**CURRICULUM OF PUC-I**

**RGUKT BASAR**

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| **I YEAR** **I SEMESTER** |  |  |  |  |

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| **Subject** **Code** | **Subject Name** | **L-T-P** | **Credits** |
| EN111 | ENGLISH | 4-0-0 | 3 |
| TE112/SN112 | TELUGU/SANSKRIT | 3-0-0 | 2 |
| MA113 | MATHEMATICS | 8-0-0 | 5 |
| PH114 | PHYSICS | 5-0-0 | 3 |
| CY115 | CHEMISTRY | 5-0-0 | 3 |
| Total  | 25-0-0 | 16 |

**EN111 ENGLISH**

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

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

**Objectives:**

1. The primary aim of this syllabus is to develop an interest in English among students and motivate them to learn the language.
2. Assists in building up the gap between the language that they hear around them and what is taught in the class.
3. It tries to help the Teenagers confronted with lot of problems and confusion.

**PROSE**

**UNIT-I**

THINKING OUT OF THE BOX: LATERAL THIKING (adapted from an article on

 Lateral Thinking in [www.lifepositive.com](http://www.lifepositive.com)).

**Reading & Writing Skills:** Reading Comprehension (Unseen & Seen)

**Grammar:** Articles, Prepositions & Parts of Speech

**Communication Skills:** Vowels, Consonants & Diphthongs

**UNIT-II**

GENDER BIAS By Sudha Murthy (wife of N.R Narayana Murthy Infosys Technoligies

 Ltd, in (1981)

**Reading/Writing Skills:** Verb forms, Transcoding Information

**Communication Skills:** Phonemic Transcription

**UNIT-III**

THE ART OF WICKET KEEPING: THE UTTAKH-BHAITAKH BREED (abridged)

 By Ramachandra Guha

**Grammar:** Direct & Indirect Speech, Transcoding Information

**Communication Skills:** Dialogue Writing

**POETRY**

**UNIT-I:** ON FRIENDSHIP **By** Kahlil Gibran

**UNIT-II:** TELEVISION (abridged) **By** Roald Dahl

**UNIT-III:** A SPIDER AND A FLY  **By** Don Marquis

**SUPPLEMENTARY READER**

**UNIT-I:** AFTER TWENTY YEARS **By** O. Henry

**UNIT-II:**  THE GOLD FRAME **By** R.K Laxman

**UNIT-III:** THE STORY TELLER **By** Saki

**TE112 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.

**తెలుగు జాతి వివేకం**

**పద్య భాగం**

**అధ్యాయం - 1**

1. ధర్మ పద్ధతి

2. నీతి పద్ధతి

3.వివేక పద్ధతి

**అధ్యాయం – 2**

1. కార్యసాధక పద్ధతి

2. విద్వత్ పద్ధతి

3. సజ్జన పద్ధతి

**అధ్యాయం – 3**

1. స్వార్థ పద్ధతి

2. అర్థ పద్ధతి

3. అధికార పద్ధతి

**అధ్యాయం – 4**

1. ముర్ఖ పద్ధతి

2. దుర్జన పద్ధతి

3. లోకస్వభావ పద్ధతి (సగ భాగం)

**MA113 MATHEMATICS**

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

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

**Objectives:**

**ALGEBRA**

**UNIT-I**

**Functions:**

1. Types of functions – Definitions.
2. Inverse functions and Theorems.
3. Domain, Range, Inverse of real valued functions.

**UNIT-II**

**Mathematical Induction:**

1. Principle of Mathematical Induction & Theorems.
2. Applications of Mathematical Induction.
3. Problems on divisibility.

**UNIT-III**

**Matrices:**

1. Types of matrices
2. Scalar multiple of matrix and multiplication of matrices
3. Transpose of a matrix
4. Determinants
5. Adjoint and Inverse of a matrix
6. Consistency and inconsistency of Equations – Rank of a matrix
7. Solution of simultaneous linear equations

**VECTOR ALGEBRA**

**UNIT-IV**

**Addition of Vectors:**

1. Vectors as a triad of real numbers.
2. Classification of vectors.
3. Addition of Vectors.
4. Scalar multiplication.
5. Angle between two non zero vectors.
6. Linear combination of vectors.
7. Component of a vector in three dimensions.
8. Vector equations of line and plane including their Cartesian equivalent forms.

**UNIT-V**

**Product of Vectors:**

1. Scalar product – Geometrical Interpretations – orthogonal projections.
2. Properties of dot product.
3. Expression of dot product in i, j, k system – Angle between two vectors.
4. Geometrical Vector methods.
5. Vector equations of plane in normal form.
6. Angle between two planes
7. Vector product of two vectors and properties.
8. Vector product in i, j, k system.
9. Vector Areas.
10. Scalar Triple Product.
11. Vector equations of plane in different forms, skew lines, shortest distance and their Cartesian equivalents. Plane through the line of intersection of two planes, condition for coplanarity of two lines, perpendicular distance of a point from a plane, Angle between line and a plane. Cartesian equivalents of all these results.
12. Vector Triple Product – Results.

**TRIGONOMETRY**

**UNIT-VI**

**Trigonometric Ratios up to Transformations:**

1. Graphs and Periodicity of Trigonometric functions.
2. Trigonometric ratios and Compound angles.
3. Trigonometric ratios of multiple and sub-multiple angles.
4. Transformations – Sum and Product rules.

**UNIT-VII**

**Trigonometric Equations:**

1. General Solution of Trigonometric Equations
2. Simple Trigonometric Equations – Solutions.

**UNIT-VIII**

**Inverse Trigonometric Functions:**

1. To reduce a Trigonometric Functions into a bijection.
2. Graphs of Inverse Trigonometric Functions.
3. Properties of Inverse Trigonometric Functions.

**UNIT-IX**

**Hyperbolic Functions:**

1. Definition of Hyperbolic Function – Graphs.
2. Definition of Inverse Hyperbolic Functions –Graphs.
3. Addition formulas of Hyperbolic Functions.

**UNIT-X**

**Properties of Triangles:**

1. Relation between sides and angles of a Triangle.
2. Sine, cosine, Tangent and Projection rules.
3. Half angle formulae and areas of a triangle.
4. In-circle and Ex-circle of a Triangle.

**REFERENCES**:

1. SKILLS IN MATHEMATICS SERIES ALGEBRA(VOLUME 1 & 2),ARIHANT PUBLICATIONS ,DR.S.K GOYAL
2. SKILLS IN MATHEMATICS SERIES TRIGONOMETRY, ARIHANT PUBLICATIONS, 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

**PH114 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**

**PHYSICAL WORLD:**

1. What is physics?
2. Scope and excitement of physics
3. Physics, technology and society
4. Fundamental forces in nature
5. Nature of physical laws

**UNIT-II**

**UNITS AND MEASUREMENTS:**

1. Introduction
2. The international system of units
3. Measurement of length
4. Measurement of mass
5. Measurement of time
6. Accuracy, precision of instruments and errors in measurement
7. Significant figures
8. Dimensions of physical quantities
9. Dimensional formulae and dimensional equations
10. Dimensional analysis and its applications

**UNIT-III**

**MOTION IN A STRAIGHT LINE:**

1. Introduction
2. Position, path length and displacement
3. Average velocity and average speed
4. Instantaneous velocity and speed
5. Acceleration
6. Kinematic equations for uniformly accelerated motion
7. Relative velocity

**UNIT-IV**

**MOTION IN A PLANE:**

1. Introduction
2. Scalars and vectors
3. Multiplication of vectors by real numbers
4. Addition and subtraction of vectors. graphical method
5. Resolution of vectors
6. Vector addition. analytical method
7. Motion in a plane
8. Motion in a plane with constant acceleration
9. Relative velocity in two dimensions
10. Projectile motion
11. Uniform circular motion

**UNIT-V**

**LAWS OF MOTION:**

1. Introduction
2. Aristotle's fallacy
3. The law of inertia
4. Newton's first law of motion
5. Newton's second law of motion
6. Newton's third law of motion
7. Conservation of momentum
8. Equilibrium of a particle
9. Common forces in mechanics, friction
10. Circular motion
11. Solving problems in mechanics

**UNIT-VI**

**WORK, ENERGY AND POWER:**

1. Introduction
2. Notions of work and kinetic energy : The work-energy theorem
3. Work
4. Kinetic energy
5. Work done by a variable force
6. The work-energy theorem for a variable force
7. The concept of potential energy
8. The conservation of mechanical energy
9. The potential energy of a spring
10. Various forms of energy : the law of conservation of energy
11. Power
12. Collisions

**UNIT-VII**

**SYSTEM OF PARTICLES AND ROTATIONAL MOTION:**

1. Introduction
2. Centre of mass, Centre of Gravity
3. Motion of centre of mass
4. Linear momentum of a system of particles
5. Vector product of two vectors
6. Angular velocity and its relation with linear velocity, Kinematics of rotational motion about a fixed axis
7. Torque and angular momentum
8. Equilibrium of a rigid body
9. Moment of inertia
10. Theorems of perpendicular and parallel axes
11. Dynamics of rotational motion about a fixed axis
12. Angular momentum in case of rotations about a fixed axis
13. Rolling motion

**PUC-1 PHYSICS LABORATORY**

**` LIST OF EXPERIMENTS**

**1. Vernier callipers**

Aim: To determine volume of given cylinder and sphere using vernier callipers.

**2.Screw guage**

Aim: To determine thickness of glass plate and the diameter of given wire using screw guage.

**3.Spherometer**

Aim: To determine radius of curvature of given curved surface using spherometer.

**4.Simple pendulum**

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

**5.Helical spring**

Aim: To determine the force constant of given helical spring by plotting a graph between tension and length.

**6.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.

**7. 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.

**8.Velocity of sound**

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

**CY115 CHEMISTRY**

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

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

**Objectives:**

1. To understand the basic concepts of structure of atom
2. To understand the importance of elements and their classification
3. To understand the concept of chemical bonding
4. To understand the different states of matter and to understand the behavior of gases

and liquids

1. To understand the concepts of stoichiometry and chemical thermodynamics

**UNIT-I**

**Atomic structure:**

Sub-atomic particles, Atomic models- Rutherford’s nuclear model of atom, Developments to the Bohr’s model of atom, Bohr’s model for hydrogen atom, Towards quantum mechanical model of the atom, Quantum mechanical model of an atom. Important features of quantum mechanical model of atom-orbitals and quantum numbers-shapes of atomic orbitals-energies of orbitals-filling of orbitals in atoms, Aufbau principle, Pauli’s exclusion principle and Hund’s rule of maximum multiplicity-Electronic configurations of atoms-Stability of half filled and completely filled orbitals.

**UNIT-II**

**Classification of elements and periodicity in properties:**

Need to classify elements, Genesis of periodic classification, Modern periodic law and present form of the periodic table, Nomenclature of elements with atomic number greater than 100, Electronic configuration of elements and the periodic table, Electronic configuration and types of elements s,p,d and f blocks, Trends in physical properties-periodic trends in chemical properties-Periodic trends and chemical reactivity.

**UNIT-III**

**Chemical bonding and molecular structure:**

Kossel-Lewis approach to chemical bonding, Ionic or electrovalent bond, Bond parameters, The Valence Shell Electron Pair Repulsion (VSEPR) theory, Valence bond theory, Hybridisation, Coordinate bond, Molecular orbital theory-bonding in some homonuclear diatomic molecules, Hydrogen bonding.

**UNIT-IV**

**States of matter: Gases and Liquids:**

Intermolecular forces, Thermal energy, Intermolecular forces Vs Thermal interactions, The gaseous state, The gas laws, Ideal gas equation, Graham’s law of diffusion – Dalton’s law of partial pressures, Kinetic molecular theory of gases, Kinetic gas equation of an ideal gas (no derivation)- Deduction of gas laws from kinetic gas equation, Distribution of molecular speeds – rms, average and most probable speeds-kinetic energy of gas molecules, Behaviour of real gases – deviation from ideal gas behaviour – compressibility factor Vs pressure diagrams of real gases, Liquefaction of gases, Liquid state – properties of liquids in terms of inter molecular interactions – vapour pressure, viscosity and surface tension (Qualitative idea only, no mathematical derivation).

**UNIT-V**

**Stoichiometry:**

Some basic concepts, Laws of chemical combinations, Gay Lussac’s law of gaseous volumes, Dalton’s atomic theory, Avogadro law, Atomic and molecular masses-mole concept and molar mass concept, of equivalent weight, Percentage composition of compounds and calculations of empirical and molecular formulae of compounds, Stoichiometry and stoichiometric calculations, Methods of expressing concentrations of solutions, Redox reactions, Oxidation number concept, Types of redox reactions, Balancing of redox reactions – oxidation number method-half reaction (ion-electron) method, Redox reactions in titrimetry.

**UNIT-VI**

**Thermodynamics:**

Thermodynamic terms, Applications-work-enthalpy-extensive and intensive properties-heat capacity, Measurement of “U and H”: Calorimetry, Enthalpy change, ∆H of reactions, Enthalpies for different types of reactions, Spontaneity, Gibbs energy change and equilibrium, Absolute entropy and the third law of thermodynamics.

**PUC-1 CHEMISTRY LABORATORY**

**` LIST OF EXPERIMENTS**

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