**CURRICULUM OF PUC-II\_A.Y 16-17**

**RGUKT BASAR**

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

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| **Subject** **Code** | **Subject Name** | **L-T-P** | **Credits** |
| EN301 | ENGLISH | 4-0-0 | 3 |
| TE302 | TELUGU | 3-0-0 | 2 |
| MA303 | MATHEMATICS | 8-0-0 | 4 |
| PH304 | PHYSICS | 5-0-0 | 4 |
| CY305 | CHEMISTRY | 5-0-0 | 4 |
| Total  | 25-0-0 | 17 |

**EN301 ENGLISH**

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

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

**Objectives:**

1. The primary aim of these lessons is to ignite curiosity and interest in PUC students in the subject taught.
2. These lessons are designed to develop in students an interest in the English language and motivate them to learn it.
3. Integrating the four skills presents a ‘holistic’ view of language and prepares students for the use of language in the real world.

**PROSE**

**UNIT-I**

**Respond Instead of Reacting:** by Azim Premji

* Reading/Writing exercise: Comprehension passages (5)
* Introduction to communication skills
* Grammar: Present Perfect tense, prepositions

**UNIT-II**

**How to Live to be 200:** by Stephen Leacock.

* Reading/Writing exercise: Vocabulary, Tables, Bar charts, Pie Charts, Tree Diagrams,
* Flow Charts
* Grammar: Present simple and Past simple

**UNIT-III**

**Albert Einstein at School:** by Patrick Pringle

* Reading/Writing Skills: Comprehension from Non-Detailed text
* Advertisements
* Word –stress
* Grammar: Direct and Indirect speech
* Developing a paragraph using the given conversation

**POETRY:**

1. Equipment by Edgar Albert
2. The Giving Tree by Shel Silverstein
3. Human Family by Maya Angelou

**SUPPLEMENTARY READER:**

1. Animal Farm (an abridged version) by George Orwell Chapters:1,2,3,4,5

**TELUGU**

**TE302**

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

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

**ఉద్దేశ్యాలు :**

1. **విద్యార్థులకు సాహిత్యం ద్యారా దైనందిన జీవితం పట్ల అవగాహనను కల్గించడం.**
2. **తెలుగుసాహిత్య పఠనం వలన వ్యక్తిత్వ వికాసాన్ని పెంపొందించడం, సంభాషణా విధానాన్ని తెలియజేయడం.**
3. **నేటి సమాజంలో మానవ సంబంధాలను ఎలా అర్థం చేసుకోవాలి, సద్గుణాలను ఏ విధంగా పెంపొందించుకోవాలి, అహంకారం వల్ల కలిగి దుష్పరిణామాలను తెలియపర్చడం.**
4. **తెలుగు సాహిత్యంలో విద్యార్థులకు రచనాభిలాషపై ఆసక్తిని నెలకొల్పడం.**
5. **విద్యార్థులకు సామాజీక, రాజకీయ, ఆర్థిక, సాంస్కృతిక, ఆధ్యాత్మిక, వైజ్ఞానిక, సాంకేతిక విషయాల పట్ల స్పృహను కల్గించడం.**

**పద్య , గద్య భాగం**

**అధ్యాయం - 1**

1. యయాతి హితవు

2. వ్యాఘ్రగోమాయు సంవాదం (భాగం - 1)

**అధ్యాయం – 2**

1. వ్యాఘ్రగోమాయు సంవాదం (భాగం - 2)

2. కిన్నెరసాని పాటలు

**అధ్యాయం – 3**

1. జయభేరి

2. దురాశ

**అధ్యాయం – 4**

1. టి.వి యుగంలో తెలుగు

2. అనువాదం

**MA303 MATHEMATICS**

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

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

**Objectives:**

**ALGEBRA**

**UNIT-I**

**Complex Numbers:**

1. Complex number as an ordered pair of real numbers – fundamental operations
2. Representation of complex numbers in the form a+ib.
3. Modulus and amplitude of complex numbers – Illustrations.
4. Geometrical and Polar Representation of complex numbers in Argand plane- Argand diagram.

**UNIT-II**

**De Moivre’s Theorem:**

1. De Moivre’s theorem – Integral and Rational indices.
2. nth roots of unity – Geometrical Interpretations – Illustrations.

**UNIT-III**

**Quadratic Expressions:**

1. Quadratic expressions, equations in one variable
2. Sign of quadratic expressions - Change in signs – Maximum and minimum values.
3. Quadratic inequations.

**UNIT-IV**

**Theory of Equations:**

1. The relation between the roots and coefficients in an equation
2. Solving the equations when two or more roots of it are connected by certain relation.
3. Equation with real coefficients, occurrence of complex roots in conjugate pairs and its consequences.
4. Transformation of equations – Reciprocal Equations.

**UNIT-V**

**Permutations and Combinations:**

1. Fundamental Principle of counting – linear and circular permutations
2. Permutations of ‘n’ dissimilar things taken ‘r’ at a time.
3. Permutations when repetitions allowed.
4. Circular permutations.
5. Permutations with constraint repetitions.
6. Combinations-definitions and certain theorems.

**UNIT-VI**

**Binomial Theorem:**

1. Binomial theorem for positive integral index.
2. Binomial theorem for rational index (without proof)
3. Approximations using Binomial theorem.

**UNIT-VII**

**Partial fractions:**

1. Partial fractions of f(x)/g(x) when g(x) contains non-repeated linear factors.
2. Partial fractions of f(x)/g(x) when g(x) contains repeated and/or non-repeated linear factors.
3. Partial fractions of f(x)/g(x) when g(x) contains irreducible factors.

**PROBABILITY**

**UNIT-VIII**

**Measures of Dispersion:**

1. Range
2. Mean deviation
3. Variance and standard deviation of ungrouped/grouped data.
4. Coefficient of variation and analysis of frequency distribution with equal means but different variances.

**UNIT-IX**

**Probability:**

1. Random experiments and events
2. Classical definition of probability, Axiomatic approach and addition theorem of probability.
3. Independent and dependent events conditional probability-multiplication theorem and Bayee’s theorem.

**UNIT-X**

**Random Variables and Probability Distributions:**

1. Random variables
2. Theoretical discrete distributions – Binomial and Poisson Distributions.

**REFERENCES**:

1. SKILLS IN MATHEMATICS SERIES ALGEBRA (VOLUME 1 & 2),ARIHANT PUBLICATIONS 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

**PHYSICS**

**PH304**

**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 corelate 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**

**WAVES**

1. INTRODUCTION
2. Transverse and longitudinal waves
3. Displacement relation in a progressive wave
4. The speed of a travelling wave
5. The principle of superposition of waves
6. Reflection of waves
7. Beats
8. Doppler effect

**UNIT-II**

**RAY OPTICS AND OPTICAL INSTRUMENTS:**

1. INTRODUCTION
2. Reflection of Light by Spherical Mirrors
3. Refraction
4. Total Internal Reflection
5. Refraction at Spherical Surfaces and by Lenses
6. Refraction through a Prism
7. Dispersion by a Prism
8. Some Natural Phenomena due to Sunlight
9. OPTICAL INSTRUMENTS

**UNIT-III**

**WAVE OPTICS:**

1. Introduction
2. Huygens Principle
3. Refraction and reflection of plane waves using Huygens Principle
4. Coherent and Incoherent Addition of Waves
5. Interference of Light Waves and Young's Experiment
6. Diffraction
7. Polarisation

**UNIT-IV**

**ELECTRIC CHARGES AND FIELDS:**

1. INTRODUCTION
2. Electric Charges
3. Conductors and Insulators
4. Charging by Induction
5. Basic Properties of Electric Charge
6. Coulomb's Law
7. Forces between Multiple Charges
8. Electric Field
9. Electric Field Lines
10. Electric Flux
11. Electric Dipole
12. Dipole in a Uniform External Field
13. Continuous Charge Distribution
14. Gauss's Law
15. Application of Gauss's Law

**UNIT-V**

**ELECTROSTATIC POTENTIAL AND CAPACITANCE:**

1. INTRODUCTION
2. Electrostatic Potential
3. Potential due to a Point Charge
4. Potential due to an Electric Dipole
5. Potential due to a System of Charges
6. Equipotential Surfaces
7. Potential Energy of a System of Charges
8. Potential Energy in an External Field
9. Electrostatics of Conductors
10. Dielectrics and Polarisation
11. Capacitors and Capacitance The
12. Parallel Plate Capacitor
13. Effect of Dielectric on Capacitance
14. Combination of Capacitors
15. Energy Stored in a Capacitor
16. Van de Graff Generator

**UNIT-VI**

**CURRENT ELECTRICITY:**

1. INTRODUCTION
2. Electric Current
3. Electric Currents in Conductors
4. Ohm's law
5. Drift of Electrons and the Origin of Resistivity
6. Limitations of Ohm's Law
7. Resistivity of various Materials
8. Temperature Dependence of Resistivity
9. Electrical Energy, Power
10. Combination of Resistors — Series and Parallel
11. Cells, emf, Internal Resistance
12. Cells in Series and in Parallel
13. Kirchhoff's Laws
14. Wheatstone Bridge
15. Meter Bridge
16. Potentiometer

**UNIT-VII**

**MOVING CHARGES AND MAGNETISM:**

1. INTRODUCTION
2. Magnetic Force
3. Motion in a Magnetic Field
4. Motion in Combined Electric and Magnetic Fields
5. Magnetic Field due to a Current Element, Biot-Savart Law
6. Magnetic Field on the Axis of a Circular Current Loop
7. Ampere's Circuital Law
8. The Solenoid and the Toroid
9. Force between Two Parallel Currents, the Ampere
10. Torque on Current Loop, Magnetic Dipole
11. The Moving Coil Galvanometer

**UNIT-VIII**

**MAGNETISM AND MATTER:**

1. INTRODUCTION
2. The Bar Magnet
3. Magnetism and Gauss's Law
4. The Earth's Magnetism
5. Magnetisation and Magnetic Intensity
6. Magnetic Properties of Materials
7. Permanent Magnets and Electromagnets

**PUC-II PHYSICS LABORATORY**

**LIST OF EXPERIMENTS**

1. **Refractive index of a Prism**

Aim: To determine the refractive index of given prism by i-d curve method.

1. **Convex lens**

Aim: To determine the focal length of given convex lens by distance object method

and u-v method & plotting a graph between u-v,1/u-1/v

1. **Concave mirror**

Aim: To determine the focal length of given concave mirror by distance object

method and u-v method & plotting a graph between u-v,1/u-1/v.

1. **Concave lens**

Aim: To determine the focal length of given concave lens by u-v method with the

help of convex lens.

1. **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.

1. **P-N Junction diode**

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

1. **Zener diode**

Aim : To draw V-I characteristics of zener diode

1. **Transistor**

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

**CY305 CHEMISTRY**

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

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

**Objectives:**

1. To understand the preparation and properties of hydrocarbons and haloalkanes &

 haloarenes

1. To understand the preparation and properties of alcohols, ethers, carbonyl compounds and carboxylic acids
2. To understand the basic concepts of solid state of matter
3. To understand the importance of electrochemistry and chemical kinetics
4. To understand the properties of group 15 elements

**UNIT-I**

**Hydrocarbons:**

Classification of hydrocarbons, Alkanes – Nomenclature, isomerism (structural and conformations of ethane only), preparation of alkanes-properties of alkanes, Alkenes – Nomenclature, structure of ethane, isomerism (structural and geometrical)-methods of preparation of alkenes-properties of alkenes, Alkynes – Nomenclature and isomerism, structure of acetylene, methods of preparation of acetylene-physical properties and chemical reactions of alkynes, Aromatic hydrocarbons: Nomenclature and isomerism, structure of benzene, resonance and aromaticity-preparation of benzene, physical and chemical properties of benzene-directive influence of functional groups in mono substituted benzene, Carcinogenicity and toxicity.

**UNIT-II**

**Haloalkanes and haloarenes:**

Classification, Nature of C-X bond, Methods of preparation, Physical properties, Chemical reactions, Polyhalogen compounds.

**UNIT-III**

**Organic compounds containing C, H and O:**

Alcohols, Phenols, ethers: Classification, Nomenclature, Structures of functional groups, Alcohols and phenols, Physical properties, Chemical reactions, Some commercially important alcohols, Ethers.

Aldehydes and ketones: Nomenclature and structure of carbonyl group, Preparation of aldehydes and ketones, Physical properties, Chemical reactions, Uses of aldehydes and ketones,

Carboxylic acids: Nomenclature and structure of carboxyl group, Methods of preparation of carboxylic acids, Physical properties, Chemical reactions, Uses of carboxylic acids.

**UNIT-IV**

**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-V**

**Electrochemistry and Chemical kinetics:**

Electrochemistry: Electrochemical cells, Galvanic cells, Nernst equation, Conductance of electrolytic solutions, Electrolytic cells and electrolysis, Batteries, Fuel cells, Corrosion.

Chemical kinetics: Rate of a chemical reaction, Factors influencing rate of a reaction, Integrated rate equations, Pseudo first order reaction, Temperature dependence of the rate of a reaction, Collision theory of chemical reaction rates.

**UNIT-VI**

**Group 15 elements:**

Introduction, Dinitrogen, Ammonia, Oxides of nitrogen, Nitric acid, Phosphorous-allotropic forms, Phosphine , Phosphorous halides, Oxoacids of phosphorous.

**PUC-II CHEMISTRY LABORATORY**

**LIST OF EXPERIMENTS**

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.