COURSE FILE

## ON

**CHEMISTRY**

**Course Code** – **P231209**

## I B.Tech II-SEMESTER A.Y.: 2023-2024

**Prepared by**

**P.SULOCHANA**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

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| **Academic Year** | 2023-2024 |
| **Course Title** | CHEMISTRY |
| **Course Code** | P231209 |
| **Programme** | B.Tech |
| **Year & Semester** | 1 year II-semester |
| **Branch & Section** | ECE |
| **Regulation** | R23 |
| **Course Faculty** | P.SULOCHANA |

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

### INSTITUTE VISION AND MISSION

**Vision:**

To emerge as a place of brilliance providing technological Knowledge and Research oriented exploration and making students to meet the global standards.

### Mission:

Impart professional and communication skills by providing proficient faculty, qualitative infrastructure which assists students in learning, practicing and innovative applications and also infusing moral and value based education for their real life development.

**DEPARTMENT OF SCIENCE AND HUMANITIES**

### DEPARTMENT VISION AND MISSION

**Vision:**

### To emerge and establish as a center of excellence endeavoring to impart quality education, primarly the robust knowledge of basic science and engineering.

### Mission:

* To develop proficient engineers of global competence by in calcuting human values and providind essential participation and interaction.
* To create passion for learning for science, engineering and technology.

#### DEPARTMENT OF SCIENCE AND HUMANITIES

#### PROGRAM EDUCATIONAL OBJECTIVES

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| --- | --- |
| PEO 1 | Graduates will have competent to design, develop and solve Engineering problems and shall have expertise in programming tools |
| PEO 2 | Graduates will be adapt to state of art technologies through continuous learning in the areas of IOT. |
| PEO3 | Graduate should have demonstrate leadership qualities, team work and professional ethics to serve the society |

#### PROGRAM SPECIFIC OUTCOMES

|  |  |
| --- | --- |
| PSO1 | Ability to apply mathematical concepts, algorithm design techniques and suitable Data structures to solve practical problems using different problem-solving strategies. |
| PSO2 | Ability to design computing solutions for problems in interdisciplinary areas. |

#### PROGRAMME OUTCOMES (POs)

|  |  |
| --- | --- |
| **PO1** | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **PO2** | **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **PO3** | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **PO4** | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **PO5** | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations. |
| **PO6** | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **PO7** | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development |
| **PO8** | **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **PO9** | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **PO10** | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **PO11** | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **PO12** | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

#### JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA B.Tech. in SCIENCE AND HUMANITIES

**I YEAR COURSE STRUCTURE AND SYLLABUS (R23)**

#### Applicable From 2023-24 Admitted Batch

|  |
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| **B.Tech.–IYear IISemester** |

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| **S.No.** | **Category** | **Title** | **L/D** | **T** | **P** | **Credits** |
| 1 | BS&H | Chemistry | 3 | 0 | 0 | 3 |
| 2 | BS &H | DifferentialEquations&Vector Calculus | 3 | 0 | 0 | 3 |
| 3 | Engineering Science | Basic ElectricalandElectronics Engineering | 3 | 0 | 0 | 3 |
| 4 | Engineering Science | EngineeringGraphics | 1 | 0 | 4 | 3 |
| 5 | Engineering Science | ITWorkshop | 0 | 0 | 2 | 1 |
| 6 | Professional Core | Programcore(Branch specific) | 3 | 0 | 0 | 3 |
| 7 | BS&H | ChemistryLab | 0 | 0 | 2 | 1 |
| 8 | Engineering Science | ElectricalandElectronics Engineering Workshop | 0 | 0 | 3 | 1.5 |
| 9 | Professional Core | ProgramCoreLab(Branch specific) | 0 | 0 | 3 | 1.5 |
| 10 | BS&H | NSS/NCC/Scouts & Guides/CommunityService | - | - | 1 | 0.5 |
| **Total** | | | **13** | **0** | **15** | **20.5** |

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| --- | --- | --- | --- | --- | --- |
| **I Year – II Semester** |  | **L** | **T** | **P** | **C** |
| **3** | **0** | **0** | **3** |
| **CHEMISTRY** | | | | | |

### Course Objectives:

* + Tofamiliarizeengineeringchemistryand itsapplications
  + Totrainthestudentsontheprinciplesandapplicationsofelectrochemistryand polymers
  + Tointroduceinstrumentalmethods,molecular machinesandswitches.

**CourseOutcomes:**Attheendofthecourse,thestudentswillbeable to:

**CO1:**Comparethematerialsofconstructionforbatteryandelectrochemicalsensors.

**CO2**:Explainthepreparation,properties,andapplicationsofthermoplastics&thermosetting& elastomers conducting polymers.

**CO3**: Explain the principles ofspectrometry, slc in separation ofsolid and liquid mixtures. **CO4:**ApplytheprincipleofBanddiagramsintheapplicationofconductorsand semiconductors.

**CO5:**Summarizetheconceptsof Instrumentalmethods.

### UNITI- StructureandBondingModels:

Fundamentals of Quantum mechanics, Schrodinger Wave equation, significance of Ψ and Ψ2, particleinonedimensionalbox,molecularorbitaltheory–bondinginhomo-andheteronuclear diatomic molecules – energy level diagrams of O2 and CO, etc. π-molecular orbitals of butadiene and benzene, calculation of bond order.

**UNITII- Modern Engineering materials** Semiconductors – Introduction, basic concept, application Superconductors-Introductionbasicconcept,applications.

Supercapacitors:Introduction,BasicConcept-Classification– Applications.

Nano materials: Introduction, classification, properties and applications of Fullerenes, carbon nano tubes and Graphines nanoparticles.

### UNITIII- ElectrochemistryandApplications

Electrochemical cell, Nernst equation, cell potential calculations and numerical problems, potentiometry-potentiometrictitrations(redoxtitrations),conceptofconductivity,conductivity cell, conductometric titrations (acid-base titrations).

Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples.

Primarycells–Zinc-airbattery,Secondarycells–lithium-ionbatteries-workingofthebatteries including cell reactions; Fuel cells, hydrogen-oxygenfuel cell– working of the cells. Polymer Electrolyte Membrane Fuel cells (PEMFC).

### UNITIV- PolymerChemistry

Introduction to polymers, functionality of monomers, chain growth and step growth polymerization, coordination polymerization, with specific examples and mechanisms of polymer formation.

Plastics –Thermo and Thermosetting plastics, Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres.

Elastomers–Buna-S,Buna-N–preparation,propertiesand applications.

Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications.Bio-Degradablepolymers-PolyGlycolicAcid(PGA),Polyl LacticAcid(PLA).

### UNITV-Instrumental Methods and Applications

Electromagnetic spectrum. Absorption of radiation: Beer-Lambert’s law. UV-Visible Spectroscopy, electronic transition, Instrumentation, IR spectroscopies, fundamental modes and selection rules, Instrumentation. Chromatography-Basic Principle, Classification-HPLC: Principle, Instrumentation and Applications.

### Textbooks:

1. JainandJain,EngineeringChemistry,16/e,DhanpatRai,2013.
2. PeterAtkins,JuliodePaulaandJamesKeeler,Atkins’PhysicalChemistry,10/e, Oxford University Press, 2010.

### ReferenceBooks:

1. SkoogandWest,PrinciplesofInstrumentalAnalysis,6/e,Thomson, 2007.
2. J.D.Lee,ConciseInorganicChemistry,5th Edition,WileyPublications,Feb.2008
3. TextbookofPolymerScience, Fred W.BillmayerJr,3rdEdition

### Course Outcomes

#### Course: CHEMISTRY (C323)

**Class: I – II SEM –**

After completing this course, the student will be able to:

**Course Outcomes:** Attheendofthecourse,thestudentswillbeable to:

**CO1:**Comparethematerialsofconstructionforbatteryandelectrochemicalsensors.

**CO2**:Explainthepreparation,properties,andapplicationsofthermoplastics&thermosetting& elastomers conducting polymers.

**CO3**: Explain the principles ofspectrometry, slc in separation ofsolid and liquid mixtures. **CO4:**ApplytheprincipleofBanddiagramsintheapplicationofconductorsand semiconductors.

**CO5:**Summarizetheconceptsof Instrumentalmethods.

**Mapping of course outcomes with program outcomes:**

1. **HIGH 2. MEDIUM 3. LOW**

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|  | Course Outcomes (COs) | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | Compare the materials of construction for batteries and electrochemical sensors. | 1 | 1 | - | - | - | - | 3 | - | - | - | - | - | - | - |
| CO2 | CO2: Explain the preparation, properties, and applications of thermoplastics & thermosetting & elastomers conducting polymers. | 1 | 2 | - | - | - | - | 3 | - | - | - | - | - | - | - |
| CO3 | CO3: Explain the principles of spectrometry, slc in separation of solid and liquid mixtures. | 1 | 1 | - | - | 3 | - | - | - | - | - | - | - | - | - |
| CO4 | CO4: Apply the principle of Band diagrams in the application of conductors and semiconductors. | 1 | 1 | 2 | - | - | - | 3 | - | - | - | - | - | - | - |
| CO5 | CO5: Summarize the concepts of Instrumental methods. | 1 | 2 | - | - | 2 | 3 | - | - | - | - | - | - | - | - |
| CO123 |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | - | - | - | 1 | - |

**CO – PO / PSO Mapping Justification**

**Course: CHEMISTRY**

#### Class: I – II SEM

**PROGRAMME OUTCOMES (POs):**

**PO1.** **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

**PO2.** **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3.** **Design / development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4.** **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

.

**PO5.** **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

#### PROGRAM SPECIFIC OUTCOMES (PSOs):

**PSO1** Ability to apply mathematical concepts, algorithm design techniques and suitable data structures to solve practical problems using different problem- solving strategies.

**PSO2** Ability to design computing solutions for problems in interdisciplinary areas

PSO3: **Successful Career and Entrepreneurship:** The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies

**PRAKASAM ENGINEERING COLLEGE**

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**Kandukur (M), SPSR Nellore Dist., AP – 523105**

**Website: https://prakasamec.com**

CO1: Compare the materials of construction for batteries and electrochemical sensors.

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|  | **Justification** |
| **PO1** | Demonstrate a strong understanding of core chemical concepts and principles (e.g., thermodynamics, kinetics, quantum mechanics) |
| **PO2** | Identify, formulate, and analyze complex chemical problems.Utilize critical thinking and problem-solving skills to design experiments, interpret data, and draw well-supported conclusions. |
| **PO7** | Understand the environmental impact of chemical processes and products and promote sustainable development practices in chemistry. |

CO2: Explain the preparation, properties, and applications of thermoplastics & thermosetting & elastomers conducting polymers.

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|  | **Justification** |
| **PO1** | Demonstrate a strong understanding of core chemical concepts and principles (e.g., thermodynamics, kinetics, quantum mechanics) |
| **PO2** | Identify, formulate, and analyze complex chemical problems.Utilize critical thinking and problem-solving skills to design experiments, interpret data, and draw well-supported conclusions. |
| **PO7** | Understand the environmental impact of chemical processes and products and promote sustainable development practices in chemistry. |

CO3: Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.

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|  | **Justification** |
| **PO1** | Demonstrate a strong understanding of core chemical concepts and principles (e.g., thermodynamics, kinetics, quantum mechanics) |
| **PO2** | Identify, formulate, and analyze complex chemical problems.Utilize critical thinking and problem-solving skills to design experiments, interpret data, and draw well-supported conclusions. |
| **PO5** | Create, select, and apply appropriate laboratory techniques, instrumentation, and computational tools. |

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CO4: Apply the principle of Band diagrams in the application of conductors and semiconductors.

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|  | **Justification** |
| **PO1** | Demonstrate a strong understanding of core chemical concepts and principles (e.g., thermodynamics, kinetics, quantum mechanics) |
| **PO2** | Identify, formulate, and analyze complex chemical problems.Utilize critical thinking and problem-solving skills to design experiments, interpret data, and draw well-supported conclusions. |
| **PO3** | Design and develop chemical processes, products, or materials that meet specified needs with appropriate consideration for safety, ethics, and societal impact. |
| **PO7** | Understand the environmental impact of chemical processes and products and promote sustainable development practices in chemistry. |

CO5: Summarize the concepts of Instrumental methods.

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|  | **Justification** |
| **PO1** | Demonstrate a strong understanding of core chemical concepts and principles (e.g., thermodynamics, kinetics, quantum mechanics) |
| **PO2** | Identify, formulate, and analyze complex chemical problems.Utilize critical thinking and problem-solving skills to design experiments, interpret data, and draw well-supported conclusions. |
| **PO5** | Create, select, and apply appropriate laboratory techniques, instrumentation, and computational tools. |
| **PO6** | Understand and address the societal, health, safety, legal, and ethical issues relevant to the practice of chemistry.  Recognize and fulfill professional and ethical responsibilities to society. |

Academic calendar

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| |  | | --- | | **PRAKASAM ENGINEERING COLLEGE - KANDUKUR** | | | | | | | | |  | |  | | --- | |  | |  |  |  |  |  |  |
| **(AUTONOMOUS)** | | | | | | | |  |  |  |  |  |  |  |  |
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|  | O.V. ROAD, **KANDUKUR- 523 105**, PRAKASAM DIST., A.P. | | | | | |  |  |  |  |  |  |  |  |  |
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| **ACADEMIC CALENDAR** | | | | | | | |  |  |  |  |  |  |  |  |
| **B.Tech I Year - I & II Semester (2023-24)** | | | | | | | |  |  |  |  |  |  |  |  |
| **I Semester** | | | | | | | |  |  |  |  |  |  |  |  |
| **Description** | | | | | **From** | **To** |  |  |  |  |  |  |  |  |  |
| **Commencement of I Semester** | | | | | **31.08.2023** |  |  |  |  |  |  |  |  |  |  |
| Induction Programme (Zero Semester) | | | | | 31.08.2023 | 16.09.2023 |  |  |  |  |  |  |  |  |  |
| I Unit of Instruction | | | | | 19.09.2023 | 11.11.2023 |  |  |  |  |  |  |  |  |  |
| I Mid Examinations | | | | | 06.11.2023 | 11.11.2023 |  |  |  | | |  |  |  |  |
| II Unit of Instruction | | | | | 13.11.2023 | 06.01.2024 |  |  |  |  |  |  |
| II Mid Examinations | | | | | 01.01.2024 | 06.01.2024 |  |  |  |  |  |  |
| Preperation & Practical examination | | | | | 08.01.2024 | 20.01.2024 |  |  |  |  |  |  |  |  |  |
| End Examination | | | | | 22.01.2024 | 03.02.2024 |  |  |  |  | | |  |  |  |
| Commencement of II Semester Class work | | | | | 05.02.2024 |  | |  |  |  |  |  |
|  | | | | | | | |  |  |  |  |  |
| I Unit of Instruction | | | | | 05.02.2024 | 30.03.2024 |  |  |  |  |  |  |
| I Mid Examinations | | | | | 25.03.2024 | 30.03.2024 |  |  |  |  |  |  |  |  |  |
| II Unit of Instruction | | | | | 01.04.2024 | 25.05.2024 |  |  |  |  |  |  |  |  |  |
| II Mid Examinations | | | | | 20.05.2024 | 25.05.2024 |  |  |  |  |  |  |  |  |  |
| Preperation & Practical examination | | | | | 27.05.2024 | 08.06.2024 |  |  |  |  |  |  |  |  |  |
| End Examination | | | | | 10.06.2024 | 27.06.2024 |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  | **Principal** | |  |  |  |  |  |  |  |  |
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| **PRAKASAM ENGINEERING COLLEGE (AUTONOMOUS)** | | | | | | | | |  |
| **I-I B.Tech II-SEM Time Table** | | | | | | | | |  |
| **AY: 2023-24** | | | | | | | | |  |
| **BRANCH: ECE-I** | | | | | | | | |  |
| **DAY** | **9.20  To  10.20** | **10.20  To  11.10** | **11.10 To 11.20** | **11.20 To 12.20** | **12.20 To 1.20** | **1.20 To  2.10** | **2.10 To 3.00** | **3.00 To 3.10** | **3.10 To 4.00** |
| **MON** | **Chemistry Lab** | | | | **LUNCH** | NA | DE&VC |  | ENG |
| **TUE** | DE&VC | BCME |  | ENG | **EW Lab /  NA Lab** | | | |
| **WED** | **Communicative  English Lab** | | | | NA | BCME | BREAK | CHEM |
| **THU** | NA | DE&VC | **BREAK** | ENG | CHEM | BCME |  |
| **FRI** | CHEM | DE&VC | NA | **EW Lab /  NA Lab** | | | |
| **SAT** | BCME | DE&VC | ENG | NA | CHEM |  | BCME |
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| **ENGLISH** | **E srinivasulu** | | |  | **ENGLISH LAB** | | **E srinivasulu** | |  |
| **DE&VC** | **T Asha jyothi** | | |  | **EW LAB** | | **Y.Koteswara rao** | |  |
| **NA** | **P.M.Rupa** | | |  | **NA LAB** | | **P.M.Rupa** | |  |
| **BCME** | **Ch. Vengala Rao** | | |  | **CHEM LAB** | | **P Tirupathi** | |  |
| **CHEM** | **P Tirupathi** | | |  |  |  |  |  |  |

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**LESSON PLAN**

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| --- | --- |
| Programme: B.Tech | Academic Year: 2023-24 |
| Year: I | Semester: II |
| Course Title: CHEMISTRY | Course Code: P231209 |
| Name of Faculty: P.SULOCHANA  Asst Professor , ECE |  |

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#### .UNII-I

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| --- | --- | --- | --- | --- |
| **S.No** | **Topics** | **No. of Sessions**  **Planned** | **Teaching Method/**  **Aids** | **Refere nce** |
| 1 | **Introduction-** Structure and Bonding Models | 1 | BB | T1, R 1 |
| 2 | Fundamentals of Quantum mechanics | 1 | BB | T1, R 1 |
| 3 | Schrodinger Wave equation | 2 | BB | T1, R 1 |
| 4 | Significance of Ψ and Ψ2 | 1 | BB | T1, R 1 |
| 5 | Particle in one dimensional box | 1 | BB | T1, R 1 |
| 6 | Molecular orbital theory | 2 | BB | T1, R 1 |
| 7 | Bonding in homo-and hetero nuclear diatomic molecules | 1 | BB | T1, R1 |
| 8 | Energy level diagrams of O2 | 1 | BB | T1, R1 |
| 9 | Energy level diagrams of CO | 1 | BB | T1 |
| 10 | π-molecular orbital of butadiene | 1 | BB | T1, R1 |
| 11 | π-molecular orbital of benzene | 1 | BB | T1, R1 |
| 12 | Calculation of bond order. | 1 | BB | T1 |

**UNII -II**

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| --- | --- | --- | --- | --- |
| **S.No** | **Topics** | **No. of**  **Sessions Planned** | **Teaching**  **Method/ Aids** | **Refere nce** |
| 1 | **Introduction: Modern Engineering materials** | 1 | BB | T1, R 1 |
| 2 | Introduction, basic concept of Semiconductors | 1 | BB | T1, R 1 |
| 3 | Types of Semiconductors | 2 | BB | T1, R 1 |
| 4 | Properties and Applications of Semiconductors | 1 | BB | T1, R 1 |
| 5 | Introduction, basic concept of Superconductors | 1 | BB | T1, R 1 |
| 6 | Type-1and Type-2 Superconductors | 1 | BB | T1, R 1 |
| 7 | Properties and Applications of Superconductors | 1 | BB | T1, R 1 |
| 8 | Introduction, Basic Concept of Super capacitors | 1 | BB | T1, R 1 |
| 9 | Classification and Applications of Super capacitors | 1 | BB | T1, R 1 |
| 10 | Introduction, classification, properties and applications of Nano materials | 1 | BB | T1, R 1 |
| 1**1** | Introduction, classification, properties and applications of Fullerene | 1 | BB | T1, R 1 |
| 12 | Introduction, classification, properties and applications of carbon nano tubes | 1 | BB | T1, R 1 |
| 13 | Introduction, classification, properties and applications of Graphene | 1 | BB | T1, R 1 |

#### UNII -III

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.N**  **o** | **Topics** | **No. of Sessions**  **Planned** | **Teaching Method/**  **Aids** | **Refere nce** |
| 1 | Introduction: Electrochemistry and Applications | 1 | BB | T1,R1 |
| 2 | Electrochemical cell, Nernst equation | 2 | BB | T1 |
| 3 | Cell potential calculations and numerical problems, | 2 | BB | T1, R  1 |
| 4 | Potentiometry potentiometric titrations (redox titrations) | 1 | BB | T1, R  1 |
| 5 | Concept of conductivity, Conductivity cell | 1 | BB | T1, R  1 |
| 6 | Conductometric titrations (acid-base titrations). | 2 | BB | T1, R  ` |
| 7 | Electrochemical sensors – potentiometric sensors with examples | 1 | BB | T1, R  1 |
| 8 | Amperometric sensors with examples. | 1 | BB | T1, R1 |
| 9 | Primary cells–Zinc-air battery working of the batteries including cell reactions | 1 | BB | R1 |
| 10 | Secondary cells–lithium-ion batteries working of the batteries including cell reactions | 1 | BB | T1, R  1 |
| 11 | Fuel cells, hydrogen-oxygen fuel cell– working of the cells | 1 | BB | T1, R1 |
| 12 | Polymer Electrolyte Membrane Fuel cells (PEMFC). | 1 | BB | T1, R1 |

**UNII -IV**

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| **S.No** | **Topics** | **No. of**  **Sessions Planned** | **Teaching**  **Method/ Aids** | **Reference** |
| **1** | **Introduction: Polymer Chemistry** | **1** | BB | T1, R 1 |
| 2 | Introduction to polymers, functionality of monomers | 1 | BB | R1 |
| 3 | Chain growth and step growth polymerization with specific examples and mechanisms of polymer formation. | 2 | BB | T1, R 1 |
| 4 | Coordination polymerization, with specific examples and mechanisms of polymer formation. | 1 | BB | T1, R 1 |
| 5 | Plastics –Thermo and Thermosetting plastics | 1 | BB | T1, R 1 |
| 6 | Preparation, properties and applications of PVC, Teflon, Nylon-6,6 | 1 | BB | T1, R 1 |
| 7 | Preparation, properties and applications of Bakelite | 1 | BB | T1, R 1 |
| 8 | Elastomers–Buna-S, Buna-N–preparation, properties and applications. | 1 | BB | T1, R 1 |
| 9 | Conducting polymers – poly acetylene, poly aniline, – mechanism of conduction and applications | 2 | BB | T1, R 1 |
| 10 | Bio-Degradable polymers Poly Glycolic Acid (PGA), Poly Lactic Acid (PLA). | 2 | BB | T1, R 1 |

#### UNII -V

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| **S.No** | **Topics** | **No. of**  **Sessions Planned** | **Teaching**  **Method/ Aids** | **Referen ce** |
| 1 | Introduction: Instrumental Methods and Applications | 1 | BB | T1, R 1 |
| 2 | Electromagnetic spectrum. Absorption of radiation | 1 | BB | T1, R 1 |
| 3 | Beer-Lambert’s law | 1 | BB | T1, R 1 |
| 4 | UV-Visible Spectroscopy | 1 | BB | T1, R 1 |
| 5 | Electronic transition, Instrumentation | 1 | BB | T1, R 1 |
| 6 | IR spectroscopy | 1 | BB | T1, R 1 |
| 7 | Fundamental modes and selection rules | 1 | BB | T1, R 1 |
| 8 | Chromatography-Basic Principle, Classification-HPLC: | 2 | BB | T1, R 1 |
| 9 | Principle, Instrumentation and Applications | 2 | BB | T1, R 1 |

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| **Text Books** | |
| Text 1 | Jain and Jain, Engineering Chemistry,16/e, DhanpatRai, 2013. |
| Text 2 | Peter Atkins, Juliode Paula and James Keeler, Atkins’ Physical Chemistry,10/e, Oxford University Press, 2010. |

|  |  |
| --- | --- |
| **Reference Books** | |
| Ref-1 | Skoog and West, Principle so Instrumental Analysis, 6/e, Thomson, 2007. |
| Ref-2 | J.D.Lee, Concise In organic Chemistry,5th Edition, Wiley Publications, Feb.2008 |
| Ref-3 | Text book of Polymer Science, Fred W.BillmayerJr,3rdEdition |

## Lecture notes Subject: CHEMISTRY

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**UNIVERSITY QUESTION PAPER**

# PRAKASAM ENGINEERINGCOLLEGE

(AUTONOMOUS)

B.Tech I Year II Semester (R23) Regular Examinations July- 2024

**CHEMISTRY**

(Common to ECE, CSE-Allied)

Time: 3 hours Max. Marks: 70

# PART – A

(Compulsory Question)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Answer the following: (10 X 02 = 20 Marks) | | | **BTL** | | **CO** | **Marks** |
| 1 | a | Write a few conditions for the formation of molecular orbital theory. | **BTL3** | | **CO 1** | 2M |
|  | b | Write any two applications of Quantum dots. | **BTL1** | | **CO 1** | 2M |
|  | c | Mention any two application of semiconductors. | **BTL2** | | **CO 2** | 2M |
|  | d | Classify the Nano materials based on the dimension. | **BTL4** | | **CO 2** | 2M |
|  | e | Define redox reaction? | **BTL1** | | **CO 3** | 2M |
|  | f | Differentiate primary cells and secondary cells. | **BTL3** | | **CO 3** | 2M |
|  | g | Give the two applications of Elastomers. | **BTL4** | | **CO 4** | 2M |
|  | h | Give the two examples of thermoplastic. | **BTL1** | | **CO 4** | 2M |
|  | i | Write the principle of chromatography. | **BTL3** | | **CO 5** | 2M |
|  | j | Write the applications of HPLC. | **BTL2** | | **CO 5** | 2M |
| **PART – B** | | | | | | |
| Answer all five units: (5 X 10 = 50 Marks) | | | **BTL** | | **CO** | **Marks** |
| **UNIT - I** | | | | | | |
| 2 | a | Sketch the molecular orbital energy diagram for O2 .calculate bond order based on MO theory. | **BTL5** | | **CO1** | 5M |
|  | b | Write the postulates of ‘MO’ Theory. | **BT2** | | **CO1** | 5M |
| **OR** | | | | | | |
| 3 | a | Explain the MO energy diagram for hetero (CO) molecule & calculate its bond order. | **BTL2** | | **CO1** | 5M |
|  | b | Differentiate Bonding and Anti-bonding MO’s. | **BTL4** | | **CO1** | 5M |
| **UNIT – II** | | | | | | |
| 4 | a | Discuss about the principles and applications of super conductors | **BTL2** | | **CO2** | 5M |
|  | b | Explain the types and applications of semi-conductors | **BTL2** | | **CO2** | 5M |
| **OR** | | | | | | |
| 5 | a | How do you synthesize carbon Nano tubes using arc discharge  method. | **BTL4** | | **CO2** | 5M |
|  | b | Discuss the properties and applications of Fullerenes . | **BTL2** | | **CO2** | 5M |
| **UNIT – III** | | | | | | |
| 6 | a | Derive Nernst equation in detail. | **BTL3** | | **CO3** | 5M |
|  | b | Describe the working procedure and applications of lithium ion  battery. | **BTL2** | | **CO3** | 5M |
| **OR** | | | | | | |
| 7 | a | Explain electro chemical sensors and its applications. | **BTL2** | | **CO3** | 5M |
|  | b | Write the construction & Working of Zinc-Air battery. | **BTL3** | | **CO3** | 5M |
| **UNIT – IV** | | | | | | |
| 8 | a | Differentiate between thermoplastic and thermosetting plastics. | **BTL2** | | **CO4** | 5M |
|  | b | Write the preparation, properties and applications of PVC and Teflon. | **BTL1** | **CO4** | | 5M |
| **OR** | | | | | | |
| 9 | a | How do you prepare Buna-S and Buna-N rubber . | **BTL4** | **CO4** | | 5 M |
|  | b | Define conducting polymers. Write the mechanism of poly-acetylene  conducting polymer. | **BTL1** | **CO4** | | 5 M |
| **UNIT – V** | | | | | | |
| 10 | a | Derive Beer-Lamberts law and give the limitations. | **BTL3** | **CO5** | | 5 M |
|  | b | Discuss in detail on about different types of vibrations in IR  spectroscopy with neat diagram. | **BTL2** | **CO5** | | 5 M |
| **OR** | | | | | | |
| 11 | a | Discuss the classification and applications of HPLC. | **BTL3** | **CO5** | | 5M |
|  | b | Give an account on principle, working & instrumentation of FT-IR. | **BTL4** | **CO5** | | 5M |

MID QUESTION PAPERS

**1st MID CHEMISTRTY QUESTION PAPER**

**BRANCH – ECE-1&2**

1)a)Write the postulates of ‘MO’ Theory?

**(or)**

**b)** Sketch the molecular orbital energy diagram for O2 and CO . Explain bond order & magnetic property based on MO theory.

**2)a)** Explain π-molecular orbital of 1,3-butadiene with a neat sketch.

**(or)**

**b)** Define super capacitors? Explain in detail about the types and applications of super capacitors.

**3)a**)Explain the types and applications of semi-conductors.

**(or)**

b) Write about Type-1 and Type-2 super conductors and its applicastions.

**CHEMISTRY MID-2 QUESTION PAPER**

**BRANCH: ECE-1&2**

1) Define electrochemical cell. Explain the construction, working and mechanism of an electrochemical cell.

(or)

2 a) Define electrochemical Sensors. Write about potentiometric sensors.

b) Write the construction & Working of Zinc-Air battery.

3a) Write about co-ordination or Ziegler-Natta polymerization.

b) Distinguish between chain growth and step growth polymerization

(or)

4a) Describe the preparation, properties and uses of Bakelite.

b) Define plastics? Distinguish between thermos-plastics and thermosetting plastics.

5. Explain the Beer Lambert’s law.

(or)

6. Explain the principle, working and applications of HPLC.

**ASSIGNMENT- 1 SUBJECT: CHEMISTRY**

1. Write the postulates of ‘MO’ Theory.

**2.** Sketch the molecular orbital energy diagram for O2 and CO. Explain bond order & magnetic property based on MO theory.

3. Explain π-molecular orbital of 1,3-butadiene with a neat sketch.

4. Explain π-molecular orbital of benzene with neat sketch.

5. Explain the types and applications of semi-conductors.

6. Discuss about the principles and applications of super conductors.

7. Write about Type-I and Type-II super conductors.

8. Define super capacitors? Explain in details about the principles and applications of supercapacitors.

**Assignment 1 scripts:**

**ASSIGNMENT- 2 SUBJECT: CHEMISTRY**

1. Explain the construction, working and mechanism of galvanic cell and nernest equation.
2. Derive nernest equation for a single electrode potential and explain the terms in equation and write it’s applications.
3. Discuss the titration curves obtain in the following Acid-Base conductometric titrations.
   1. Strong acid with Strong base
   2. Weak acid with Strong base
4. Explain electrochemical sensors ?
5. Explain Batteries? 1) Zinc-air batteries 2) Lithium- ion battery.
6. Explain the Mechanism of addition and condensation polymerization.
7. Define plastics? Distinguish between thermos-plastics and thermo-setting plastics.
8. Describe the preparation properties and uses of

1)PVC 2)Nylon-6,6 3)Buna-S 4)Teflon 5)Bakelite 6)Buna-N.

**Assignment 2 scripts:**

**Result Analysis:**

|  |  |
| --- | --- |
| Course Title | CHEMISTRY |
| Course Code | P231209 |
| Programme | B.Tech |
| Year & Semester | I year II-semester, |
| Regulation | R23 |
| Course Faculty |  |

**Slow learners:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S No** | **Roll no** | **No of backlogs** | **Internal-I Status** | **Internal-II Status** |
| 1 | 23F91A0401 |  |  |  |
| 2 | 23F91A0402 |  |  |  |
| 3 | 23F91A0403 |  |  |  |
| 4 | 23F91A0404 |  |  |  |
| 5 | 23F91A0405 |  |  |  |
| 6 | 23F91A0406 |  |  |  |
| 7 | 23F91A0407 |  |  |  |
| 8 | 23F91A0408 |  |  |  |
| 9 | 23F91A0409 |  |  |  |
| 10 | 23F91A0410 |  |  |  |
| 11 | 23F91A0411 |  |  |  |
| 12 | 23F91A0412 |  |  |  |
| 13 | 23F91A0413 |  |  |  |
| 14 | 23F91A0415 |  |  |  |
| 15 | 23F91A0416 |  |  |  |
| 16 | 23F91A0417 |  |  |  |
| 17 | 23F91A0418 |  |  |  |
| 18 | 23F91A0419 |  |  |  |
| 19 | 23F91A0420 |  |  |  |
| 2O | 23F91A0421 |  |  |  |
| 21 | 23F91A0422 |  |  |  |
| 22 | 23F91A0423 |  |  |  |
| 23 | 23F91A0424 |  |  |  |
| 24 | 23F91A0425 |  |  |  |
| 25 | 23F91A0426 |  |  |  |
| 26 | 23F91A0427 |  |  |  |
| 27 | 23F91A0428 |  |  |  |
| 28 | 23F91A0429 |  |  |  |
| 29 | 23F91A0430 |  |  |  |
| 30 | 23F91A0431 |  |  |  |
| 31 | 23F91A0432 |  |  |  |
| 32 | 23F91A0433 |  |  |  |
| 33 | 23F91A0434 |  |  |  |
| 34 | 23F91A0435 |  |  |  |
| 35 | 23F91A0436 |  |  |  |
| 36 | 23F91A0437 |  |  |  |
| 37 | 23F91A0438 |  |  |  |
| 38 | 23F91A0439 |  |  |  |
| 39 | 23F91A0440 |  |  |  |
| 40 | 23F91A0441 |  |  |  |
| 41 | 23F91A0442 |  |  |  |
| 42 | 23F91A0443 |  |  |  |
| 43 | 23F91A0444 |  |  |  |
| 44 | 23F91A0445 |  |  |  |
| 45 | 23F91A0446 |  |  |  |
| 46 | 23F91A0447 |  |  |  |
| 47 | 23F91A0448 |  |  |  |
| 48 | 23F91A0449 |  |  |  |
| 49 | 23F91A0450 |  |  |  |
| 50 | 23F91A0451 |  |  |  |
| 51 | 23F91A0452 |  |  |  |
| 52 | 23F91A0453 |  |  |  |
| 53 | 23F91A0454 |  |  |  |
| 54 | 23F91A0455 |  |  |  |
| 55 | 23F91A0456 |  |  |  |
| 56 | 23F91A0457 |  |  |  |
| 57 | 23F91A0458 |  |  |  |
| 58 | 23F91A0459 |  |  |  |
| 59 | 23F91A0460 |  |  |  |

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**Advanced learners:**

|  |  |  |
| --- | --- | --- |
| **S No** | **Roll No** | **Assigned Work** |
| 1 |  | Advanced concepts material is provided for advanced learners, subject seminars are presented by advanced learners in the class. |
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### B.TECH –I-II-ECE-A RESULT ANALYSIS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ACADAMIC YEAR** | **COURSE NAME** | **NUMBER OF STUDENTS** | | **QUESTION PAPER SETTING** | | **PASS%** |
| **APPEARED** | **PASSED** | **INTERNAL** | **EXTERNAL** |
| **2023-24** | **CHEMISTRY** |  |  | **COURSE FACULTY** | **JNTUK** |  |

**CHEMISTRY RESULT ANALYSIS**

70

60

50

40

30

APPEARED

PASSED

20

10

0

2023-24

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REMEDIAL CLASS TIMETABLE

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**Website: https://prakasamec.com**

**Course Outcome Attainment (Internal Examination-1)**

Name of the faculty

P.SULOCHANA

Branch & Section: ECE

Academic Year: 2023-24

Examination: I Mid

Course Name:

CHEMISTRY

Year: I

Semester:II

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | HT No. | **Q1a** | **Q1b** | **Q1c** | **Q2a** | **Q2b** | **Q2C** | **Q3a** | **Q3b** | **Q3c** | **Q4a** | **Q4b** | **Q4c** |  | **A1** |
| **Max. Marks ==>** | | **5** |  |  | **5** |  |  | **3** | **2** |  | **5** |  |  |  | **5** |
| 1 |  |  |  |  | 4 |  |  |  |  |  | 5 |  |  |  | **5** |
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| 13 |  | 3 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 14 |  | 3 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 15 |  | 4 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 16 |  | 5 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 17 |  | 1 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 18 |  | 4 |  |  |  |  |  |  |  |  | 4 |  |  |  | **5** |
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| 20 |  | 4 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
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| 40 |  | 3 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
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| 42 |  | 5 |  |  | 5 |  |  |  |  |  |  |  |  |  | **5** |
| 43 |  | 5 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 44 |  |  |  |  | 5 |  |  |  |  |  | 5 |  |  |  | **5** |
| 45 |  |  |  |  | 5 |  |  |  |  |  | 5 |  |  |  | **5** |
| 46 |  |  |  |  | 2 |  |  | 2 |  |  |  |  |  |  | **5** |
| 47 |  |  |  |  |  |  |  | 3 |  |  | 3 |  |  |  | **5** |
| 48 |  |  |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 49 |  |  |  |  | 5 |  |  |  |  |  | 5 |  |  |  | **5** |
| 50 |  |  |  |  |  |  |  | 5 |  |  | 5 |  |  |  | **5** |
| 51 |  | 5 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 52 |  |  |  |  |  |  |  | 4 |  |  | 5 |  |  |  | **5** |
| 53 |  | 4 |  |  |  |  |  |  |  |  | 4 |  |  |  | **5** |
| 54 |  |  |  |  | 4 |  |  |  |  |  | 4 |  |  |  | **5** |
| 55 |  |  |  |  |  |  |  | 4 |  |  | 5 |  |  |  | **5** |
| 56 |  |  |  |  |  |  |  |  |  |  | 3 |  |  |  | **5** |
| 57 |  |  |  |  | 4 |  |  |  |  |  | 4 |  |  |  | **5** |
| 58 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 59 |  |  |  |  | 3 |  |  |  |  |  | 4 |  |  |  | **5** |
| 60 |  |  |  |  | 5 |  |  |  |  |  | 5 |  |  |  | **5** |
| 61 |  |  |  |  |  |  |  |  |  |  | 4 |  |  |  | **5** |
| 62 |  |  |  |  | 4 |  |  |  |  |  | 4 |  |  |  | **5** |
| 63 |  |  |  |  | 4 |  |  |  |  |  | 5 |  |  |  | **5** |
| 64 |  |  |  |  |  |  |  |  |  |  | 2 |  |  |  | **5** |
| 66 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Target set by the faculty / HoD | | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 1.80 | 1.20 | 0.00 | 3.00 | 0.00 | 0.00 | 6.00 | 3.00 |
| Number of students  performed above the target | | 18 | 0 | 0 | 26 | 0 | 0 | 9 | 0 | 0 | 55 | 0 | 0 | 62 | 63 |
| Number of students attempted | | 21 | 0 | 0 | 27 | 0 | 0 | 9 | 0 | 0 | 58 | 0 | 0 | 63 | 63 |
| Percentage of students scored more than target | | 86% |  |  | 96% |  |  | 100% |  |  | 95% |  |  | 98% | 100% |

**CO Mapping with Exam Questions:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO - 1 | **Y** |  |  | **Y** |  |  |  |  |  |  |  |  | Y | **Y** |
| CO - 2 |  |  |  |  |  |  | **Y** |  |  |  |  |  | Y | **Y** |
| CO - 3 |  |  |  |  |  |  |  |  |  | **Y** |  |  | Y | **Y** |
| CO - 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**CO Attainment based on Exam Questions:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO - 1 | 86% |  |  | 96% |  |  |  |  |  |  |  |  | 98% | 100% |
| CO - 2 |  |  |  |  |  |  |  |  |  |  |  |  | 98% | 100% |
| CO - 3 |  |  |  |  |  |  |  |  |  | 95% |  |  | 98% | 100% |
| CO - 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO - 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CO | **Subj** |  |  | Asgn | Overall |  | Level |
| CO-1 | 91% |  |  | 100% | 96% |  | 3.00 |
| CO-2 |  |  |  | 100% | 99% |  | 3.00 |
| CO-3 | 95% |  |  | 100% | 98% |  | 3.00 |
| CO-4 |  |  |  |  |  |  |  |
| CO-5 |  |  |  |  |  |  |  |
| CO-6 |  |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Attainment Level** | | |
| 1 | 40% |  |
| 2 | 50% |
| 3 | >60% |

Attainment (Internal 1 Examination) = **3.00**

**PRAKASAM ENGINEERING COLLEGE**

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**(Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada)**

**Kandukur (M), SPSR Nellore Dist., AP – 523105**

**Website: https://prakasamec.com**

**Course Outcome Attainment (Internal Examination-2)**

Name of the faculty : P.SULOCHANA Academic Year:2023-24

Branch & Section:

ECE

Examination: II MID

Course Name:

CHEMISTRY

Year: I

Semester:II

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **HT No.** | **Q1a** | **Q1b** | **Q1c** | **Q2a** | **Q2b** | **Q2c** | **Q3a** | **Q3b** | **Q3c** | **Q4a** | **Q4b** | **Q4c** |  | **A2** |
| **Max. Marks ==>** | | **5** |  |  | **5** |  |  | **5** |  |  | **5** |  |  |  | **5** |
| 1 |  | 4 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 2 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 3 |  | 2 |  |  |  |  |  | 2 |  |  |  |  |  |  | **5** |
| 4 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 5 |  | 3 |  |  |  |  |  | 3 |  |  |  |  |  |  | **5** |
| 6 |  | 3 |  |  |  |  |  | 3 |  |  |  |  |  |  | **5** |
| 7 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 8 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 9 |  | 4 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 11 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 12 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 13 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 14 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 15 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 16 |  | 4 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 17 |  | 4 |  |  |  |  |  | 3 |  |  |  |  |  |  | **5** |
| 18 |  | 4 |  |  |  |  |  | 3 |  |  |  |  |  |  | **5** |
| 19 |  | 4 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 20 |  | 4 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 21 |  | 5 |  |  |  |  |  | 1 |  |  |  |  |  |  | **5** |
| 22 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 23 |  | 4 |  |  |  |  |  |  |  |  | 1 |  |  |  | **5** |
| 24 |  | 5 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 25 |  | 4 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 26 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 27 |  | 4 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 28 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 29 |  | 4 |  |  |  |  |  | 1 |  |  |  |  |  |  | **5** |
| 30 |  | 5 |  |  |  |  |  | 1 |  |  |  |  |  |  | **5** |
| 31 |  | 4 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 32 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 33 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 34 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 35 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 36 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 37 |  | 4 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 38 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 39 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 40 |  | 3 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 41 |  | 5 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 42 |  | 5 |  |  | 5 |  |  |  |  |  |  |  |  |  | **5** |
| 43 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 44 |  | 4 |  |  | 5 |  |  |  |  |  |  |  |  |  | **5** |
| 45 |  | 4 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 46 |  | 4 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 47 |  | 4 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 48 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 49 |  | 5 |  |  | 4 |  |  |  |  |  |  |  |  |  | **5** |
| 50 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 51 |  | 5 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 52 |  | 5 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 53 |  | 4 |  |  |  |  |  | 2 |  |  |  |  |  |  | **5** |
| 54 |  | 5 |  |  | 4 |  |  |  |  |  |  |  |  |  | **5** |
| 55 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 56 |  | 4 |  |  | 5 |  |  |  |  |  |  |  |  |  | **5** |
| 57 |  | 4 |  |  |  |  |  | 2 |  |  |  |  |  |  | **5** |
| 58 |  | 5 |  |  |  |  |  | 3 |  |  |  |  |  |  | **5** |
| 59 |  | 5 |  |  |  |  |  | 5 |  |  |  |  |  |  | **5** |
| 60 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 61 |  | 5 |  |  |  |  |  | 4 |  |  |  |  |  |  | **5** |
| 62 |  | 5 |  |  |  |  |  |  |  |  | 5 |  |  |  | **5** |
| 63 |  | 5 |  |  |  |  |  |  |  |  |  |  |  |  | **5** |
| 64 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 65 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 66 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Target set by the faculty / HoD | | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 6.00 | 3.00 |
| Number of students performed above the target | | 59 | 0 | 0 | 5 | 0 | 0 | 33 | 0 | 0 | 2 | 0 | 0 | 60 | 63 |
| Number of students attempted | | 60 | 0 | 0 | 5 | 0 | 0 | 39 | 0 | 0 | 3 | 0 | 0 | 61 | 63 |
| Percentage of students scored more than target | | 98% |  |  | 100% |  |  | 85% |  |  | 67% |  |  | 98% | 100% |

**CO Mapping with Exam Questions:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO - 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 4 | **Y** |  |  |  |  |  |  |  |  |  |  |  | Y | **Y** |
| CO - 5 |  |  |  | **Y** |  |  |  |  |  | **Y** |  |  | Y | **Y** |
| CO - 6 |  |  |  |  |  |  | **Y** |  |  |  |  |  | Y | **Y** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| % Students Scored  >Target % | 98% |  |  | 100% |  |  | 85% |  |  | 67% |  |  | 98% | 100% |

**CO Attainment based on Exam Questions:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO - 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO - 4 | 98% |  |  |  |  |  |  |  |  |  |  |  | 98% | 100% |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO - 5 |  |  |  | 100% |  |  |  |  |  | 67% |  |  | 98% | 100% |
| CO - 6 |  |  |  |  |  |  | 85% |  |  |  |  |  | 98% | 100% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CO** | **Subj** | obj |  | Asgn | Overall | Level |
| CO-1 |  |  |  |  |  |  |
| CO-2 |  |  |  |  |  |  |
| CO-3 |  |  |  |  |  |  |
| CO-4 | 98% | 98% |  | 100% | 99% | 3.00 |
| CO-5 | 83% | 98% |  | 100% | 94% | 3.00 |
| CO-6 | 85% | 98% |  | 100% | 94% | 3.00 |

|  |  |  |
| --- | --- | --- |
| **Attainment Level** | | |
|  | 1 | 40% |
|  | 2 | 50% |
|  | 3 | >60% |

Attainment (Internal Examination-2) = **3.00**

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**(Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada)**

**Kandukur (M), SPSR Nellore Dist., AP – 523105**

**Website: https://prakasamec.com**

Department of Computer Science and Engineering

**Course Outcome Attainment (University Examinations)**

Academic Year: 2023-24

|  |  |  |  |
| --- | --- | --- | --- |
| Name of the faculty :  Branch & Section: | | P.SULOCHANA |  |
| ECE |
| Course Name: | | CHEMISTRY |
| **S.No** | **Roll Number** | **Marks Secured** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |
| 11 |  |  |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |
| 15 |  |  |
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| 20 |  |  |
| 21 |  |  |
| 22 |  |  |
| 23 |  |  |
| 24 |  |  |
| 25 |  |  |
| 26 |  |  |
| 27 |  |  |
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| 29 |  |  |
| 30 |  |  |
| 31 |  |  |
| 32 |  |  |
| 33 |  |  |
| 34 |  |  |
| 35 |  |  |
| Max Marks | | 75 |
| Class Average mark | | | 26 |
| Number of students performed above the target | | | 51 |
| Number of successful students | | | 29 |

Year / Semester:I / II

|  |  |  |
| --- | --- | --- |
| **S.No** | **Roll Number** | **Marks Secured** |
| 36 |  |  |
| 37 |  |  |
| 38 |  |  |
| 39 |  |  |
| 40 |  |  |
| 41 |  |  |
| 42 |  |  |
| 43 |  |  |
| 44 |  |  |
| 45 |  |  |
| 46 |  |  |
| 47 |  |  |
| 48 |  |  |
| 49 |  |  |
| 50 |  |  |
| 51 |  |  |
| 52 |  |  |
| 53 |  |  |
| 54 |  |  |
| 55 |  |  |
| 56 |  |  |
| 57 |  |  |
| 58 |  |  |
| 59 |  |  |
| 60 |  |  |
| 61 |  |  |
| 62 |  |  |
| 63 |  |  |
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|  |  |  |
|  |  |  |
|  |  |  |

|  |  |
| --- | --- |
| **Attainment Level** | **% students** |
| 1 | 40% |
| 2 | 50% |

|  |  |
| --- | --- |
| Percentage of students scored more than target | 57% |
| **Attainment level** | **3** |

|  |  |
| --- | --- |
| 3 | >60% |

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**Kandukur (M), SPSR Nellore Dist., AP – 523105**

**Website: https://prakasamec.com**

Department of Computer Science and Engineering

**Course Outcome Attainment**

Name of the faculty :Branch & Section: Course Name:CHE

:P.SULOCHANA

ECE

Academic Year: 2023-24 Year:I

Semester:II

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course Outcomes** | **1st Internal**  **Exam** | **2nd Internal**  **Exam** | **Internal**  **Exam** | **University**  **Exam** | Attainment Level |
| **CO1** | 3.00 |  | 3.00 | 3.00 | 3.00 |
| **CO2** | 3.00 |  | 3.00 | 3.00 | 3.00 |
| **CO3** | 3.00 |  | 3.00 | 3.00 | 3.00 |
| **CO4** |  | 3.00 | 3.00 | 3.00 | 3.00 |
| **CO5** |  | 3.00 | 3.00 | 3.00 | 3.00 |
| **CO6** |  | 3.00 | 3.00 | 3.00 | 3.00 |
| **Internal & University Attainment:** | | | 3.00 | 3.00 |  |
| **Weightage** | | | 30% | 70% |
| **CO Attainment for the course (Internal, University)** | | | 0.90 | 2.10 |
| **CO Attainment for the course (Direct Method)** | | | 3.00 | |

Overall course attainment level **3.00**

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**Kandukur (M), SPSR Nellore Dist., AP – 523105**

**Website: https://prakasamec.com**

Department of Computer Science and Engineering

**Program Outcome Attainment (from Course)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name of Faculty: | | |  | | | | | | Academic Year: | | | | 2023-24 | | |
| Branch & Section: | | | ECE | | | | | | Year: | | | | I | | |
| Course Name:  **CO-PO mapping** | | | CHEMISTRY | | | | | | Semester: | | | | II | | |
|  | **PO1** | **PO2** | | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | | **PO8** | **PO9** | **PO10** | | **PO11** | **PO12** | | **PSO1** | **PSO2** |
| CO1 | 3 | - | | 2 | - | - | - | - | | - | - | - | | - | 1 | | - | 2 |
| CO2 | 3 | 2 | | - | 1 | - | - | - | | - | - | - | | - | 1 | | 2 | - |
| CO3 | 2 | 3 | | 3 |  | 2 | - | - | | - | - | - | | - | - | | 3 | 1 |
| CO4 | - | 1 | | - | 2 | 2 | - | - | | - | - | - | | - | - | | - | 1 |
| CO5 | 1 | 1 | | - | - | 1 | - | - | | - | - | - | | - | - | | 1 | - |
| CO6 | 1 | - | | 1 | - | - | - | - | | - | - | - | | - | 1 | | - | - |
| **Course** | 2 | 1.8 | | 2 | 1.5 | 1.6 | 0 | 0 | | 0 | 0 | 0 | | 0 | 1 | | 2 | 1.33 |

|  |  |
| --- | --- |
| **CO** | **Course Outcome Attainment** |
| **CO1** | 3.00 |
| **CO2** | 3.00 |
| **CO3** | 3.00 |
| **CO4** | 3.00 |
| **CO5** | 3.00 |
| **CO6** | 3.00 |
| **Overall course attainment level 3.00** | |

**PO-ATTAINMENT**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| **CO**  **Attainme nt** | **2.00** | **1.75** | **2.00** | **1.50** | **1.60** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **1.00** |

**CO contribution to PO - 33%, 67%, 100% (Level 1/2/3)**

**PRAKASAM ENGINEERING COLLEGE**

**Accredited by NAAC with B++ Grade, Recognized under 2(f), 12(B) of UGC Act 1956**

**(Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada)**

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## REGISTERS

**Attendance register**