/07/2013

❖ **University Exam Pattern:** (Two Days per Batch). HJGVZ_! # YL