**PUC-I**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **I YEAR** **II SEMESTER** |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject** **Code** | **Subject Name** | **L-T-P** | **Credits** |
| EN121 | ENGLISH | 4-0-0 | 3 |
| TE122/SN122 | TELUGU/SANSKRIT | 3-0-0 | 2 |
| MA123 | MATHEMATICS | 8-0-0 | 5 |
| PH124 | PHYSICS | 5-0-0 | 3 |
| CY125 | CHEMISTRY | 5-0-0 | 3 |
| PH701 | PHYSICS LAB | 0-0-2 | 2 |
| CY701 | CHEMISTRY LAB | 0-0-2 | 2 |
| Total  | 25-0-4 | 20 |

**EN121 ENGLISH**

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

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

**OBJECTIVES:**

1. To practice language skills with literary texts: Speech practice, Vocabulary Learning, Comprehension, Grammar and Usage

2. To create an easy understanding of Prose, Poetry and Short stories through the practice of modular approach

3.  To enhance the understanding of unseen passages related to the given texts.

4. To create awareness on global and local literary pieces

 **PROSE**

**UNIT-I**

ROBOTS AND PEOPLE **By** Isaac Asimov

**Grammar:** Combining Sentences, Vocabulary

**UNIT-II**

YOU’RE ON THE 87th FLOOR, AND SOMETHING’S TERRIBLY WRONG  **By** Adam Mayblum

 **Grammar:** Question forms, Tags, Degrees of Comparison of Adjectives

 **Writing Skills:** Dialogue Writing, Odd sounds

**UNIT-III**

REFUND (abridged) **By** Fritz Karinthy

 **Grammar:** Correction of Sentences (Speaking and Writing)

 **POETRY**

**UNIT-IV**

MOTHER’S DAY **By** Shiv K. Kumar

 **Grammar:** Active and Passive Voice, Transcription, Syllable Division

**UNIT-V**

ANECDOTE FOR FATHERS (abridged) **By** William Wordsworth

**SUPPLEMENTARY READER**

**UNIT-I:** THE FACE ON THE WALL By E.V Lucas

**UNIT-II:** THE NIGHTINGALE AND THE ROSE By Oscar Wilde

**UNIT-III:** BEPIN CHOUDHURY’S LAPSE OF MEMORY By Satyajit Ray

**TE122 TELUGU**

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

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

**ఉద్దేశ్యాలు :**

**1. విద్యార్థులకు తెలుగు భాషా, సాహిత్యాల పట్ల ఆసక్తిని కల్గించడం.**

**2. సాహిత్య పఠనం వలన కలిగే రసానుభూతి, దాని వల్ల విద్యార్థులకు మానసిక వికాసానికి, ప్రేరణకు**

**దోహదపడడం.**

**3. నేటి యాంత్రిక జీవనంలో, భావి పౌరుడుగా, ఒంటరి తనాన్నివిడిచి సామాజీక, మానవ సంబంధాలు ఎలా ఉండాలో చేయడం.**

**4. తీరిక సమయాలలో తెలుగు సాహిత్య పఠనాభిలాషను ఒక ఆసక్తిగా మార్చడం.**

**5. తెలుగు సాహిత్యంలో ఉన్నత విద్యకై విద్యార్థులను ప్రోత్సహించడం.**

**పద్య భాగం, గద్యభాగం**

**అధ్యాయం – 1**

1. లోకస్వభావ పద్ధతి (సగభాగం)

 2. అహింస పద్ధతి

3. వేదాంత పద్ధతి (సగభాగం)

**అధ్యాయం – 2**

1. వేదాంత పద్ధతి

2. నీతిచంద్రిక సూక్తులు (భాగం -1)

A. మిత్రలాభం

**అధ్యాయం – 3**

1. నీతిచంద్రిక సూక్తులు (భాగం -2)

A. మిత్ర భేదం

B. విగ్రహం

**అధ్యాయం –4**

1. నీతిచంద్రిక సూక్తులు (భాగం -3)

A. సంధి

**MA123 MATHEMATICS**

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

**Internals: 40Marks 8-0-0-5**

**COORDINATE GEOMETRY**

|  |  |
| --- | --- |
| **1 Locus :** |  |

1. Definition of locus – Illustrations.
2. To find equations of locus - Problems connected to it.

**2** **Transformation of Axes :**

|  |  |  |
| --- | --- | --- |
| 2.1 | Transformation of axes - Rules, Derivations and |  |
|  | Illustrations. |  |
| 2.2 | Rotation of axes - Derivations – Illustrations. |  |
| **3 The Straight Line :** |  |
| 3.1 | Revision of fundamental results. |  |

1. Straight line - Normal form – Illustrations.
2. Straight line - Symmetric form.
3. Straight line - Reduction into various forms.
4. Intersection of two Straight Lines.
5. Family of straight lines - Concurrent lines.
6. Condition for Concurrent lines.
7. Angle between two lines.
8. Length of perpendicular from a point to a Line.
9. Distance between two parallel lines.

|  |  |
| --- | --- |
| 3.11 Concurrent lines - properties related to a triangle.  |  |
| **4 Pair of Straight lines:** |  |
| 4.1 Equations of pair of lines passing through origin, |  |
| angle between a pair of lines. |  |

1. Condition for perpendicular and coincident lines, bisectors of angles.
2. Pair of bisectors of angles.
3. Pair of lines - second degree general equation.

4.5 Conditions for parallel lines - distance between them, Point of intersection of pair of lines.

4.6 Homogenizing a second degree equation with a first degree equation in X and Y.

|  |  |
| --- | --- |
| **5 Three Dimensional Coordinates :** |  |

1. Coordinates.
2. Section formulas - Centroid of a triangle and

tetrahedron.

|  |  |
| --- | --- |
| **6 Direction Cosines and Direction Ratios :** |  |

1. Direction Cosines.
2. Direction Ratios.

|  |  |
| --- | --- |
| **7 Plane :** |  |

7.1 Cartesian equation of Plane - Simple Illustrations.

**CALCULUS**

**8. Limits and Continuity:**

8.1Intervals and neighborhoods.

1. Limits.
2. Standard Limits.
3. Continuity.

**9 Differentiation**:

9.1 Derivative of a function.

9.2 Elementary Properties.

9.3 Trigonometric, Inverse Trigonometric, Hyperbolic,

Inverse Hyperbolic Function - Derivatives.

9.4 Methods of Differentiation.

9.5 Second Order Derivatives.

10 **Applications of Derivatives**:

1. Errors and approximations.
2. Geometrical Interpretation of a derivative.

|  |  |  |
| --- | --- | --- |
| 10.3 | Equations of tangents and normals. |  |
| 10.4 | Lengths of tangent, normal, sub tangent and sub normal. |  |

1. Angles between two curves and condition for orthogonality of curves.
2. Derivative as Rate of change.
3. Rolle’s Theorem and Lagrange’s Mean value theorem without proofs and their geometrical interpretation.
4. Increasing and decreasing functions.
5. Maxima and Minima.

**REFERENCES**:

1. SKILLS IN MATHEMATICS COORDINATE GEOMETRY ,DR.S.K.GOYAL
2. BOARD OF INTERMEDIATE TELANGANA STATE AKADEMI BOOKS
3. NCERT PUC FIRST&SECONDYEAR TEXTBOOKS.
4. THOMAS CALCULUS ,MAURICE D.WIER,JOEL HASS, FRANK R.GIORDANO PEARSON EDUCATION
5. SKILLS IN MATHEMATICS DIFFERENTIAL CALCULUS,AMIT M AGARWAL

**PH124 PHYSICS**

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

**Internals: 40Marks 5-0-0-3**

**Objectives:**

1. To ignite the spirit of learning the science and understanding the Nature from a scientific and a logical perspective.

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

3.To learn the basic principles of Physics that forms a strong foundation in the development of technology.

**UNIT-I**

**OSCILLATIONS:**

* Introduction
* Periodic and oscillatory motions
* Simple harmonic motion
* Simple harmonic motion and uniform circular motion
* Velocity and acceleration in simple harmonic motion
* Force law for Simple harmonic Motion
* Energy in simple harmonic motion
* Some systems executing Simple Harmonic Motion
* Damped simple harmonic motion
* Forced oscillations and resonance

**UNIT-II**

**GRAVITATION:**

* Introduction
* Kepler's laws
* Universal law of gravitation
* The gravitational constant
* Acceleration due to gravity of the earth
* Acceleration due to gravity below and above the surface of earth
* Gravitational potential energy
* Escape speed
* Earth satellite
* Energy of an orbiting satellite
* Geostationary and polar satellites
* Weightlessness

**UNIT-III**

**MECHANICAL PROPERTIES OF SOLIDS:**

* Introduction
* Elastic behaviour of solids
* Stress and strain
* Hooke's law
* Stress-strain curve
* Elastic moduli
* Applications of elastic behaviour of materials

**UNIT-IV**

**MECHANICAL PROPERTIES OF FLUIDS:**

* Introduction
* Pressure
* Streamline flow
* Bernoulli's principle
* Viscosity
* Reynolds number
* Surface tension

**UNIT-V**

**THERMAL PROPERTIES OF MATTER:**

* Introduction
* Temperature and heat
* Measurement of temperature
* Ideal-gas equation and absolute temperature
* Thermal expansion
* Specific heat capacity
* Calorimetry
* Change of state
* Heat transfer
* Newton's law of cooling

**UNIT-VI**

**THERMODYNAMICS:**

* Introduction
* Thermal equilibrium
* Zeroth law of thermodynamics
* Heat, internal energy and work
* First law of thermodynamics
* Specific heat capacy
* Thermodynamic state variables and equation of State
* Thermodynamic processes
* Heat engines
* Refrigerators and heat pumps
* Second law of thermodynamics
* Reversible and irreversible processes
* Carnot engine, Carnot's theorem

**UNIT-VII**

**KINETIC THEORY:**

* Introduction
* Molecular nature of matter
* Behaviour of gases
* Kinetic theory of an ideal gas
* Law of equipartition of energy
* Specific heat capacity
* Mean free path

**REFERENCE BOOK:**

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

**PUC-1 PHYSICS LABORATORY**

**SEM02 -LIST OF EXPERIMENTS PH-701**

**1. Simple pendulum**

Aim: To determine acceleration due to gravity and length of seconds pendulum plotting a graph between l/t2 using simple pendulum.

**2. Boyles law**

Aim: To verify Boyles law and plotting a graph in between h-1/l ,p-l and find the atmospheric pressure using quill tube method.

**3. Sono meter**

Aim: a) To verify first law and plotting a graph between f-1/l

 b) To verify second law and plotting a graph between T-l2 using sonometer.

**4. Velocity of sound**

Aim: To determine velocity of sound in air and unknown frequency of given tuning fork using resonating air column apparatus.

**CY125 CHEMISTRY**

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

**Internals: 40Marks 5-0-0-3**

**Objectives:**

1. To understand the concept of solutions and their properties
2. To understand the importance of equilibrium in chemical reactions and the concept of acids and bases
3. To understand the properties of hydrogen element
4. To understand the properties of s-block elements and their compounds
5. To understand the properties of 13th and 14th group elements
6. To know the basic concepts of organic chemistry and its importance in day today life

**Unit 1: Solutions**

Types of solutions, Expressing concentration of solutions, Solubility, Vapour pressure of liquid solutions, Ideal and non-ideal solutions, Colligative properties and determination of molar mass, Abnormal molar masses.

**Unit 2: Hydrogen and its compounds**

Position of hydrogen in the periodic table, Dihydrogen - occurrence and isotopes, Preparation of dihydrogen, Properties of dihydrogen, Hydrides: Ionic, covalent, and non-stoichiometric hydrides, Water: Physical properties; structure of water, ice, chemical properties of water, hard and soft water, temporary and permanent hardness of water, Hydrogen peroxide: Preparation; physical properties; structure and chemical properties; storage and uses, Heavy water, Hydrogen as a fuel.

**Unit 3: Chemical equilibrium and Acids-bases**

Equilibrium in physical process, Equilibrium in chemical process – dynamic equilibrium, Law of chemical equilibrium – law of mass action and equilibrium constant, Homogeneous equilibria, equilibrium constant in gaseous systems, relationship between Kp and Kc, Heterogeneous equilibria, Applications of equilibrium constant, Relationship between equilibrium constant ‘K’, reaction quotient ‘Q’ and Gibbs energy ‘G’, Factors affecting equilibria, Le-chatelier’s principle, application to industrial synthesis of ammonia and sulphur trioxide, Ionic equilibrium in solutions, Acids, bases and salts- Arrhenius, Bronsted-Lowry and Lewis concepts of acids and bases, Ionization of acids and bases, Buffer solutions, Solubility equilibria of sparingly soluble salts, Solubility product constant-common ion effect on solubility of ionic salts.

**Unit 4: s-block elements (Alkali and alkaline earth metals)**

Alkali metals; Electronic configurations; atomic and ionic radii; ionization enthalpy; hydration enthalpy; physical properties; chemical properties; uses, General characteristics of the compounds of the alkali metals: oxides; halides; salts of oxy acids, Anomalous properties of lithium, Some important compounds of sodium: Sodium carbonate; sodium chloride; sodium hydroxide; sodium hydrogen carbonate, Biological importance of sodium and potassium, Alkaline earth metals: Electronic configuration; ionization enthalpy; hydration enthalpy; physical properties; chemical properties; uses, General characteristics of the compounds of the alkaline earth metals: oxides, hydroxides, halides, salts of oxy acids (carbonates, sulphates and nitrates), Anomalous behavior of beryllium: its diagonal relationship with aluminium, Some important compounds of calcium, Biological importance of calcium and magnesium.

**Unit 5: p-block elements Group 13 elements**

General introduction – Electronic configuration, atomic radii, ionization enthalpy, electro negativity; physical and chemical properties, Importance trends and anomalous properties of boron, Some important compounds of boron – borax, ortho boric acid, diborane, Uses of boron, aluminium and their compounds.

**Unit 6: Group 14 elements**

General introduction – Electronic configuration, atomic radii, ionization enthalpy, electro negativity; physical & chemical properties, Important trends and anomalous properties of carbon, Allotropes of carbon, Uses of carbon, Some important compounds of carbon and silicon – carbon monoxide, carbon dioxide, silica, silicones, silicates and zeolites.

**Unit 7: Organic Chemistry-Some basic principles and techniques**

General introduction, Tetravalency of carbon: shapes of organic compounds, Structural representation of organic compounds, Classification of organic compounds, Nomenclature of organic compounds, Isomerism, Fundamental concepts in organic reaction mechanisms, Methods of purification of organic compounds, Qualitative elemental analysis of organic compounds, Quantitative elemental analysis of organic compounds.

**PRE-UNIVERSITY COURSE CHEMISTRY (PUC1) LABORATORY**

1. Chemistry involved in the preparation of the following
2. Inorganic compounds: potash alum, potassium ferric oxalate
3. Organic compounds: acetanilide, iodoform
4. Chemistry involved in the titrimetric excercises
5. Acids-bases and use of indicators
6. Oxalic acid vs KMnO4
7. Mohr’s salt vs KMnO4