VSR GOVERNMENT DEGREE AND PG COLLEGE MOVVA
DEPARTRMENT OF CHEMISTRY
COURSE OUTCOMES

SEMESTER – I

Course I (Inorganic &Physical Chemistry) 60 hrs. (4h/w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understand the basic concepts of p-block elements,D block elements and F block elements.

2. Explain the difference between solid, liquid and gases in terms of inter molecular interactions. Understand the basics of X-ray diffraction and crystal structures

3.Knowledge about metallic bonding and various theories related to thermal and electrical conductivity.

4.Applications of distribution law ,and colligative properties.

5. Gain knowledge about applications of liquid crystals as LCD devices.

LABORATORY COURSE -I **30**hrs (2 h / w)

Practical-I Analysis of SALT MIXTURE

(At the end of Semester-I)

Qualitative inorganic analysis (Minimum of Six mixtures should be analyzed)

50 M

Course outcomes:

At the end of the course, the student will be able to;

1. Understand the basic concepts of qualitative analysis of inorganic mixture

2. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory

3. Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis

SEMESTER – II

Course II – (Organic & General Chemistry) 60 hrs (4h/w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understand and explain the differential behaviour of organic compounds based on fundamental concepts learnt.

2. Formulate the mechanism of organic reactions by re calling and correlating the fundamental properties of the reactants involved.

3. Learn and understand the concept of aromaticity, molecular structure and Huckel's rule, many organic reaction mechanisms including free radical Substitution, Electrophilic Addition and Electrophilic Aromatic Substitution.

4. Knowledge about colloids. Adsorption phenomenon, and MOT applied to different molecules,HSAB concept.

5 Correlate and describe the stereo chemical properties of organic compounds and reactions.

LABORATORY COURSE-II **30**hrs (2 h / w)

Practical-II Volumetric Analysis

(At the end of Semester-II)

Course outcomes:

At the end of the course, the student will be able to;

1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory

2. Understand and explain the volumetric analysis based on fundamental concepts learnt in ionic equilibria

3. Learn and identify the concepts of a standard solutions, primary and secondary standards

4. Facilitate the learner to make solutions of various molar concentrations. This may include: The concept of the mole; Converting moles to grams; Converting grams to moles; Defining concentration; Dilution of Solutions; Making different molar concentrations.

SEMESTER – III

Course III (ORGANICCHEMISTRY&SPECTROSCOPY) 60hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understand preparation, properties and reactions of haloalkanes, haloarenes and oxygen containing functional groups.

2. Use the synthetic chemistry learn tin this course to do functional group transformations.

3. To propose plausible mechanisms for any relevant reaction

4 Understand the molecular spectroscopy like electronic (UV), IR, and NMR spectroscopy and applications in structural elucidation.

5 Apply the knowledge of IR and UV- Visible spectroscopy in identification of functional groups in organic compounds

LABORATORY COURSE -III 30hrs (2 h / w)

Practical Course-III Organic preparations and IR Spectral Analysis

(At the end of Semester- III)

Course outcomes:

On the completion of the course, the student will be able to do the following:

1. how to use glassware, equipment and chemicals and follow experimental procedures in the laboratory

2. how to calculate limiting reagent, theoretical yield, and percent yield

3. how to engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately

4. how to dispose of chemicals in a safe and responsible manner

5. how to perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.

6. how to create and carry out work up and separation procedures

7. how to critically evaluate data collected to determine the identity, purity, and percent yield of products and to summarize findings in writing in a clear and concise manner

SEMESTER - IV

Course IV (INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY) 60hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. To learn about the laws of absorption of light energy by molecules and the subsequent mechanisms of photo chemical reactions.

2. To understand the classification of organometallic compounds on the basis of bonding, uses and hepaticity of organic ligands.

3. Learn importance of The carbohydrates, structures of glucose and fructose learn some inter conversions of carbohydrates .

4 Understand the classification of amino acids and heterocyclic compounds preparations properties and their importance. Learn about preparations and properties of nitroalkanes, amines reaction mechanisms

5.Laws of thermodynamics , Kirchoff equation and applications of Entropy, Enthalpy and Gibbs Free Energy.

LABORATORY COURSE -IV 30hrs(2 h / w)

Practical Course-IV Organic Qualitative analysis 50 M

(At the end of Semester- IV)

Course outcomes:

At the end of the course, the student will be able to;

1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory

2. Determine melting and boiling points of organic compounds

3. Understand the application of concepts of different organic reactions studied in theory part of organic chemistry

SEMESTER - IV

Course V(INORGANIC &PHYSICAL CHEMISTRY) 60 hrs (4 h / w)

Course outcomes:

1.Learn the nomenclature of complexes, Understand the theories of co ordination compounds, and factors affected the CFSE.

2 To understand the reactivity of metal complexes Use of chelating agents in medicines and drugs .

3 Learn the phase rule and the terms Understanding the water system, Pb-Ag and salt water system

4. Learn the nature of electrolytes, transport number, kholraush law and its applications Application of single electrode potential and electrolytic cell.

5 Understand the types of order of reactions and derivation of rate constant for the order of the reactions. and factors affecting rate of reaction and different experimental methods for their determination .

SEMESTER - IV

Course V LABORATORY COURSE 30hrs (2 h / w)

Practical-Course -V Conductometric and Potentiometric Titrimetry 50 M

Course outcomes:

At the end of the course, the student will be able to;

1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory

2. Apply concepts of electrochemistry in experiments

3. Be familiar with electro analytical methods and techniques in analytical chemistry which study an analyte by measuring the potential (volts) and/or current (amperes) in an electrochemical cell containing the analyte

A.P. State Council of Higher Education

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **CHEMISTRY**

IV Year B.Sc.(Hons)–Semester–V

Max Marks: 100+50

Course6-B: Analytical Methods in Chemistry-1

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of solvent extraction and ion exchange method.

2. Acquire knowledge on the basic principles of volumetric analysis and gravimetric analysis.

3. Demonstrate the usage of common laboratory apparatus used in quantitative analysis.

4. Understand the theories of different types of titrations.

5. Gain knowledge on different types of errors and their minimization methods.

Course6-B: Analytical methods in chemistry-1-PRACTICALSYLLABUS

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Estimate iron (II) using standard Potassium dichromate solution

2. Learn the procedure for the estimation of total hardness of water

3. Demonstrate the determination of chloride using Mohr's method

4. Acquire skills in the operation and calibration of pH meter

5. Perform the strong acid vs strong base titration using pH meter

Course7-B: Analytical Methods in Chemistry-2

(Skill Enhancement Course (Elective), Credits: 05)

Max Marks: 100+50

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1.Knowledge about Chromatography , Classification,Nature of absorbents,Rf values.

2. Learn the preparation of TLC plates and Perform the separation of a given dye mixture using TLC

3. Demonstrate skills related to analysis of water using different techniques

4.Understand the principles of spectrophotometry in the determination of metal ions.

5. Comprehend the applications of atomic spectroscopy.

Course7-B: Analytical Methods in Chemistry-2-

PRACTICAL SYLLABUS

V. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Perform the separation of a given dye mixture using TLC

2. Learn the preparation of TLC plates

3. Demonstrate the separation of mixture of amino acids using paper chromatography

4. Acquire skills in using column chromatography for the separation of dye mixture