

## SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Curricular Plan for the Academic Year :: 2022-23

| Name of the Faculty Member  | K.Rama devi          |          |            |   | Name of the Department | PG DEPARTMENT OF CHEMISTRY |
|-----------------------------|----------------------|----------|------------|---|------------------------|----------------------------|
| Program                     | M.Sc. CHEMISTRY      |          |            |   | Group:                 | organic chemistry          |
| Title of the Course         | GENERAL CHEMISTRY-II |          |            |   | Course Code:           | CHE201                     |
| Year                        | I                    | Semester | II         |   | Hrs allotted:          | 60                         |
| Section                     | ORGANIC CHEMISTRY    |          |            |   | Hours/Week             | 4                          |
| Unit No. & Name             | Hour                 | Day      | Date       | Topic to be Covered                                       | Methodology Adopted    | Remarks                    |
| UNIT-1                      | 1                    | thu      | 13-04-2023 | Introduction to quantum chemistry                         | P1                     |                            |
| Basic Quantum Chemistry-III | 2                    | Sat      | 15-04-2023 | Hydrogen atom-solution of $\phi(\phi)$ equation           | P1                     |                            |
|                             | 3                    | mon      | 17-04-2023 | Solution of R(r) equation                                 | P1                     |                            |
|                             | 4                    | tue      | 18-04-2023 | Probability density in orbitals                           | P1                     |                            |
|                             | 5                    | wed      | 19-04-2023 | Shapes of orbitals  | P1                     |                            |
|                             | 6                    | thu      | 20-04-2023 | Seminar   | P10                    |                            |
|                             | 7                    | fri      | 21-04-2023 | Perturbation theory- Time independent perturbation theory | P1                     |                            |
|                             | 8                    | mon      | 24-04-2023 | application to ground state energy of Helium atom         | P1                     |                            |
|                             | 9                    | tue      | 25-04-2023 | Question & Answer   | P3                     |                            |

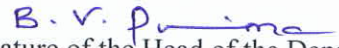
|   |    |     |            |  |    |  |
|---|----|-----|------------|--|----|--|
|   | 10 | wed | 26-04-2023 | Variation principle  | P1 |  |
|   | 11 | thu | 27-04-2023 | applications- calculation of zero-point energy of harmonic oscillator          | P1 |  |
|   | 12 | fri | 28-04-2023 | Wave functions of many electron systems-Helium atom                            | P1 |  |
|   | 13 | sat | 29-04-2023 | Many electron atom- Hartee-Fock self-consistent field methods                  | P1 |  |
|   | 14 | wed | 03-05-2023 | The Born-Oppenheimer Approximation-Breakdown of Born-Oppenheimer Approximation | P1 |  |
|   | 15 | thu | 04-05-2023 | Discussion on above topics   | P4 |  |
| <b>UNIT-II</b>  | 16 | mon | 05-06-2023 | Introduction to the topic  | P1 |  |
| <b>Molecular symmetry and Group Theory in Chemistry</b> | 17 | tue | 06-06-2023 | Symmetry elements, symmetry operations   | P1 |  |
|   | 18 | wed | 07-06-2023 | point groups- Schoenflies symbols  | P1 |  |
|   | 19 | thu | 08-06-2023 | Classification of molecules into point groups-                                 | P1 |  |
|   | 20 | fri | 09-06-2023 | Axioms of group theory   | P1 |  |
|   | 21 | sat | 10-06-2023 | Group multiplication tables for $C_{2v}$ and $C_{3v}$ point groups             | P1 |  |
|   | 22 | mon | 12-06-2023 | Similarity transformations- and classes of operations                          | P1 |  |
|   | 23 | tue | 13-06-2023 | Representations- reducible and irreducible representations,                    | P1 |  |
|   | 24 | wed | 14-06-2023 | Mullikan symbols for irreducible representations.                              | P1 |  |
|   | 25 | thu | 15-06-2023 | The Great Orthogonality Theorem and its implications                           | P1 |  |

|                                     |    |     |            |   |     |  |
|-------------------------------------|----|-----|------------|---|-----|--|
|                                     | 26 | fri | 16-06-2023 | Character table and its anatomy. Derivation of character table for $C_{2v}$ and $C_{3v}$ point groups | P1  |  |
|                                     | 27 | sat | 17-06-2023 | Character table and its anatomy. Derivation of character table for $C_{2v}$ and $C_{3v}$ point groups | P1  |  |
|                                     | 28 | mon | 19-06-2023 | Applications of Group Theory to I.R and Raman Spectroscopy  | P1  |  |
|                                     | 29 | tue | 20-06-2023 | Discussion on above topics  | P4  |  |
| <b>UNIT-III</b>                     | 30 | wed | 21-06-2023 | Introduction to the topic   | P1  |  |
| <b>Treatment of analytical data</b> | 31 | thu | 22-06-2023 | Errors- Types of errors (Absolute and Relative errors)  | P1  |  |
|                                     | 32 | fri | 23-06-2023 | Classification of errors- Determinate and Indeterminate errors  | P1  |  |
|                                     | 33 | sat | 24-06-2023 | Accuracy and Precision-Minimization of errors- Propagation of errors                                  | P1  |  |
|                                     | 34 | mon | 26-06-2023 | Measures of central tendency-Measures of precision  | P1  |  |
|                                     | 35 | tue | 27-06-2023 | Mean-Standard deviation- Distribution of Indeterminate errors- Gaussian distribution                  | P1  |  |
|                                     | 36 | wed | 28-06-2023 | Standard error of mean. Reliability of results- Confidence interval of mean                           | P1  |  |
|                                     | 37 | fri | 30-06-2023 | Testing of significance-Comparison of results- Comparison of the means of two samples                 | P1  |  |
|                                     | 38 | Sat | 01-07-2023 | seminar on F-test and student's t-test  | P10 |  |
|                                     | 39 | mon | 03-07-2023 | Criteria of rejection of an observation- Significant figures and computation rules                    | P1  |  |
|                                     | 40 | tue | 04-07-2023 | Correlation and regression- Linear regression Analysis-Slope and Intercept                            | P1  |  |
| <b>Unit-IV</b>                      | 41 | wed | 05-07-2023 | Introduction to the topic   | P1  |  |

|  |           |            |                   |   |    |  |
|--|-----------|------------|-------------------|---|----|--|
| <b>FORTRAN-77<br/>Programming<br/>Language -<br/>Applications in<br/>Chemistry</b> | <b>42</b> | <b>thu</b> | <b>06-07-2023</b> | Computer oriented procedure-Digital Computer Organization   | P1 |  |
|  | <b>43</b> | <b>fri</b> | <b>07-07-2023</b> | Block Diagram of Computer- A simplified model of Computer   | P1 |  |
|  | <b>44</b> | <b>mon</b> | <b>10-07-2023</b> | Flow chart symbols and flow charts  | P1 |  |
|  | <b>45</b> | <b>tue</b> | <b>11-07-2023</b> | Higher level Language for computers-Lower level Languages-  | P1 |  |
|  | <b>46</b> | <b>wed</b> | <b>12-07-2023</b> | FORTRAN constants –Fortran Variables-Fortran variable names-<br>Type declaration statements.          | P1 |  |
|  | <b>47</b> | <b>thu</b> | <b>13-07-2023</b> | Arithmetic Operators, Hierarchy of operators - modes of<br>arithmetic expressions                     | P1 |  |
|  | <b>48</b> | <b>sat</b> | <b>15-07-2023</b> | Integer expressions and real expressions-Arithmetic statements  | P1 |  |
|  | <b>49</b> | <b>mon</b> | <b>17-07-2023</b> | Input (READ) and output WRITE) statements-Replacement<br>statement                                    | P1 |  |
|  | <b>50</b> | <b>tue</b> | <b>18-07-2023</b> | Relational operators- Format specifications for READ and<br>WRITE statements-                         | P1 |  |
|  | <b>51</b> | <b>wed</b> | <b>19-07-2023</b> | Logical constants, variables and expressions. IF statements<br>(Arithmetic, Logical, Block and Nested | P1 |  |
|  | <b>52</b> | <b>thu</b> | <b>20-07-2023</b> | Flowchart and computer program to find out roots of quadratic<br>equation                             | P1 |  |
|  | <b>53</b> | <b>fri</b> | <b>21-07-2023</b> | Determination of hydrogen ion concentration of strong acid.   | P1 |  |
|  | <b>54</b> | <b>sat</b> | <b>22-07-2023</b> | GOTO statement and Computed GOTO statement  | P1 |  |
|  | <b>55</b> | <b>mon</b> | <b>24-07-2023</b> | Subscripted variable and DIMENSION statement.   | P1 |  |
|  | <b>56</b> | <b>wed</b> | <b>26-07-2023</b> | DO statement- Rules for DO statement(Question & Answer)   | P3 |  |
|  | <b>57</b> | <b>thu</b> | <b>27-07-2023</b> | Flowchart and computer program to find out Standard deviation<br>and Variance of univariant data      | P1 |  |

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|--|----|-----|------------|---|----|--|
|  | 58 | fri | 28-07-2023 | Flowchart and computer program to find out Standard deviation and Variance of univariant data | P1 |  |
|  | 59 | mon | 31-07-2023 | Rate constant of first order reaction or Beer's law by linear least square method             | P1 |  |
|  | 60 | tue | 01-08-2023 | Solution for Vander Waals equation or Hydrogen ion concentration of a monoprotic weak acid    | P1 |  |
|  | 61 | wed | 02-08-2023 | Program for the calculation of Cell Constant  | P1 |  |

  
Signature of the Lecturer

  
Signature of the Head of the Department

  
Signature of the Principal

P1 - Lecture  
P2 - Demonstration  
P5 - Audio & Video  
P7 - Assignment or Case Study  
P9 - Learning By Doing  
P11- Brainstorming

P3 - Question & Answer  
P4 - Discussion, Debate or Collaboration  
P6 - Virtual or Online learning  
P8 - Study Project  
P10 - Class Seminar

## SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Curricular Plan for the Academic Year :: 2022-23

| Name of the Faculty Member             | V. RAJA RAJESWARI      |          |            |   | Name of the Department | PG DEPARTMENT OF CHEMISTRY |
|--|------------------------|----------|------------|---|------------------------|----------------------------|
| Program                                | M.Sc. CHEMISTRY        |          |            |   | Group:                 |                            |
| Title of the Course                    | INORGANIC CHEMISTRY-II |          |            |   | Course Code:           | CHE202                     |
| Year                                   | I                      | Semester | II         |   | Hrs allotted:          | 60                         |
| Section                                | ORGANIC CHEMISTRY      |          |            |   | Hours/Week             | 4                          |
| Unit No. & Name                        | Hour                   | Day      | Date       | Topic to be Covered                                   | Methodology Adopted    | Remarks                    |
| <b>UNIT - I<br/>INORGANIC REACTION</b> | 1                      | Thu      | 13-04-2023 | Introduction to Inorganic reaction mechanism          | P1                     |                            |
|  | 2                      | Sat      | 15-04-2023 | Explanation of Quantitative analysis                  | P1                     |                            |
|  | 3                      | Mon      | 17-04-2023 | Substitution reactions of metal complexes - SN1 & SN2 | P1                     |                            |
|  | 4                      | Tue      | 18-04-2023 | D, Id, Ia and A mechanisms                            | P1                     |                            |
|  | 5                      | wed      | 19-04-2023 | Explanation of Volumetric and Gravimetric Analysis    | P1                     |                            |
|  | 6                      | Thu      | 20-04-2023 | Ligands replacement reactions of Octahedral complexes | P1                     |                            |
|  | 7                      | Fri      | 21-04-2023 | Acid hydrolysis-factors affecting acid hydrolysis     | P1                     |                            |
|  | 8                      | Mon      | 24-04-2023 | Anation and Base hydrolysis of cobalt (III) complexes | P1                     |                            |

|  |    |     |            |  |    |  |
|--|----|-----|------------|--|----|--|
| MECHANISM  | 9  | Tue | 25-04-2023 | Ligand displacement reactions of squareplanar complexes                      | P1 |  |
|  | 10 | wed | 26-04-2023 | Explanation of Types of reactions  | P1 |  |
|  | 11 | Thu | 27-04-2023 | Factors affecting square planr complexes                                     | P1 |  |
|  | 12 | Fri | 28-04-2023 | Trans effect - Applications of Trans effect                                  | P1 |  |
|  | 13 | sat | 29-04-2023 | I Sem - Organic chemistry practical Exam                                     | P1 |  |
|  | 14 | Mon | 01-05-2023 | I Sem - Inorganic chemistry practical Exam                                   | P1 |  |
|  | 15 | Tue | 02-05-2023 | I Sem - Physical chemistry practical Exam                                    | P1 |  |
|  | 16 | Wed | 03-05-2023 | Discussion, Debate or Collaboration  | P4 |  |
|  | 17 | Thu | 04-05-2023 | Electron transfer reactions of complexes                                     | P1 |  |
|  | 18 | Fri | 05-05-2023 | Non- complementary reactions with examples                                   | P1 |  |
|  | 19 | Sat | 06-05-2023 | Determination of Nickel by EDTA- Explanation                                 | P1 |  |
|  | 20 | Wed | 07-06-2023 | Determination of Nickel by EDTA  | P1 |  |
|  | 21 | Thu | 08-06-2023 | Inner and Outer sphere mechanisms  | P1 |  |
| UNIT-II METAL -<br>LIGAND<br>EQUILIBRIA IN<br>SOLUTION | 22 | Fri | 09-06-2023 | Metal-Ligand equilibria in solution-Stepwise and overall formation constants | P1 |  |
|  | 23 | Sat | 10-06-2023 | Explanation of Ca <sup>+2</sup> & Mg <sup>+2</sup> in a mixture by EDTA      | P1 |  |
|  | 24 | Mon | 12-06-2023 | Trends in stepwise constants   | P1 |  |
|  | 25 | Tue | 13-06-2023 | Factors affectingthe stability of metal complexes                            | P1 |  |

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|----|-----|------------|---|----|--|
| 26 | Wed | 14-06-2023 | Determination of Calcium and Magnesium in mixture by EDTA                       | P1 |  |
| 27 | Thu | 15-06-2023 | Pearson's Theory of hard and soft acids and bases                               | P1 |  |
| 28 | Fri | 16-06-2023 | Chelate effect and its thermodynamic origin                                     | P1 |  |
| 29 | Sat | 17-06-2023 | Discussion, Debate or Collaboration   | P4 |  |
| 30 | Mon | 19-06-2023 | Determination of stability constants of complexes-<br>spectrophotometric method | P1 |  |
| 31 | Tue | 20-06-2023 | Determination of complexes by PH -metric method                                 | P1 |  |
| 32 | Wed | 21-06-2023 | Determination of Ferro cyanide by ceric sulphate - Explanation                  | P1 |  |
| 33 | Thu | 22-06-2023 | Factors effecting the stability of complexes                                    | P1 |  |
| 34 | Fri | 23-06-2023 | Reactivity of metal complexes-iner and labile complexes                         | P1 |  |
| 35 | Sat | 24-06-2023 | Determination of Ferro cyanide by ceric sulphate                                | P1 |  |
| 36 | Mon | 26-06-2023 | Explanation of lability on the basis of VBT & CFT                               | P1 |  |
| 37 | Tue | 27-06-2023 | Bio- Inorganic chemistry- Metalloporphyrins                                     | P1 |  |
| 38 | Wed | 28-06-2023 | Calculations of determination of Ferro cyanide by ceric sulphate                | P1 |  |
| 39 | Fri | 30-06-2023 | Haemoglobin and Myoglobin   | P1 |  |
| 40 | Sat | 01-07-2023 | Determination of Ferric iron by photochemical reducton                          | P1 |  |
| 41 | Mon | 03-07-2023 | Biological role of alkali and alkaline earth metal ions- $\text{Ca}^{+2}$       | P1 |  |
| 42 | Tue | 04-07-2023 | Biological and abiological Nitrogen fixation                                    | P1 |  |



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|--------------------------|----|-----|------------|---|----|--|
| UNIT-III<br>ORGANOMET    | 43 | Thu | 06-07-2023 | Organo mettalic compounds-16 and 18 electron rule                                       | P1 |  |
|                          | 44 | Fri | 07-07-2023 | Isoelectronic relationship- Synthesis, structure,bonding                                | P1 |  |
|                          | 45 | Mon | 10-07-2023 | Reaction of carbon monoxide, dinitrogen and nitic oxide complexes                       | P1 |  |
|                          | 46 | Tue | 11-07-2023 | Isolobal relationship- H,Cl,CH <sub>3</sub> ,Mn(CO) <sub>5</sub>                        | P1 |  |
|                          | 47 | Wed | 12-07-2023 | Determination of Ferric iron by photochemical reducton                                  | P1 |  |
|                          | 48 | Thu | 13-07-2023 | HSAB principle  | P1 |  |
|                          | 49 | Sat | 15-07-2023 | Calculations of Determination of Ferric iron by photochemical reduction                 | P1 |  |
|                          | 50 | Mon | 17-07-2023 | Isolobal relationship- S,CH <sub>2</sub> ,Fe(CO) <sub>4</sub> ,P,CH,Co(CO) <sub>3</sub> | P1 |  |
|                          | 51 | Tue | 18-07-2023 | Synthesis, structure, bonding and reactions of metallocenes- Ferrocene                  | P1 |  |
|                          | 52 | Wed | 19-07-2023 | Explanation of variuos steps in Gravimetry  | P1 |  |
|                          | 53 | Thu | 20-07-2023 | Heamoglobin - Structure and importance  | P1 |  |
|                          | 54 | Fri | 21-07-2023 | Catalysis by organometallic compounds   | P1 |  |
|                          | 55 | Sat | 22-07-2023 | Determination of Zinc by Zinc pyrophosphate   | P1 |  |
|                          | 56 | Mon | 24-07-2023 | Homogeneous catalysis- Alkene hydrogenation   | P3 |  |
|                          | 57 | Wed | 26-07-2023 | Determination of Zinc by Zinc pyrophosphate- weighing                                   | P1 |  |
|                          | 58 | Thu | 27-07-2023 | Wilkinson's catalyst, Hydroformylation  | P1 |  |
| UNIT-IV METAL<br>CLUSTER | 59 | Fri | 28-07-2023 | Metal cluster compounds- Definition, evidences for exist of M-M bonds                   | P1 |  |

|           |    |     |            |   |    |  |
|-----------|----|-----|------------|---|----|--|
| COMPOUNDS | 60 | Mon | 31-07-2023 | Conditions favourable for formation of M-M bonds  | P1 |  |
|           | 61 | Tue | 01-08-2023 | Preparation ,structure and bonding of $\text{Re}_2\text{Cl}_8^{2-}$<br>$\text{Mo}_2\text{Cl}_8^{4-}$ , $\text{Re}(\text{RCOO})_4\text{X}_2$ , $\text{Mo}_2\text{Cl}_9^{3-}$ , $\text{W}_2\text{Cl}_9^{3-}$  | P1 |  |
|           | 62 | Wed | 02-08-2023 | Preparation ,structure and bonding of<br>$\text{Mo}_2(\text{RCOO})_4(\text{H}_2\text{O})_2$ , $\text{Co}(\text{RCOO})_4(\text{H}_2\text{O})_2$ , $\text{Cu}_2(\text{RCOO})_4(\text{H}_2\text{O})_2$   | P1 |  |
|           | 63 | Thu | 03-08-2023 | $\text{Cr}_2\text{Cl}_9^{3-}$ , $\text{Re}_3\text{Cl}_9$ , $\text{Re}_3\text{Cl}_{12}^{3-}$ , $\text{Mo}_6\text{Cl}_8^{4-}$ , $\text{Nb}_4\text{X}_{12}^{2-}$ , $\text{Ta}_6\text{X}_{12}^{2-}$ ,<br>Polyatomic clusters-Zintlions, Cherrrel phases | P1 |  |

*V. R. Raja*  
Signature of the Lecturer

*B. V. P. Rama*  
Signature of the Head of the Department

*Selva*  
Signature of the Principal

## SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Curricular Plan for the Academic Year :: 2022-23


| Name of the Faculty Member | P.RAMYA KRISHNA &K.SUJATHA |          |            |  | Name of the Department | PG DEPARTMENT OF CHEMISTRY |
|----------------------------|----------------------------|----------|------------|--|------------------------|----------------------------|
| Program                    | M.Sc. (ORGANIC CHEMISTRY)  |          |            |  | Group:                 | I M.Sc                     |
| Title of the Course        | ORGANIC CHEMISTRY-II       |          |            |  | Course Code:           | CHE203                     |
| Year                       | I                          | Semester | II         |  | Hrs allotted:          | 60                         |
| Section                    | ORGANIC CHEMISTRY          |          |            |  | Hours/Week             | 4                          |
| Unit No. & Name            | Hour                       | Day      | Date       | Topic to be Covered                        | Methodology Adopted    | Remarks                    |
| UNIT-1                     | 1                          | Fri      | 14-04-2023 | Stereochemistry of SN1 reactions           | P1                     |                            |
| REACTION MECHANISM         | 2                          | mon      | 17-04-2023 | stereochemistry of SN2 reactions           | P1                     |                            |
|                            | 3                          | Tue      | 18-04-2023 | Neighbouring group participation by O,S,N. | P1                     |                            |
|                            | 4                          | Thurs    | 20-04-2023 | aromatic nucleophilic substitution,SN2,SN1 | P1                     |                            |
|                            | 5                          | Fri      | 21-04-2023 | Benzyne mechanism                          | P1                     |                            |
|                            | 6                          | Mon      | 24-04-2023 | Seminar                                    | P10                    |                            |
|                            | 7                          | Tues     | 25-04-2023 | evidence for the structure of benzyne      | P1                     |                            |
|                            | 8                          | Thurs    | 27-04-2023 | von richter sommelet-hauser rearrangements | P1                     |                            |
|                            | 9                          | Fri      | 28-04-2023 | Question & Answer                          | P3                     |                            |

|                           |    |       |            |  |    |  |
|---------------------------|----|-------|------------|--|----|--|
|                           | 10 | Mon   | 01-05-2023 | elimination reactions  | P1 |  |
|                           | 11 | Tue   | 02-05-2023 | Revision   | P1 |  |
|                           | 12 | Thurs | 04-05-2023 | Wave functions of many electron systems-Helium atom                            | P1 |  |
|                           | 13 | mon   | 05-06-2023 | Many electron atom- Hartee-Fock self-consistent field methods                  | P1 |  |
|                           | 14 | tue   | 06-06-2023 | The Born-Oppenheimer Approximation-Breakdown of Born-Oppenheimer Approximation | P1 |  |
|                           | 15 | thu   | 08-06-2023 | types, stereochemistry and orientation, dehydration, dehalogenation            | P1 |  |
|                           | 16 | fri   | 09-06-2023 | decarboxylation eliminations and pyrolytic eliminations                        | P1 |  |
| <b>UNIT-II</b>            | 17 | mon   | 12-06-2023 | Addition to carbon carbon multiple bonds                                       | P1 |  |
| <b>ADDITION REACTIONS</b> | 17 | tue   | 13-06-2023 | stereochemical aspects of addition reactions, free radicals                    | P1 |  |
|                           | 18 | thu   | 15-06-2023 | Debate on hydroboration  | P4 |  |
|                           | 19 | fri   | 16-06-2023 | chemoselectivity and hydrogenation   | P1 |  |
|                           | 20 | mon   | 19-06-2023 | addition to carbon hetero multiple bonds                                       | P1 |  |
|                           | 21 | tues  | 20-06-2023 | addition reactions to C=N, C=O, aldol, cannizaro reaction                      | P1 |  |
|                           | 22 | Thurs | 22-06-2023 | claisen schmidth reaction  | P1 |  |
|                           | 23 | fri   | 23-06-2023 | dieckmenn, benzoin reaction  | P1 |  |
|                           | 24 | mon   | 26-06-2023 | stobbe condensation  | P1 |  |
|                           | 25 | tues  | 27-06-2023 | reformatsky reaction   | P1 |  |
|                           | 26 | thu   | 29-06-2023 | tollens and prins reaction   | P1 |  |

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|---|----|-------|------------|---|-----|--|
|   | 27 | fri   | 30-06-2023 | grignards and mannich reaction                                | P1  |  |
|   | 28 | mon   | 03-07-2023 | michael reaction  | P1  |  |
|   | 29 | tues  | 04-07-2023 | Discussion, Debate or Collaboration                           | P4  |  |
| <b>UNIT-III</b>                           | 30 | thurs | 06-07-2023 | Introduction to the topic                                     | P1  |  |
| <b>MOLECULAR REARRANGEME</b>              | 31 | fri   | 07-07-2023 | types of molecular rearrangements                             | P1  |  |
|   | 32 | tue   | 04-07-2023 | pinacole-pinacolone,wagner meerwein,tiffeneau demjanov,dienor | P1  |  |
|   | 33 | thu   | 06-07-2023 | arndt eistert reaction  | P1  |  |
|   | 34 | fri   | 07-07-2023 | beckmann and hoffmann reaction                                | P1  |  |
|   | 35 | mon   | 10-07-2023 | curtius and schmidth reaction                                 | P1  |  |
|   | 36 | tue   | 11-07-2023 | lossen rearrangement  | P1  |  |
|   | 37 | thu   | 13-07-2023 | Bayer villiger and hydroperoxide reaction,dakin reaction      | P1  |  |
|   | 38 | fri   | 14-07-2023 | F-test and student's t-test(seminar)                          | P10 |  |
|   | 39 | mon   | 17-07-2023 | benzil-benzilic acid rearrangement                            | P1  |  |
|   | 40 | tues  | 18-07-2023 | favorskii rearrangement                                       | P1  |  |
| <b>Unit-IV</b>                            | 41 | thu   | 20-07-2023 | Introduction to the topic                                     | P1  |  |
| <b>SPECTROSCOPY AND PROTECTING GROUPS</b> | 42 | fri   | 21-07-2023 | Uv Visible absorption laws,electronic excitations             | P1  |  |
|   | 43 | mon   | 24-07-2023 | absorption shifts   | P1  |  |
|   | 44 | tues  | 25-07-2023 | fundamental modes of vibration in IR                          | P1  |  |
|   | 45 | thu   | 27-07-2023 | Finger print region and its importance                        | P1  |  |
|   | 46 | fri   | 28-07-2023 | NMR introduction-chemical shift                               | P1  |  |

|  |    |       |            |   |    |  |
|--|----|-------|------------|---|----|--|
|  | 47 | mon   | 31-07-2023 | factors effecting chemical shift and coupling constant      | P1 |  |
|  | 48 | tue   | 01-08-2023 | determination of dueterium exchange and dueterium labelling | P1 |  |
|  | 49 | Thurs | 03-08-2023 | introduction to mass spectroscopy                           | P1 |  |
|  | 50 | fri   | 04-08-2023 | molecular ion and fragment ion                              | P1 |  |
|  | 51 | mon   | 07-08-2023 | cleavage, rearrangement, loss of molecular ions             | P1 |  |
|  | 52 | tues  | 08-08-2023 | isotope abundance   | P1 |  |
|  | 53 | thurs | 16-08-2023 | metastable ion  | P1 |  |
|  | 54 | fri   | 17-08-2023 | even electron rule, nitrogen rule                           | P1 |  |
|  | 55 | mon   | 21-08-2023 | Mc Lafferty rearrangement                                   | P1 |  |
|  | 56 | tues  | 22-08-2023 | protection of carbonyl group                                | P1 |  |
|  | 57 | thurs | 24-08-2023 | protection of co group                                      | P1 |  |
|  | 58 | fri   | 25-08-2023 | protection of hydroxyl group                                | P1 |  |
|  | 59 | mon   | 28-08-2023 | protection of carboxylic group                              | P1 |  |
|  | 60 | tues  | 29-08-2023 | protection of carboxylic group                              | P1 |  |
|  | 61 | mon   | 01-09-2023 | protection of amino group                                   | P1 |  |

  
Signature of the Lecturer

  
Signature of the Head of the Department

  
Signature of the Principal

P1 - Lecture  
P2 - Demonstration  
P5 - Audio & Video  
P7 - Assignment or Case Study  
P9 - Learning By Doing  
P11 - Brainstorming

P3 - Question & Answer  
P4 - Discussion, Debate or Collaboration  
P6 - Virtual or Online learning  
P8 - Study Project  
P10 - Class Seminar

## SIR C R REDDY COLLEGE FOR WOMEN, ELURU

## Curricular Plan for the Academic Year :: 2022-23

| Name of the Faculty Member               | K.Rama devi           |          |            |   | Name of the Department | PG DEPARTMENT OF CHEMISTRY |
|--|-----------------------|----------|------------|---|------------------------|----------------------------|
| Program                                  | M.Sc. CHEMISTRY       |          |            |   | Group:                 | Organic chemistry          |
| Title of the Course                      | PHYSICAL CHEMISTRY-II |          |            |   | Course Code:           | CHE204                     |
| Year                                     | I                     | Semester | II         |   | Hrs allotted:          | 60                         |
| Section                                  | ORGANIC CHEMISTRY     |          |            |   | Hours/Week             | 4                          |
| Unit No. & Name                          | Hour                  | Day      | Date       | Topic to be Covered   | Methodology Adopted    | Remarks                    |
| UNIT-1                                   | 1                     | mon      | 17-04-2023 | Introduction to spectroscopy  | P1                     |                            |
| Physical methods of molecular structural | 2                     | tue      | 18-04-2023 | NMR Principle and theory  | P1                     |                            |
|  | 3                     | wed      | 19-04-2023 | nature of spinning particle and its interaction with magnetic field | P1                     |                            |
|  | 4                     | thu      | 20-04-2023 | chemical shift and its origin                                       | P1                     |                            |
|  | 5                     | mon      | 24-04-2023 | factors influencing chemical shift                                  | P1                     |                            |
|  | 6                     | tue      | 25-04-2023 | spin-spin interaction   | P1                     |                            |
|  | 7                     | wed      | 26-04-2023 | application of NMR to structure of ethanol                          | P1                     |                            |
|  | 8                     | thu      | 27-04-2023 | nmr spectra of styrene ,acetophenone and dimethyl formamide         | P1                     |                            |

|                                   |    |     |            |   |    |  |
|-----------------------------------|----|-----|------------|---|----|--|
|                                   | 9  | wed | 03-05-2023 | ESR Principle and theory  | P1 |  |
|                                   | 10 | thu | 04-05-2023 | experimental technique of esr                                   | P1 |  |
|                                   | 11 | mon | 05-06-2023 | g factor  | P1 |  |
|                                   | 12 | tue | 06-06-2023 | line width and line shapes                                      | P1 |  |
|                                   | 13 | wed | 07-06-2023 | hyperfine interactions  | P1 |  |
|                                   | 14 | thu | 08-06-2023 | application of ESR studies                                      | P1 |  |
|                                   | 15 | mon | 12-06-2023 | question and answers  | P3 |  |
| <b>UNIT-II</b>                    | 16 | tue | 13-06-2023 | introduction to thermodynamics                                  | P1 |  |
| <b>Thermodynamics-II</b>          | 17 | wed | 14-06-2023 | entropy concept and its significance                            | P1 |  |
|                                   | 18 | thu | 15-06-2023 | entropy changes accompanying process like expansion, heating    | P1 |  |
|                                   | 19 | mon | 19-06-2023 | measurement of entropy in phase transition                      | P1 |  |
|                                   | 20 | tue | 20-06-2023 | Nernst heat theorem, III law of thermodynamics                  | P1 |  |
|                                   | 21 | wed | 21-06-2023 | determination of absolute entropies of solids,liquids and gases | P1 |  |
|                                   | 22 | thu | 22-06-2023 | exceptions to the III law of thermodynamics                     | P1 |  |
|                                   | 23 | mon | 26-06-2023 | discussion on above topics                                      | P4 |  |
| <b>Statistical thermodynamics</b> | 24 | tue | 27-06-2023 | objectives of statistical thermodynamics,types of ensembles     | P1 |  |
|                                   | 25 | wed | 28-06-2023 | concept of distibutions   | P1 |  |



|                           |    |     |            |  |     |  |
|---------------------------|----|-----|------------|--|-----|--|
|                           | 26 | mon | 03-07-2023 | most probable distribution laws  | P1  |  |
|                           | 27 | tue | 04-07-2023 | partition function, its significance, its types  | P1  |  |
|                           | 28 | wed | 05-07-2023 | derivation of translational, rotational, vibrational partition functions   | P1  |  |
|                           | 29 | thu | 06-07-2023 | relation of E, H, S, G and C <sub>v</sub> with the partition functions   | P1  |  |
|                           | 30 | mon | 10-07-2023 | seminar  | P10 |  |
| <b>UNIT-III</b>           | 31 | tue | 11-07-2023 | Review on fundamental concepts in Electrochemistry   | P1  |  |
| <b>Electrochemistry-I</b> | 32 | wed | 12-07-2023 | Electrochemical cells-electrodes-indicator electrodes-types of electrodes.   | P1  |  |
|                           | 33 | thu | 13-07-2023 | Concentration cells- EMF of concentration cells with and without transference  | P1  |  |
|                           | 34 | mon | 17-07-2023 | Effect of complexation on redox potential- ferricyanide/ ferrocyanide couple, Iron (III) phenanthroline / Iron (II) phenanthroline couple. | P1  |  |
|                           | 35 | tue | 18-07-2023 | Determination of solubility product, equilibrium constant and activity coefficients from EMF data  | P1  |  |
|                           | 36 | wed | 19-07-2023 | Concept of activity and activity coefficients in electrolytic solutions  | P1  |  |
|                           | 37 | thu | 20-07-2023 | Debye-Huckel theory of electrolytic solutions. Debye-Huckel limiting law (derivation not required),  | P1  |  |
|                           | 38 | mon | 24-07-2023 | Calculation of mean ionic activity coefficient; Limitations of Debye-Huckel theory.  | P1  |  |
|                           | 39 | wed | 26-07-2023 | Effect of dilution on equivalent conductance of electrolytes-  | P1  |  |
|                           | 40 | thu | 27-07-2023 | Anomalous behaviour of strong electrolytes   | P1  |  |
|                           | 41 | mon | 31-07-2023 | Debye Huckel-Onsagar equation-verification and limitations,  | P1  |  |
|                           | 42 | tue | 01-08-2023 | Bjerrum theory of ion association (elementary treatment)   | P1  |  |

|                            |    |     |            |   |     |  |
|----------------------------|----|-----|------------|---|-----|--|
|                            | 43 | wed | 02-08-2023 | fuel cells and its applications                                       | P1  |  |
|                            | 44 | thu | 03-08-2023 | discussion on above topics  | P4  |  |
| <b>Unit-IV</b>             | 45 | Mon | 07-08-2023 | The electrode-electrolyte interface                                   | P1  |  |
| <b>Electrochemistry-II</b> | 46 | Tue | 08-08-2023 | The electric double layer. The Helmholtz- Perrin parallel-plate model | P1  |  |
|                            | 47 | Wed | 09-08-2023 | Gouy-Chapman diffuse-charge model and the Stern model                 | P1  |  |
|                            | 48 | Thu | 10-08-2023 | Charge transfer reactions at the electrode-electrolyte interface.     | P1  |  |
|                            | 49 | mon | 14-08-2023 | Exchange current density and over-potential                           | P1  |  |
|                            | 50 | wed | 16-08-2023 | question and answers  | P3  |  |
|                            | 51 | thu | 17-08-2023 | Derivation of Butler-Volmer equation                                  | P1  |  |
|                            | 52 | fri | 18-08-2023 | High field approximation, Tafel equation, Low field equilibrium       | P1  |  |
|                            | 53 | sat | 19-08-2023 | Voltammetry-Concentration polarization                                | P1  |  |
|                            | 54 | mon | 21-08-2023 | Theory of polarography - Diffusion current - Ilkovic equation         | P1  |  |
|                            | 55 | tue | 22-08-2023 | Equation for half- wave potential                                     | P1  |  |
|                            | 56 | wed | 23-08-2023 | different experimental techniques                                     | P1  |  |
|                            | 57 | thu | 24-08-2023 | nernst equation   | P1  |  |
|                            | 58 | fri | 25-08-2023 | seminar   | P10 |  |
|                            | 59 | sat | 26-08-2023 | question and answers  | P3  |  |

|  |    |     |            |                   |    |  |
|--|----|-----|------------|-------------------|----|--|
|  | 60 | mon | 28-08-2023 | review on unit IV | P4 |  |
|  |    |     |            |                   |    |  |

  
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- P1 - Lecture
- P2 - Demonstration
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## SIR C R REDDY COLLEGE FOR WOMEN, ELURU


## Curricular Plan for the Academic Year :: 2022-23

| Name of the Faculty Member      | J. DURGA  |          |           |   | Name of the Department | DEPARTMENT OF PG CHEMISTRY |
|---------------------------------|---|----------|-----------|---|------------------------|----------------------------|
| Program                         | M.Sc. CHEMISTRY                                     |          |           |   | Group:                 |                            |
| Title of the Course             | ORGANIC REACTION MECHANISM - II AND PHOTO CHEMISTRY |          |           |   | Course Code:           | 33401                      |
| Year                            | II  | Semester | IV        |   | Hrs allotted:          | 60                         |
| Section                         |   |          |           |   | Hours/Week             | 4                          |
| Unit No. & Name                 | Hour  | Day      | Date      | Topic to be Covered   | Methodology<br>Adopted | Remarks                    |
| UNIT - III<br>Photo Chemistry-I | 1   | WED      | 19/4/2023 | Photochemical energy, Frank Condon Principle                            | P1                     |                            |
|                                 | 2   | THU      | 20/4/2023 | Types of Electronic Excitation and Molecular orbital view of excitation | P1                     |                            |
|                                 | 3   | FRI      | 21/4/2023 | Jablonski Diagram, singlet and triplet states                           | P1                     |                            |
|                                 | 4   | MON      | 24/4/2023 | photo sensitization   | P1                     |                            |
|                                 | 5   | THU      | 27/4/2023 | quenching   | P1                     |                            |
|                                 | 6   | SAT      | 29/4/2023 | quantum efficiency and quantum yield                                    | P1                     |                            |
|                                 | 7   | MON      | 1/5/2023  | Photo Chemistry of Carbonyl Compounds                                   | P1                     |                            |
|                                 | 8   | THUR     | 4/5/2023  | Norrish Type I reaction (alpha cleavage reaction)                       | P1                     |                            |
|                                 | 9   | SAT      | 6/5/2023  | Norrish Type – II reaction  | P1                     |                            |
|                                 | 10  | MON      | 5/6/2023  | Paterno- Buchi reaction   | P1                     |                            |
|                                 | 11  | TUE      | 6/6/2023  | Photo reduction & photo enolisation                                     | P1                     |                            |
|                                 | 12  | WED      | 7/6/2023  | photochemical Oxidations [Backstrom mechanism]                          | P1                     |                            |
|                                 | 13  | THU      | 8/6/2023  | Photo oxidation of alkenes with singlet oxygen.                         | P1                     |                            |
|                                 | 14  | FRI      | 9/6/2023  | Review on above topics  | P3                     |                            |
|                                 | 15  | SAT      | 10/6/2023 | Introduction of photo chemical rearrangements and types                 | P3                     |                            |

|   |    |      |           |   |    |  |
|---|----|------|-----------|---|----|--|
| Unit-IV<br>Photochemistry-II                        | 16 | MON  | 12/6/2023 | Di – Pi methane Rearrangement, Oxa di – Pi methane rearrangement                                      | P1 |  |
|   | 17 | TUE  | 13/6/2023 | Aza di – Pi methane rearrangement   | P1 |  |
|   | 18 | WED  | 14/6/2023 | Photo Fries rearrangement of Phenolic acetates and Anilides   | P1 |  |
|   | 19 | THU  | 15/6/2023 | Photochemical rearrangement of Cyclohexadienones  | P1 |  |
|   | 20 | FRI  | 16/6/2023 | Photorearrangements of Beta, gamma unsaturated systems (Mechanism of 1,2 & 1,3 – acyl shifts)         | P1 |  |
|   | 21 | MON  | 31/5/2023 | Photochemistry of Benzene and substituted benzene, 1, 2, 1,3, & 1, 4-additions                        | P1 |  |
|   | 22 | WED  | 2/6/2023  | Photochemistry of unsaturated systems, Cis- Trans Isomerisation of alkenes (Direct and sensitized)    | P1 |  |
|   | 23 | THUR | 3/6/2023  | <i>Photoisomerisation of Stilbene</i>   | P1 |  |
|   | 24 | SAT  | 5/6/2023  | Photochemistry of Butadiene; Dimerisations of alkenes, Intramolecular dimerisation                    | P1 |  |
|   | 25 | MON  | 7/6/2023  | Photochemistry of alpha, beta Unsaturated ketones (dimerisations and addition across the double bond) | P1 |  |
|   | 26 | WED  | 9/6/2023  | Photochemical rearrangement reactions of Cyclohexenone  | P1 |  |
|   | 27 | THUR | 10/6/2023 | Photochemistry of Nitrite esters (Barton reaction)  | P1 |  |
|   | 28 | MON  | 14/6/2023 | Review on Unit - IV   | P3 |  |
| Unit-I<br>Free Radical Reactions And Rearrangements | 29 | WED  | 16/6/2023 | Introduction of NGP   | P4 |  |
|   | 30 | THUR | 17/6/2023 | Neighboring group assistance in free radical reactions  | P1 |  |
|   | 31 | SAT  | 19/6/2023 | Reactivity for aliphatic substrates   | P1 |  |
|   | 32 | MON  | 21/6/2023 | Reactivity in aromatic substrates   | P1 |  |
|   | 33 | WED  | 23/6/2023 | Reactivity at bridge head   | P1 |  |
|   | 34 | THUR | 24/6/2023 | Reactivity at bridge head   | P1 |  |
|   | 35 | SAT  | 26/6/2023 | Allylic halogenations using NBS (Wohl – Ziegler bromination)  | P1 |  |

|                |  |      |           |   |   |    |  |
|----------------|--|------|-----------|---|---|----|--|
|                | 36   | MON  | 28/6/2023 | Hydroxylation at aromatic carbon by Fentons reagent   | P1  |    |  |
|                | 37   | WED  | 30/6/2023 | Oxidation of aldehydes to carboxylic acids  | P1  |    |  |
|                | 38   | THUR | 1/7/2023  | Formation of cyclic ethers using Leadtetraacetate;  | P1  |    |  |
|                | 39   | SAT  | 3/7/2023  | Formation of hydroperoxides (autooxidation)   | P1  |    |  |
|                | 40   | MON  | 5/7/2023  | Coupling of alkynes (Eglinton reaction and Glacer reaction);Arylation of Aromatic compounds by diazoinum salts(Gomberg – Bachmanreaction) | P1  |    |  |
| <b>Unit-II</b> | 41   | WED  | 7/7/2023  | Mechanisms of Sandmeyer reaction, Hunsdiecker reaction  | P1  |    |  |
|                | 42   | THUR | 8/7/2023  | Reed reaction.  | P1  |    |  |
|                | 43   | MON  | 12/7/2023 | Wagner – Meerwein Rearrangement   | P1  |    |  |
|                | 44   | WED  | 14/7/2021 | Demyanov Rearrangement  | P1  |    |  |
|                | 45   | THU  | 15/7/2023 | Wittig Rearrangement  | P1  |    |  |
|                | 46   | SAT  | 17/7/2023 | Stevens Rearrangement   | P1  |    |  |
|                | 47   | MON  | 19/7/2023 | Review on Unit - I  | P3  |    |  |
|                | 48   | WED  | 21/7/2023 | Introduction of Strategies in Asymmetric Synthesis  | P4  |    |  |
|                | <b>Methodologies in asymmetric synthesis</b> | 49   | THU       | 22/7/2023   | Intgroduction of Chiral Substrate controlled asymmetric synthesis               | P4 |  |
|                |  | 50   | SAT       | 24/7/2023   | Nucleophilic additions to chiral carbonyl compounds. 1, 2- asymmetric induction | P1 |  |
| 51             |  | MON  | 26/7/2023 | Cram's rule   | P1  |    |  |
| 52             |  | WED  | 28/7/2023 | Cram's rule   | P1  |    |  |
| 53             |  | THU  | 29/7/2023 | Felkin-Anh model  | P1  |    |  |
| 54             |  | SAT  | 31/7/2023 | Introduction of Chiral reagent controlled asymmetric synthesis  | P4  |    |  |
| 55             |  | MON  | 24/7/2023 | Asymmetric reductions using BINAL-H   | P1  |    |  |
| 56             |  | WED  | 26/7/2023 | Asymmetric hydroboration using IPC2 BH and IPCBH2.  | P1  |    |  |

|    |     |           |   |                     |    |
|----|-----|-----------|---|---------------------|----|
| 57 | THU | 27/7/2023 | Introduction Chiral catalyst controlled asymmetric synthesis                    | P1                  |    |
| 58 | FRI | 28/7/2023 | Sharpless and Jacobsen asymmetric epoxidations                                  | P1                  |    |
| 59 | SAT | 29/7/2023 | Sharpless asymmetric dihydroxylation  | P1                  |    |
| 60 | MON | 31/7/2023 | Asymmetric hydrogenations using chiral Wilkinson biphosphine and Noyori catalys | P1                  |    |
| 61 | TUE | 1/8/2023  | Enzyme mediated enantioselective synthesis                                      | P1                  |    |
| 62 | WED | 2/8/2023  | Review on methodologies in asymmetric synthesis                                 | P3                  |    |
| 63 | THU | 3/8/2023  |   | Review on all units | P3 |

  
Signature of the  
Lecturer

  
Signature of the Head of the Department

  
Signature of the Principal

P1 - Lecture  
P2 - Demonstration  
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SIR C R REDDY COLLEGE FOR WOMEN,  
ELURU

**Curricular Plan for the Academic Year :: 2022-23**

| Name of the Faculty Member      | Dr. B. VALLI PURNIMA    |          |           | Name of the Department               | PG CHEMISTRY |         |
|---------------------------------|-------------------------|----------|-----------|--------------------------------------|--------------|---------|
| Program                         | M.Sc ORGANIC CHEMISTRY  |          |           | Group:                               |              |         |
| Title of the Course             | ORGANIC SPECTROSCOPY-II |          |           | Course Code:                         | 42204        |         |
| Year                            | II                      | Semester | IV        | Hrs allotted:                        | 60           |         |
| Section                         |                         |          |           | Hours/Week                           | 4            |         |
| Unit No. & Name                 | Hour                    | Day      | Date      | Topic to be Covered                  | Methodology  | Remarks |
|                                 |                         |          |           |                                      | Adopted      |         |
| UNIT- I ORD and CD Spectroscopy | 1                       | FRI      | 4/6/2023  | Introduction to optical activity     | P4           |         |
|                                 | 2                       | WED      | 4/7/2023  | Plane and circularly polarised light | P1           |         |
|                                 | 3                       | THU      | 4/8/2023  | Optical Rotation                     | P1           |         |
|                                 | 4                       | FRI      | 4/9/2023  | Circular birefringence               | P1           |         |
|                                 | 5                       | TUE      | 4/13/2023 | Circular dichroism                   | P1           |         |
|                                 | 6                       | THU      | 4/15/2023 | Cotton effect                        | P1           |         |
|                                 | 7                       | FRI      | 4/16/2023 | Plane curves and Anomalous curves    | P1           |         |
|                                 | 8                       | TUE      | 4/20/2023 | Semi empirical rules                 | P1           |         |
|                                 | 9                       | THU      | 4/22/2023 | The axial halo ketone rule           | P1           |         |
|                                 | 10                      | FRI      | 4/23/2023 | The Octant Rule                      | P1           |         |



|                |    |      |           |   |    |  |
|----------------|----|------|-----------|---|----|--|
|                | 11 | TUE  | 4/27/2023 | Applications of Octant rule                     | P1 |  |
|                | 12 | WED  | 4/28/2023 | Study of absolute configuration and confirmaton | P1 |  |
|                | 13 | THUR | 4/29/2023 | Helicity rule                                   | P1 |  |
|                | 14 | FRI  | 4/30/2023 | Review on Unit-I                                | P1 |  |
|                | 15 | TUE  | 5/4/2023  | Class room Seminar                              | P1 |  |
| <b>Unit-II</b> | 16 | WED  | 5/5/2023  | Improving the PMR spectrum                      | P1 |  |
|                | 17 | THUR | 5/6/2023  | Chemical and Magnetic equivalence               | P1 |  |
|                | 18 | FRI  | 5/7/2023  | Chemical exchange                               | P1 |  |
|                | 19 | TUE  | 5/25/2023 | First and Non-First order Spectra               | P1 |  |
|                | 20 | WED  | 5/26/2023 | Spectra and analysis of AB system               | P1 |  |
|                | 21 | THUR | 5/27/2023 | Spectra and analysis of AMX system              | P1 |  |
|                | 22 | FRI  | 5/28/2023 | Spectra and analysis of ABX system              | P1 |  |
| <b>NMR</b>     | 23 | TUE  | 6/1/2023  | Simplification of Complex Spectra               | P1 |  |
|                | 24 | WED  | 6/2/2023  | Nuclear Magnetic Double Resonance               | P1 |  |
|                | 25 | THUR | 6/3/2023  | Lanthanide Shift Reagents                       | P1 |  |
|                | 26 | FRI  | 6/4/2023  | Solvent effects                                 | P1 |  |
|                | 27 | TUE  | 6/8/2023  | Fourier transforms technique                    | P1 |  |
|                | 28 | WED  | 6/9/2023  | NOE   | P1 |  |
|                | 29 | THUR | 6/10/2023 | Definition and Importance                       | P4 |  |
| <b>2D NMR</b>  | 30 | FRI  | 6/11/2023 | COSY  | P1 |  |

|   |     |           |                       |   |     |  |
|---|-----|-----------|-----------------------|---|-----|--|
| Electro analytical<br>Methods of Analysis - 1           | 31  | TUE       | 6/15/2023             | DEPT  | P1  |  |
|   | 32  | WED       | 6/16/2023             | HOMCOR  | P1  |  |
|   | 33  | THUR      | 6/17/2023             | HETCOR  | P1  |  |
|   | 34  | FRI       | 6/18/2023             | INADEQUATE  | P1  |  |
|   | 35  | TUE       | 6/22/2023             | INDOR   | P1  |  |
|   | 36  | WED       | 6/23/2023             | INEPT   | P1  |  |
|   | 37  | THUR      | 6/24/2023             | NOESY   | P1  |  |
|   | 38  | FRI       | 6/25/2023             | 2D NMR spectral analysis  | P1  |  |
|   | 39  | TUE       | 6/29/2023             | Class room Seminar  | P10 |  |
|   | 40  | WED       | 6/30/2023             | Review on Unit-III  | P1  |  |
| Unit-IV<br>Seperation Techniques<br>and Instrumentation | 41  | THUR      | 7/1/2023              | <i>Introduction to Organic spectral analysis</i>                                  | P1  |  |
|   | 42  | FRI       | 7/2/2023              | Overall problem solving by using UV,IR,NMR and MASS Spectral of Carboxylic acids  | P1  |  |
|   | 43  | TUE       | 7/6/2023              | Overall problem solving by using UV,IR,NMR and MASS Spectral data of ESTERS       | P1  |  |
|   | 44  | WED       | 7/7/2023              | Overall problem solving by using UV,IR,NMR and MASS Spectral data of ALDEHYDES    | P1  |  |
|   | 45  | THUR      | 7/8/2023              | Overall problem solving by using UV,IR,NMR and MASS Spectral data of KETONES      | P1  |  |
|   | 46  | FRI       | 7/9/2023              | Overall problem solving by using UV,IR,NMR and MASS Spectral data of AMINES       | P1  |  |
|   | 47  | TUE       | 7/13/2023             | Overall problem solving by using UV,IR,NMR and MASS Spectral data Nitro Compounds | P1  |  |
|   | 48  | WED       | 7/14/2023             | Solvent Extraction  | P1  |  |
|   | 49  | THUR      | 7/15/2023             | <i>Paper Chromatography</i>   | P1  |  |
|   | 50  | FRI       | 7/16/2023             | Thin Layer Chromatography   | P1  |  |
| 51  | TUE | 7/20/2023 | Column Chromatography | P1  |     |  |

|    |      |           |  |    |  |
|----|------|-----------|--|----|--|
| 52 | THUR | 7/22/2023 | Electrophoresis                        | P1 |  |
| 53 | FRI  | 7/23/2023 | Class Room Seminar                     | P1 |  |
| 54 | TUE  | 7/27/2023 | Instrumentation                        | P1 |  |
| 55 | WED  | 7/28/2023 | Gas Chromatography                     | P1 |  |
| 56 | THUR | 7/29/2023 | High Performance Liquid Chromatography | P1 |  |
| 57 | FRI  | 7/30/2023 | X-Ray Diffraction                      | P1 |  |
| 58 | TUE  | 8/3/2023  | Review on Unit-IV                      | P3 |  |
| 59 | WED  | 8/4/2023  | Discussion on questions and answers    | P3 |  |
| 60 | THUR | 8/5/2023  | Review on over all syllabus            | P4 |  |

*B.V. Prasad*  
Signature of the Lecturer

*B.V. Prasad*  
Signature of the Head of the Department

*N. Sridhar*  
Signature of the Principal

P1 - Lecture  
P2 - Demonstration  
P5 - Audio & Video  
P7 - Assignment or Case Study  
P9 - Learning By Doing  
P11- Brainstorming

P3 - Question & Answer  
P4 - Discussion, Debate or Collaboration  
P6 - Virtual or Online learning  
P8 - Study Project  
P10 - Class Seminar

**SIR C R REDDY COLLEGE FOR WOMEN ,  
ELURU**

**Curricular Plan for the Academic Year :: 2022-23**

|                            |                             |          |    |                        |              |
|----------------------------|-----------------------------|----------|----|------------------------|--------------|
| Name of the Faculty Member | J.Durga                     |          |    | Name of the Department | PG CHEMISTRY |
| Program                    | M.Sc. ORGANIC CHEMISTRY     |          |    | Group:                 |              |
| Title of the Course        | MODERN ORGANIC SYNTHESIS-II |          |    | Course Code:           | 33403        |
| Year                       | II                          | Semester | IV | Hrs allotted:          | 60           |
| Section                    |                             |          |    | Hours/Week             | 4            |

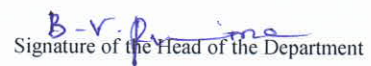
| Unit No. & Name            | Hour | Day | Date      | Topic to be Covered   | Methodology | Remarks |
|----------------------------|------|-----|-----------|---|-------------|---------|
|                            |      |     |           |   | Adopted     |         |
| UNIT- I:<br>Organo Silanes | 1    | TUE | 6/4/2023  | Discussion about over all syllabus  | P4          |         |
|                            | 2    | WED | 7/4/2023  | Introduction on Organo silanes silanes  | P1          |         |
|                            | 3    | THU | 8/4/2023  | Synthetic applications of trimethylsilyl chloride and dimethyl-t-butylsilyl chloride.                       | P1          |         |
|                            | 4    | MON | 12/4/2023 | Synthetic applications of trimethylsilyl cyanide, trimethylsilyl iodide                                     | P1          |         |
|                            | 5    | MON | 19/4/2023 | Synthetic applications of trimethylsilyl triflate.  | P1          |         |
|                            | 6    | TUE | 4/20/2023 | $\alpha$ -silyl carbanions and its synthetic applications   | P1          |         |
|                            | 7    | MON | 4/26/2023 | $\beta$ -silyl carbonium ions and its synthetic applications  | P1          |         |
|                            | 8    | TUE | 4/27/2023 | Synthetic applications of silyl enol ethers   | P1          |         |
|                            | 9    | WED | 4/28/2023 | Preparation and synthetic applications of alkynyl silanes and aryl silanes                                  | P1          |         |
|                            | 10   | THU | 4/29/2023 | Preparation and synthetic applications of allyl silanes and vinyl silanes                                   | P1          |         |
|                            | 11   | MON | 5/3/2023  | Nazarov cyclization and its applications in modern organic synthesis.                                       | P4          |         |
|                            | 12   | TUE | 4/5/2023  | Synthetic conversion of $\alpha$ , $\beta$ -epoxy silanes and its applications in modern organic synthesis. | P1          |         |
|                            | 13   | WED | 5/5/2023  | Peterson Olefination and its applications   | P1          |         |
|                            | 14   | THU | 5/6/2023  | Brook rearrangement and Rubottom oxidation and their applications in modern organic synthesis.              | P1          |         |

|                        |    |     |           |   |                     |    |
|------------------------|----|-----|-----------|---|---------------------|----|
|                        | 15 | FRI | 5/7/2023  | Revision on Unit-I  | P4                  |    |
| Unit-II<br>Oxidation   | 16 | MON | 5/24/2023 | An introduction to Synthetic applications of various reagents in the oxidation of functional groups like alkenes, alkynes, alcohols, aldehydes and ketones: | P1                  |    |
|                        | 17 | TUE | 5/25/2023 | Preparation Synthetic applications of Oxidising agent $Pb(OAc)_4$ and $HIO_4$   | P1                  |    |
|                        | 18 | WED | 5/26/2023 | Preparation Synthetic applications of Oxidising agent $SeO_2$   | P1                  |    |
|                        | 19 | THU | 5/27/2023 | Preparation Synthetic applications of Oxidising agent Collins reagent, Jones reagent, PCC (Coreys reagent)  | P1                  |    |
|                        | 20 | MON | 5/31/2023 | Preparation Synthetic applications of Oxidising agent PDC and Baeyer-Villiger oxidation   | P1                  |    |
|                        | 21 | TUE | 6/01/2023 | Preparation Synthetic applications of Oxidising agent $MnO_2$   | P1                  |    |
|                        | 22 | WED | 6/02/2023 | Preparation Synthetic applications of Oxidising agent $KMnO_4$ and $OsO_4$  | P1                  |    |
|                        | 23 | THU | 6/03/2023 | Synthetic applications of Swern oxidation,  | P1                  |    |
|                        | 24 | MON | 6/07/2023 | Oxidations by using IBX and TEMPO reagents  | P1                  |    |
|                        | 25 | TUE | 6/08/2023 | Woodward and Prevost reagents and synthetic applications  | P4                  |    |
|                        | 26 | WED | 6/09/2023 | Oxidation by using DDQ  | P4                  |    |
|                        | 27 | THU | 6/10/2023 | Sharpless asymmetric epoxidation and Sharpless asymmetric dihydroxylation   | P1                  |    |
|                        | 28 | MON | 6/14/2023 | Oxidizing properties of Thallium nitrate and its synthetic applications   | P1                  |    |
|                        |    | 29  | TUE       | 6/15/2023   | Revision on Unit-II | P1 |
| Unit-III<br>Reductions | 30 | WED | 6/16/2023 | An introduction to Synthetic applications of various reducing reagents  | P1                  |    |
|                        | 31 | THU | 6/17/2023 | Catalytic reductions: Homogeneous (Wilkinson's Catalytic reduction) and heterogeneous catalytic reductions and their synthetic applications.                | P1                  |    |
|                        | 32 | MON | 6/21/2023 | Sampling of Solids: Cone and Quartering method, Long pile and alternative shovel method   | P1                  |    |

|                          |    |     |           |   |    |  |
|--------------------------|----|-----|-----------|---|----|--|
|                          | 33 | TUE | 6/22/2023 | Introduction on Reductions by using electrophilic nucleophilic metal hydrides   | P4 |  |
|                          | 34 | WED | 6/23/2023 | Reduction by using LiAlH <sub>4</sub> (Various examples of reductions and cram's rule) and its synthetic applications.                  | P1 |  |
|                          | 35 | THU | 6/24/2023 | Reduction by using NaBH <sub>4</sub> and its synthetic applications   | P1 |  |
|                          | 36 | MON | 6/28/2023 | Reduction by using NaBH <sub>3</sub> CN and its synthetic applications  | P1 |  |
|                          | 37 | TUE | 6/29/2023 | Reductions by using electrophilic metal hydrides: BH <sub>3</sub> , DIBAL   | P1 |  |
|                          | 38 | WED | 6/30/2023 | Reductions by dissolving metals: Clemenson reduction, Acyloin condensation and their synthetic applications                             | P1 |  |
|                          | 39 | THU | 7/1/2023  | Bouveault-Blanc reduction, and their synthetic applications   | P1 |  |
|                          | 40 | MON | 7/5/2023  | Birch reduction and their synthetic applications  | P1 |  |
|                          | 41 | TUE | 7/6/2023  | Reductions by using Diimide   | P1 |  |
|                          | 42 | WED | 7/7/2023  | Reductions by using Wolf-Kishner Reduction  | P1 |  |
|                          | 43 | THU | 7/8/2023  | Reductions by using tri n-butyl tin hydride.  | P4 |  |
|                          | 44 | MON | 7/12/2023 | Revision on Unit-III  | P1 |  |
| Unit-IV                  | 45 | TUE | 7/13/2023 | Introduction to retero synthetic analysis   | P4 |  |
| Retro Synthetic Analysis | 46 | WED | 7/14/2023 | Basics Definition and examples of : a) Retro synthetic analysis b) Disconnection c) Target molecule d) Synthone e) Synthetic equivalent | P4 |  |
|                          | 47 | THU | 7/15/2023 | Basics Definition and examples of : f) Functional Group Inter Conversion (FGI) g) Functional Group Addition (FGA)                       | P1 |  |
|                          | 48 | MON | 7/19/2023 | Guidelines for the order of events: One Group C-X disconnections (Carbonyl derivatives, ethers)   | P1 |  |
|                          | 49 | TUE | 7/20/2023 | Guidelines for the order of events: One Group C-X disconnections (sulphides and alcohols).  | P1 |  |
|                          | 50 | WED | 7/21/2023 | Guidelines for the order of events: One group C-C disconnections (Alcohols and carbonyl compounds, 1,1- C-C, 1,2-C-C and 1,3-C-C).      | P1 |  |
|                          | 51 | THU | 7/22/2023 | Guidelines for the order of events: One group C-C disconnections (Alcohols and carbonyl compounds, 1,1- C-C, 1,2-C-C and 1,3-C-C).      | P1 |  |
|                          | 52 | MON | 7/26/2023 | Guidelines for the order of events: One group C-C disconnections ( carbonyl compounds, 1,1- C-C, 1,2-C-C and 1,3-C-C).                  | P1 |  |
|                          | 53 | TUE | 7/27/2023 | Linearsynthesis and its synthetic applications  | P1 |  |

|    |     |           |   |    |  |
|----|-----|-----------|---|----|--|
| 54 | WED | 7/28/2023 | convergent synthesis and its synthetic applications           | P1 |  |
| 55 | THU | 7/29/2023 | Differences between linear synthesis and convergent synthesis | P1 |  |
| 56 | MON | 8/2/2023  | Practice on retrosynthetic analysis of various molecules      | P4 |  |
| 57 | TUE | 8/3/2023  |   | P1 |  |
| 58 | WED | 8/4/2023  | Revision on Unit-IV   | P1 |  |
| 59 | THU | 8/5/2023  | Discussion on questions and answers                           | P3 |  |
| 60 | SAT | 8/7/2023  | Revision on all units in examination point of view            | P4 |  |

  
Signature of the  
Lecturer

  
Signature of the Head of the Department

  
Signature of the Principal

P3 - Question & Answer  
P4 - Discussion, Debate or Collaboration  
P6 - Virtual or Online learning  
P8 - Study Project  
P10 - Class Seminar

## Curricular Plan for the Academic Year :: 2022-23

| Name of the Faculty Member                 |  | DR B. VALLI PURNIMA   |          |           | Name of the Department  |               | PG DEPARTMENT OF CHEMISTRY |         |
|--|--|-----------------------|----------|-----------|---|---------------|----------------------------|---------|
| Program                                    |  | M.Sc. CHEMISTRY       |          |           | Group:  |               |                            |         |
| Title of the Course                        |  | BIO-ORGANIC CHEMISTRY |          |           | Course Code:  |               | 33404                      |         |
| Year                                       |  | 2                     | Semester |           | IV  | Hrs allotted: |                            | 30      |
| Section                                    |  |                       |          |           |   | Hours/Week    |                            | 2       |
| Feb.24th to June 26th                      |  |                       |          |           |   |               |                            |         |
| Unit No. & Name                            |  | Hour                  | Day      | Date      | Topic to be Covered   | Methodology   |                            | Remarks |
|  |  |                       |          |           |   | Adopted       |                            |         |
| UNIT-I<br><br>Biopolymers and Enzymes      |  | 1                     | WED      | 19/4/2023 | Introduction to Bio-Organic Chemistry                                   | P4            |                            |         |
|  |  | 2                     | THU      | 20/4/2023 | General introduction to Bio-polymers                                    | P1            |                            |         |
|  |  | 3                     | FRI      | 21/4/2023 | Peptides: $\alpha$ -Amino acids, their general properties and synthesis | P1            |                            |         |
|  |  | 4                     | MON      | 24/4/2023 | Synthesis of peptides by Merrified solid phase synthesis                | P1            |                            |         |
|  |  | 5                     | THU      | 27/4/2023 | Chemistry of oxytocin   | P1            |                            |         |
|  |  | 6                     | SAT      | 29/4/2023 | Chemistry of dolastain-10   | P1            |                            |         |
|  |  | 7                     | WED      | 5/2/2023  | General introduction to Enzymes   | P1            |                            |         |
|  |  | 8                     | THU      | 5/3/2023  | Oxidoreductases and properties  | P1            |                            |         |
|  |  | 9                     | SAT      | 4/5/2023  | Hydrolases: properties and uses   | P1            |                            |         |
|  |  | 10                    | SAT      | 4/29/2023 | Transferases: properties and uses                                       | P4            |                            |         |
|  |  | 11                    | FRI      | 5/3/2023  | ATP: Properties and synthesis   | P1            |                            |         |
|  |  | 12                    | SAT      | 4/5/2023  | Baker's Yeast: preparation, properties                                  | P1            |                            |         |
|  |  | 13                    | FRI      | 5/5/2023  | Baker's Yeast: preparation, properties                                  | P1            |                            |         |
|  |  | 14                    | SAT      | 5/6/2023  | Enzyme: Types, design of models and examples                            | P1            |                            |         |
|  |  | 15                    | FRI      | 5/4/2023  | Revision of Unit-I  | P1            |                            |         |
| UNIT-II<br><br>Antimalarials & Antibiotics |  | 16                    | FRI      | 5/5/2023  | Introduction to anti-malarials  | P1            |                            |         |
|  |  | 17                    | SAT      | 5/6/2023  | Chemotherapy and its applications in medicinal field                    | P1            |                            |         |
|  |  | 18                    | FRI      | 5/7/2023  | Introduction to antimalarial drugs- Classification & examples           | P1            |                            |         |



UNIT -III  
VITAMINS

|    |     |           |  |    |  |
|----|-----|-----------|--|----|--|
| 19 | SAT | 5/25/2023 | synthesis and activity of quinine (quinine group)                                  | P1 |  |
| 20 | FRI | 5/26/2023 | synthesis and activity of quinacrine (acridine group)                              | P4 |  |
| 21 | SAT | 5/27/2023 | synthesis and activity of paludrine (guanidine group)                              | P1 |  |
| 22 | FRI | 5/28/2023 | Introduction to antibiotics  | P1 |  |
| 23 | FRI | 6/1/2023  | General characteristics, structure- activity relationships of various antibiotics  | P1 |  |
| 24 | SAT | 6/2/2023  | Types of anti-biotics and recent development of resistance towards the antibiotics | P1 |  |
| 25 | FRI | 6/3/2023  | Synthesis and activity of Penicillin G   | P1 |  |
| 26 | SAT | 6/4/2023  | Types of penicillins and their activities  | P1 |  |
| 27 | FRI | 6/8/2023  | Synthesis and activity of Cephalosporin-C  | P1 |  |
| 28 | SAT | 6/9/2023  | Synthesis and activity of streptomycin   | P1 |  |
| 29 | FRI | 6/10/2023 | Revision of Unit-II  | P1 |  |
| 30 | SAT | 6/11/2023 | Student classroom Seminar on Antibiotics-Applications in Medicinal Chemistry       | P4 |  |
| 31 | MON | 6/18/2023 | Definition, Occurrence, Structural formulae  | P1 |  |
| 32 | WED | 6/19/2023 | Physiological functions  | P1 |  |
| 33 | MON | 6/25/2023 | General synthesis of Vitamins  | P1 |  |
| 34 | WED | 6/26/2023 | Synthesis of Retinol (A)   | P1 |  |
| 35 | MON | 7/2/2023  | Structural Determination of Retinol A  | P1 |  |
| 36 | TUE | 7/7/2023  | Synthesis of Thiamine (B1)   | P1 |  |
| 37 | WED | 7/8/2023  | Structural Determination of Thiamine (B1)  | P1 |  |
| 38 | MON | 7/14/2023 | Structural Determination of Pyridoxine (B6)  | P1 |  |
| 39 | TUE | 7/15/2023 | Structural Determination of Riboflavin (B2)  | P1 |  |
| 40 | WED | 6/3/2023  | Synthesis of Pyridoxine (B6)   | P4 |  |
| 41 | MON | 6/9/2023  | Structural Determination Pyridoxine (B6)   | P1 |  |

UNIT -IV  
NUCLEIC ACIDS

|    |     |           |                                |    |  |
|----|-----|-----------|--------------------------------|----|--|
| 42 | WED | 6/10/2023 | Biotins                        | P1 |  |
| 43 | MON | 6/4/2023  | Nicotinnic acid                | P1 |  |
| 44 | WED | 6/5/2023  | Heterrocyclic Bases            | P1 |  |
| 45 | MON | 6/11/2023 | Nucleic acids                  | P1 |  |
| 46 | TUE | 6/18/2023 | Introduction                   | P1 |  |
| 47 | WED | 6/19/2023 | Structure Of RNA               | P1 |  |
| 48 | MON | 6/25/2023 | Structure of DNA               | P1 |  |
| 49 | WED | 6/26/2023 | Nucleotides                    | P1 |  |
| 50 | MON | 7/2/2023  | Nucleosides                    | P1 |  |
| 51 | TUE | 7/7/2023  | Genetic Code                   | P1 |  |
| 52 | WED | 7/8/2023  | Finger Print test              | P1 |  |
| 53 | MON | 7/14/2023 | Insect control                 | P4 |  |
| 54 | WED | 7/15/2023 | Diagnosis of diseases          | P1 |  |
| 55 | MON | 7/21/2023 | Insect control                 | P1 |  |
| 56 | TUE | 7/22/2023 | Improved biological detergents | P1 |  |
| 57 | WED | 7/28/2023 | Gene Therapy                   | P1 |  |
| 58 | MON | 7/29/2023 | Examples                       | P1 |  |
| 59 | WED | 8/4/2023  | Revision                       | P1 |  |
| 60 | MON | 8/5/2023  | Revision                       | P1 |  |

*B.V. Purna*  
Signature of the  
Lecturer

*B.V. Purna*  
Signature of the HOD

*[Signature]*  
Signature of the Principal