**PUC-II**

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| **II YEAR** **II SEMESTER** |  |  |  |  |

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| --- | --- | --- | --- |
| **Subject** **Code** | **Subject Name** | **L-T-P** | **Credits** |
| EN401 | ENGLISH | 4-0-0 | 3 |
| TE402 | TELUGU | 3-0-0 | 2 |
| MA403 | MATHEMATICS | 8-0-0 | 4 |
| PH404 | PHYSICS | 5-0-0 | 4 |
| CY405 | CHEMISTRY | 5-0-0 | 4 |
| PH801 | PHYSICS LAB | 0-0-2 | 2 |
| CY801 | CHEMISTRY LAB | 0-0-2 | 2 |
| Total  | 25-0-4 | 21 |

**EN401 ENGLISH**

**Externals: 60Marks L-T-P-C**

**Internals: 40Marks 4-0-0-3**

**OBJECTIVES:**

1. To give guidelines and exercises on  Punctuation, advanced vocabulary, Idioms and Phrases and Dialogue writing.

2. To create awareness on Career oriented Composition: Understanding Job related advertisements, CV/Resumes writing

3.  To improve the communication skills through the literary texts

4. To integrate the idea of Non verbal communication and  describing processes.

**PROSE**

**UNIT-I**

**Eight Cousins or One Brother:** by D.Balasubramanian

Reading /Writing Skills: Filling in Forms

Curriculum Vitae

Word-Stress

**Grammar:** Vocabulary

Prefixes and suffixes

Adjective Clauses

Restrictive and Non-Restrictive Relative clauses

**UNIT-II**

**Spoon-Feeding:** by W.R.Inge

Reading/Writing Skills: Letter Writing (Formal)

Vocabulary

**Grammar:** Present Continuous tense

**UNIT-III**

**Mother’s Day: One-Act play:** by J.B. Priestley

Reading/Writing Skills: Letter Writing (Informal)

Word-Stress

Process Description

Note Making

Process Description

Conversation Practice

Comprehension

Form Filling

Curriculum Vitae

**POETRY:**

1. **Bull in The City:** by Sri Sri(Translated by Velcheru Narayana Rao)
2. **Harvest Hymn:** by John Betjeman

**SUPPLEMENTARY READER:**

1. Animal Farm (an abridged version) By George Orwell Chapters:6,7,8,9,10

**SUGGESTED REFERENCE:** INTERNET 2

**TE402 TELUGU**

**Externals: 60Marks L-T-P-C**

**Internals: 40Marks 3-0-0-2**

**పద్య భాగం, గద్యభాగం**

**అధ్యాయం – 1**

1.ప్రహ్లదుని విద్య

2. హనుమత్సందేశం (భాగం -1)

 **అధ్యాయం – 2**

1. హనుమత్సందేశం (భాగం -2)

2. కృషి వలుడు (భాగం -1)

**అధ్యాయం – 3**

1. కృషి వలుడు (భాగం -2)

2. కైలాసదూత ప్రహసనం

**అధ్యాయం – 4**

1.వ్యాసాలు

**MA403 MATHEMATICS**

**Externals: 60Marks L-T-P-C**

**Internals: 40Marks 8-0-0-4**

**COORDINATE GEOMETRY**

**UNIT-I**

**Circle:**

1. Equation of circle – standard form – centre and radius of a circle with a given line segment as diameter & equation of circle through three non collinear points – parametric equations of a circle.
2. Position of a point in the plane of a circle – power of a point – definition of tangent – length of tangent.
3. Position of a straight line in the plane of a circle – conditions for a line to be tangent-chord joining two points on a circle – equation of the tangent at a point on the circle-point of contact-equation of normal.
4. Chord of contact – pole and polar-conjugates points and conjugate lines – equation of chord with given middle point.
5. Relative position of two circles-circles touching each other externally, internally common tangents-centers of similitude-equation of pair of tangents from an external point.

**UNIT-II**

**System of circles:**

1. Angle between two intersecting circles.
2. Radical axis of two circles-properties-Common chord and common tangent of two circles – radical centre.
3. Intersection of a line and a Circle.

**UNIT-III**

**Parabola:**

1. Conic sections – Parabola-equation of parabola in standard form-different forms of parabola-parametric equations.
2. Equations of tangent and normal at a point on the parabola (Cartesian and parametric) – conditions for straight line to be a tangent.

**UNIT-IV**

**Ellipse:**

1. Equation of ellipse in standard form-Parametric equations
2. Equation of tangent and normal at a point on the ellipse (Cartesian and parametric)-condition for a straight line to be a tangent.

**UNIT-V**

**Hyperbola:**

1. Equation of hyperbola in standard form-Parametric equations.
2. Equations of tangent and normal at a point on the hyperbola (Cartesian and parametric)-conditions for a straight line to be a tangent-Asymptotes.

**CALCULUS**

**UNIT-VI**

**Integration:**

1. Integration as the inverse process of differentiation-Standard forms-properties of integrals.
2. Method of substitution-integration of Algebraic, exponential, logarithmic, trigonometric and inverse trigonometric functions. Integration by parts.
3. Integration-Partial fractions method.
4. Reduction formulae.

**UNIT-VII**

**Definite Integrals:**

1. Definite Integral as the limit of sum
2. Interpretation of Definite Integral as an area.
3. Fundamental theorem of Integral Calculus.
4. Properties.
5. Reduction formulae.
6. Application of Definite integral to areas.

**UNIT-VIII**

**Differential equations:**

1. Formation of differential equation-Degree and order of an ordinary differential equation.
2. Solving differential equation by
3. Variables separable method.
4. Homogeneous differential equation.
5. Non – Homogeneous differential equation.
6. Linear differential equations.

**REFERENCES**:

1. SKILLS IN MATHEMATICS SERIES ALGEBRA (VOLUME 1 & 2),ARIHANT PUBLICATIONS ,DR.S.K GOYAL
2. Skills in Mathematics Integral Calculus, Amit M Agarwal
3. BOARD OF INTERMEDIATE TELANGANA STATE AKADEMI BOOKS
4. NCERT PUC FIRST YEAR TEXTBOOKS.
5. SKILLS IN MATHEMATICS VECTORS & 3D GEOMETRY, ARIHANT PUBLICATIONS, AMIT M AGARWAL.
6. THOMAS CALCULUS ,MAURICE D.WIER,JOEL HASS, FRANK R.GIORDANO PEARSON EDUCATION

**PH404 PHYSICS**

**Externals: 60Marks L-T-P-C**

**Internals: 40Marks 5-0-0-4**

**Objectives:**

1. To understand the basic Science and the working principles of Nature from a scientific perspective.

2. To correlate and understand the application of science in our day to day activities.

3. To understand and appreciate how science forms a basic building block from application point of view to technology.

4. To enable student to think and be creative in applying Physics principles for growth in technology.

**UNIT-I**

**ELECTROMAGNETIC INDUCTION:**

* Introduction
* The Experiments of Faraday and Henry
* Magnetic Flux
* Faraday's Law of Induction
* Lenz's Law and Conservation of Energy
* Motional Electromotive Force
* Energy Consideration: A Quantitative Study
* Eddy Currents
* Inductance
* AC Generator

**UNIT-II**

**ALTERNATING CURRENT:**

* Introduction
* AC Voltage Applied to a Resistor
* Representation of AC Current and Voltage by
* Rotating Vectors — Phasors
* AC Voltage Applied to an Inductor AC Voltage Applied to a Capacitor
* AC Voltage Applied to a Series LCR Circuit
* Power in AC Circuit: The Power Factor
* LC Oscillations
* Transformers

**UNIT-III**

**ELECTROMAGNETIC WAVES:**

* Introduction
* Displacement Current
* Electromagnetic Waves
* Electromagnetic Spectrum

**UNIT-IV**

**DUAL NATURE OF RADIATION AND MATTER:**

* Introduction
* Electron Emission
* Photoelectric Effect
* Experimental Study of Photoelectric Effect
* Photoelectric Effect and Wave Theory of Light
* Einstein's Photoelectric Equation: Energy Quantum of
* Radiation
* Particle Nature of Light: The Photon
* Wave Nature of Matter
* Davisson and Germer Experiment

**UNIT-V**

**ATOMS:**

* Introduction
* Alpha-particle Scattering and Rutherford's Nuclear Model
* of Atom
* Atomic Spectra
* Bohr Model of the Hydrogen Atom
* The Line Spectra of the Hydrogen Atom
* DE Broglie's Explanation of Bohr's Second Postulate of
* Quantization

**UNIT-VI**

**NUCLEI:**

* Introduction
* Atomic Masses and Composition of Nucleus
* Size of the Nucleus
* Mass-Energy and Nuclear Binding Energy
* Nuclear Force Radioactivity
* Nuclear Energy

**UNIT-VII**

**SEMICONDUCTOR ELECTRONICS: MATERIALS, DEVICES AND SIMPLE CIRCUITS:**

* Introduction
* Classification of Metals, Conductors and Semiconductors
* Intrinsic Semiconductor Extrinsic Semiconductor
* p-n Junction
* Semiconductor diode
* Application of Junction Diode as a Rectifier
* Special Purpose p-n Junction Diodes
* Junction Transistor
* Digital Electronics and Logic Gates
* Integrated Circuits

**UNIT-VIII**

**COMMUNICATION SYSTEMS:**

* Introduction
* Elements of a Communication System
* Basic Terminology Used in Electronic Communication Systems
* Bandwidth of Signals
* Bandwidth of Transmission Medium
* Propagation of Electromagnetic Waves
* Modulation and its Necessity
* Amplitude Modulation
* Production of Amplitude Modulated Wave
* Detection of Amplitude Modulated Wave

**REFERENCE BOOK:**

T.S TELUGU AKADEMI TEXTBOOK, BOARD OF INTERMEDIATE EDUCATION, TELANGANA.

**PUC-II PHYSICS LABORATORY**

 **SEM-02 - LIST OF EXPERIMENTS PH-801**

* **Deflection magneto meter**

Aim: a)To determine the magnetic movement of two bar magnets

 b)To verify the inverse square law by using equal distance method.

* **P-N Junction diode**

Aim: To draw V-I characteristics of P-N junction diode

* **Zener diode**

Aim : To draw V-I characteristics of zener diode

* **Transistor**

Aim : To draw V-I characteristics of transistor using(n-p-n) type.

**CY405 CHEMISTRY**

**Externals: 60Marks L-T-P-C**

**Internals: 40Marks 5-0-0-4**

**Objectives:**

1. To understand the behavior of 16th, 17th, and 18th group elements
2. To understand the importance of d and f block elements and their compounds
3. To understand the concepts of surface chemistry and chemical metallurgy
4. To understand the importance of polymers and bio-molecules
5. To understand the preparation and properties of amines, diazonium salts and cyanides
6. To know the importance of environmental chemistry and chemistry in everyday life

**Unit 1: Group 16 elements**

Introduction, Dioxygen, Simple oxides, Ozone, Sulphur-allotropic forms, Sulphur dioxide, Oxoacids of sulphur, Sulphuric acid.

**Unit 2: Group 17 elements**

Introduction, Chlorine, Hydrogen chloride, Oxoacids of halogens, Interhalogen compounds.

**Unit 3: Group 18 elements**

Introduction – occurance, electronic configuration, Ionization enthalpy, atomic radii, electron gain enthalpy, Physical and chemical properties.

**Unit 4: d and f block elements and coordinate compounds**

Position in the periodic table, Electronic configuration, General properties of the transition elements (d-block), Some important compounds of transition elements, Inner transition elements (f-block), The actinoides, Some applications of d- and f- block elements, Werner’s theory of coordinate compounds, Definitions of some terms used in coordination compounds, Nomenclature of coordination compounds, Isomerism in coordination compounds, Bonding in coordination compounds, Bonding in metal carbonyls, Stability of coordination compounds, Importance and applications of coordination compounds.

**Unit 5: Solid state**

General characteristics of solid state, Amorphous and crystalline solids, Classification of crystalline solids, Probing the structure of solids: X-ray crystallography, Crystal lattices and unit cells, Number of atoms in a unit cell, Closed packed structures, Packing efficiency, Calculations involving unit cell dimensions, Imperfections in solids, Electrical properties, Magnetic properties.

**Unit 6: General principles of metallurgy**

Occurance of metals, Concentration of ores, Extraction of crude metal from concentrated ore, Thermodynamic principles of metallurgy, Electrochemical principles of metallurgy, Oxidation-reduction, Refining, Uses of aluminium, copper, zinc and iron.

**Unit 7: Surface chemistry**

Adsorption, Catalysis, Colloids, Classification of colloids, Emulsions, Colloids around us.

**Unit 8: Polymers**

Classification of polymers, Types of polymerization reactions, Molecular mass of polymers, Biodegradable polymers, Polymers of commercial importance.

**Unit 9: Organic compounds containing nitrogen**

Amines: Structure of amines, Classification, Nomenclature, Preparation of amines, Physical properties, Chemical reactions

Diazonium salts: Method of preparation of diazonium salts, Physical properties, Chemical reactions, Importance of diazonium salts in synthesis of aromatic compounds

Cyanides and isocyanides: Structure of cyanides and isocyanides, Preparation

**Unit 10: Bio-molecules**

Carbohydrates, Proteins, Enzymes, Vitamins, Nucleic acids, Hormones.

**Unit 11: Chemistry in everyday life**

Drugs and their classification, Drug-target interaction, Therapeutic action of different classes of drugs, Chemicals in food, Cleansing agents.

**Unit 12: Environmental chemistry**

Definition of terms: Air, water and soil pollutions, Environmental pollution, Atmospheric pollution, Acid rain: particulate pollutants, Stratospheric pollution, Water pollution, Soil pollution: pesticides, industrial wastes, Strategies to control environmental pollution, Green chemistry.

**PRE-UNIVERSITY COURSE CHEMISTRY (PUC-II) LABORATORY**

1. Chemical principles involved in the qualitative salt analysis
2. Cations: Pb+2, Cu+2, Al+3, Fe+3, Zn+2, Ni+2, Ca+2, Ba+2, Mg+2, NH4+.
3. Anions: CO3−2, S−2, SO4−2, NO3−, NO2−, Cl−, Br−, I−.
4. Detection of extra elements in organic compounds

Detection of the following functional groups: hydroxyl, carbonyl, carboxyl and amino

groups in organic compounds.