TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (WOMEN)
HRD campus, DEVARAKONDA, NALGONDA-508248 (College code: 4133)
Recognized by UGC, India; Affiliated to Mahatma Gandhi University, Nalgonda.

DEPARTMENT OF PHYSICS

SYNOPSIS

2022-2023

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Vector Analysis**
Learning objectives:	Student will be able to understand the various methods to analyse the vector fields, theorems and simple applications.
Previous knowledge required:	Scalar and Vector quantities Properties of scalars and vectors Basics of Integration and Differentiation
Synopsis:	Scalar and vector fields Gradient of scalar field Divergence and curl of vector field Vector Integration Stokes Theorem Gauss's Theorem Green's Theorem
Illustrations/ Demonstration shown:	
Teaching aids used:	Textbook, board and chalk
References:	First Year Physics-Telugu academy
Student activity planned/ homework given:	Problems related to the topics mentioned above.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Mechanics of Particles**
Learning objectives:	Student will be able to gain knowledge about laws of motion, motion of rocket and collisions
Previous knowledge required:	Basic definitions – motion, mass, energy, momentum, collision etc Newton's Laws of motion.
Synopsis:	Laws of motion Motion of variable mass system Motion of rocket Multi stage rocket Collisions in two and three dimensions Concept of impact parameter and scattering cross -section
Illustrations/ Demonstration shown:	Motion of rocket
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To explain the motion of system of variable mass.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Mechanics of Rigid Bodies**
Learning objectives:	Student will be able to understand the concepts related to rigid bodies, Euler's equations, Gyroscope etc
Previous knowledge required:	Basic definitions of mechanics-rigid body, rotational motion, angular momentum etc
Synopsis:	Concept of Rigid body Rotational kinematics relations Equation of motion of rotating body Angular momentum and inertial tensor Euler's equations Precession of top Gyroscope
Illustrations/ Demonstration shown:	Precession of top Gyroscope
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To describe the construction and working of gyroscope and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Central Forces**
Learning objectives:	Student will be able to understand concepts of central forces and Kepler's laws
Previous knowledge required:	Basic definitions – central forces ,potential energy, gravitational field and gravitational potential etc
Synopsis:	Central forces and examples Conservative nature of central forces Negative gradient of potential Equation of motion under central force Gravitational potential and gravitational field Motion under inverse square law Kepler's laws
Illustrations/ Demonstration shown:	Examples of central forces
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	State and derive Kepler's laws.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Special Theory of Relativity**
Learning objectives:	Students will gain knowledge about concepts of special theory of relativity-absolute frames, Lorentz transformation, mass-energy relation etc
Previous knowledge required:	Basic definitions and concepts of classical mechanics
Synopsis:	Galilean relativity Absolute frames Michelson –Morley experiment Postulates of Special theory of relativity Lorentz transformation Time dilation, Length contraction , addition of velocities Mass-Energy relation Four vector formalism
Illustrations/ Demonstration shown:	Postulates of Special theory of relativity
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Describe the Michel-Morley Experiment in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Oscillations**
Learning objectives:	Students will gain knowledge about different types of oscillations and applications.
Previous knowledge required:	Basics definitions-motion, periodic motion, oscillations, Simple Harmonic motion etc
Synopsis:	Simple Harmonic Oscillator Physical characteristics of SHM Torsion and compound pendulum Combination of two mutually perpendicular Simple Harmonic Vibrations Lissajous figures Damped Harmonic Oscillator Forced Oscillator
Illustrations/ Demonstration shown:	Compound Pendulum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Physical Characteristics of SHM

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Kinetic Theory of Gases**
Learning objectives:	Student will be to understand kinetic theory gases, transport phenomena and its applications.
Previous knowledge required:	Basic definitions- kinetic energy, molecules, speed, velocity, viscosity, thermal conductivity, diffusion etc
Synopsis:	Postulates of kinetic theory of gases Maxwell's law of distribution of molecular speeds Viscosity of gases Thermal conductivity of gases Diffusion of gases
Illustrations/ Demonstration shown:	Diffusion of gases
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of Maxwell's law of distribution of molecular speeds

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamics**
Learning objectives:	Student will be to understand basics of thermodynamics and concept of entropy
Previous knowledge required:	Basic definitions –heat, temperature, entropy, reversible and irreversible processes etc
Synopsis:	Thermodynamic (Basics) Thermodynamic scale of temperature Change in entropy in reversible and irreversible processes Temperature –Entropy diagram and its applications Change of entropy of perfect gas Change of entropy when ice changes into steam
Illustrations/ Demonstration shown:	Change in entropy in reversible and irreversible processes
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Temperature –Entropy diagram and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamic potentials and Maxwell's relations**
Learning objectives:	Student will be to understand basics of thermodynamic potentials and Maxwell's equations
Previous knowledge required:	Basic definitions –heat, temperature, specific heats, perfect gas etc
Synopsis:	Thermodynamic potentials Maxwell's thermodynamic relations Ratio and difference of two specific heats for perfect gas Joule-Kelvin effect Joule-Kelvin coefficient for perfect gas and vanderwaals gas
Illustrations/ Demonstration shown:	Joule-Kelvin effect
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Thermodynamic potentials in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Low Temperature Physics**
Learning objectives:	Students will be able to understand the methods to produce low temperature and also applications
Previous knowledge required:	Basic definitions –heat, temperature, expansion, cooling, liquefaction, refrigeration etc
Synopsis:	Joule-Kelvin effect-Porous plug experiment Joule Thomson expansion Joule Thomson cooling Liquefaction of gases Principle of refrigeration
Illustrations/ Demonstration shown:	Joule-Kelvin effect-Porous plug experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Joule-Kelvin effect-Porous plug experiment

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Quantum theory of radiation**
Learning objectives:	Students will be able to gain knowledge about Quantum theory of radiation and Planck's law
Previous knowledge required:	Basic definitions –conduction, convection, radiation, heat, temperature, pyrometers, solar constant etc
Synopsis:	Ferry's black body-energy distribution in spectrum Wein's displacement law Quantum theory of radiation Planck's law Different pyrometers-Disappearing filament optical pyrometer, Angstrom's pyrometer etc
Illustrations/ Demonstration shown:	Ferry's black body-energy distribution in spectrum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Quantum theory of radiation and derive Planck's law

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Statistical Mechanics**
Learning objectives:	Students will be able to understand statistical mechanics concepts- ensembles, distribution laws and also applications
Previous knowledge required:	Basic concepts of classical mechanics , probability theorems etc
Synopsis:	Postulates of statistical mechanics Concept of ensembles Classical and quantum statistics Maxwell-Boltzmann statistics Bose-Einstein statistics Fermi-Dirac statistics
Illustrations/ Demonstration shown:	Concept of ensembles
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of statistical mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Electrostatics**
Learning objectives:	Students will be able to understand the concepts of electrostatics and its applications
Previous knowledge required:	Basic concepts-electric field, electric flux, types of charges and nature of charges, electric potential etc
Synopsis:	Gauss's law and its applications Conservative nature of electric field Concept Electric potential Relation between Electric field and Electric potential Potential energy of system of charges Energy density in an Electric field
Illustrations/ Demonstration shown:	Gauss's law and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression for Potential energy of system of charges

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Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Magnetostatics**
Learning objectives:	Students will be able to understand the concepts of Magnetostatics and its applications
Previous knowledge required:	Basic concepts-magnetic field, magnetic flux, magnetic poles, current, inductance, resistance etc
Synopsis:	Biot-Savart's law Force on a point charge in a magnetic fields Properties of Magnetic field Integral form of Ampere's law and applications Energy stored in magnetic field Ballistic galvanometer
Illustrations/ Demonstration shown:	Ballistic galvanometer
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Ballistic Galvanometer.

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Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Electromagnetic Induction and Electromagnetic waves**
Learning objectives:	Students will be able to gain knowledge about Electromagnetic Induction and Electromagnetic waves and also applications.
Previous knowledge required:	Basic concepts-Electric field, Magnetic Field, Induction, Waves-longitudinal and transverse etc
Synopsis:	Faraday's laws of Induction Lenz's law Self and Mutual Induction Continuity equation Modification of Ampere's law Displacement current Maxwell equations Transverse nature of EM waves
Illustrations/ Demonstration shown:	Lenz's law Self and Mutual Induction
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Transverse nature of EM waves

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Varying and alternating currents**
Learning objectives:	Student will be able to understand varying and alternating currents and also applications
Previous knowledge required:	Basic concepts-current, voltage, power , resistor, inductor, capacitor etc
Synopsis:	Growth and decay of currents in LCR circuits Critical damping and Alternating currents Power in AC circuits Q-factor AC and DC motors
Illustrations/ Demonstration shown:	AC and DC motors
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu academy
Student activity planned/ homework given:	Explain about single phase and three phase motors.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Network Theorems**
Learning objectives:	Student will be able to gain knowledge about Network Theorems and also applications
Previous knowledge required:	Basic electrical components, electric circuits, various sources of current and voltage etc
Synopsis:	Passive Elements Active Elements Power sources Network models Network Theorems: Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, Maximum power transfer theorem.
Illustrations/ Demonstration shown:	Passive Elements Active Elements Power sources
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about passive elements and active elements.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Fundamentals of waves**
Learning objectives:	Student will be able to understand the fundamentals of waves and their significance.
Previous knowledge required:	Basic definitions-wave, amplitude, phase, frequency, vibrations, overtones etc
Synopsis:	Fundamentals of waves Transverse wave propagation along stretched string Overtones Energy Transport Transverse Impedance
Illustrations/ Demonstration shown:	Fundamentals of waves
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Transverse wave propagation along stretched string

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Longitudinal vibrations in bars**
Learning objectives:	Student will be able to understand longitudinal vibrations and transverse vibrations in bars.
Previous knowledge required:	Basic definitions – longitudinal waves, transverse waves, tuning fork etc
Synopsis:	Longitudinal vibrations in bars-wave equation and its general solution Transverse vibrations in bars-wave equation and its general solution Tuning fork
Illustrations/ Demonstration shown:	Tuning fork
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about Tuning Fork and its significance

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Interference(Division of wave front)**
Learning objectives:	Students will gain knowledge about interference and conditions for interference and its applications.
Previous knowledge required:	Basic definitions- light, coherence, wave front, reflection, Wavelength, phase etc
Synopsis:	Principle of Superposition Conditions for interference of light Fresnel's biprism experiment Change of phase on reflection Lloyd's mirror experiment
Illustrations/ Demonstration shown:	Fresnel's Biprism experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	State the Conditions for interference of light

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Wave and Optics	**Topic: Interference(Division of amplitude)**
Learning objectives:	Students will gain knowledge about interference by division of amplitude
Previous knowledge required:	Basics definitions- light, coherence, wave front, reflection, transmission, amplitude, wavelength, phase etc
Synopsis:	Colours of thin films Non-reflecting films Wedge shaped film Newton's rings Michelson interferometer Types of fringes
Illustrations/ Demonstration shown:	Colours of thin films
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Michelson interferometer in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Diffraction**
Learning objectives:	Student will be to understand the concepts of diffraction and its significance
Previous knowledge required:	Basic definitions- diffraction, slit, resolution, grating, convex lens etc
Synopsis:	Fraunhoffer diffraction-single slit, circular aperture, double slit and diffraction grating. Resolving power of grating Fresnel's diffraction- Fresnel's half period zones, zone plate , Phase reversal zone plate etc
Illustrations/ Demonstration shown:	Fraunhoffer diffraction-single slit
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about Fraunhoffer diffraction due to single slit

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Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Polarisation**
Learning objectives:	Student will be to understand concept of polarisation, methods of polarisation and also applications
Previous knowledge required:	Basic definitions –polarised light, polarisation, reflection, refraction, scattering , polariser, analyser etc
Synopsis:	Polarised light-methods of polarisation Brewster's law Malus law Nicol's prism Positive and Negative crystals Quater wave plate and Half wave plate Babinet's compensator Laurent's Half shade polarimeter
Illustrations/ Demonstration shown:	Laurent's Half shade polarimeter
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nicol's prism.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Atomic Spectra**
Learning objectives:	Student will be to understand basics of atomic spectra and its significance.
Previous knowledge required:	Basic concepts-atomic structure, atomic models and their drawbacks.
Synopsis:	Bohr's atomic model and its drawbacks Sommerfeld's atomic model Stern-Gerlach experiment Vector atom model and quantum numbers Spectra of alkali atoms Doublet fine structure Zeeman Effect and Stark effect Paschen-Back effect
Illustrations/ Demonstration shown:	Stern-Gerlach experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Zeeman Effect and Stark effect

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Molecular Spectroscopy**
Learning objectives:	Students will be able to understand the molecular spectroscopy and its significance
Previous knowledge required:	Basic concepts-atoms, elements, molecules ,spectrum, Inter nuclear distance, rotational energy, vibrational energy etc
Synopsis:	Types of molecular spectra Pure rotational energies and spectrum of diatomic molecule Vibrational energies and spectrum of diatomic molecule Classical theory of Raman effect Raman effect experiment and its applications
Illustrations/ Demonstration shown:	Raman effect experiment and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Raman effect experiment and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Matter waves and Uncertainty principle**
Learning objectives:	Students will be able to gain knowledge about matter waves and Uncertainty principle and its significance
Previous knowledge required:	Basic concepts of Classical Physics, atomic structure, atomic models, spectral radiation, matter waves etc
Synopsis:	Photoelectric effect Compton' effect De-Broglie hypothesis Phase and Group velocities Davisson and Germer experiment Heisenberg's uncertainty principle Complementary principle of Bohr
Illustrations/ Demonstration shown:	Photoelectric effect
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain in detail about Compton's effect and its experimental verification

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Schrodinger wave equation**
Learning objectives:	Students will be able to understand and derive Schrodinger's wave equations
Previous knowledge required:	Basic concepts of quantum mechanics, matter waves, wave equations, wave functions, operators, eigen functions ,eigen values etc
Synopsis:	Schrodinger time dependent wave equation Schrodinger time independent wave equation Wave function properties-significance Postulates of quantum mechanics Eigen functions and eigen values
Illustrations/ Demonstration shown:	Wave function properties-significance
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of quantum mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Nuclear Structure**
Learning objectives:	Students will be able to understand the basics concepts of atoms –nuclear structure, properties of nucleus, nuclear models etc
Previous knowledge required:	Basic concepts- atom, atomic structure, nulear structure, nuclear properties etc
Synopsis:	Basic properties of nucleus Binding energy of nucleus Nuclear forces and nature of nuclear forces Nuclear models- liquid drop model and shell model and significance of magic numbers
Illustrations/ Demonstration shown:	Basic properties of nucleus
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about Nuclear forces and nature of nuclear forces

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Alpha and Beta decay and Particle detectors**
Learning objectives:	Students will be able to understand the concepts of nuclear radiations, alpha and beta decay, particle detectors .
Previous knowledge required:	Basic concepts- radioactive elements, radioactivity, types of nuclear radiations etc
Synopsis:	Range of alpha particles Geiger-Nuttal law Gamow's theory of alpha decay Beta spectrum Neutrino hypothesis GM counter Proportional counter Scintillation counter
Illustrations/ Demonstration shown:	Proportional counter
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of GM counter

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Solid State Physics and Crystallography**
Learning objectives:	Students will be able to gain knowledge about Crystal structure, X-Ray diffraction, Bonding in Crystals etc
Previous knowledge required:	Basic concepts-Types of solids, crystals, diffraction , bonds in solids
Synopsis:	Crystalline nature of matter Crystal systems Miller Indices Simple crystal structure Diffraction of X-Rays by crystals Types of bonding in crystals Lattice energy of ionic crystals Born-Haber cycle
Illustrations/ Demonstration shown:	Crystalline nature of matter
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the different types of bonding in crystals

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Band theory of P-N junction**
Learning objectives:	Student will be able to understand band theory in solids, types of semiconductors etc
Previous knowledge required:	Basic concepts- Classification of solids, conductors, semi-conductors ,insulators etc
Synopsis:	Energy band in solids Intrinsic Semiconductors Extrinsic Semiconductors N-type semi conductors P-type semi conductors Fermi level Continuity Equation
Illustrations/ Demonstration shown:	Energy band in solids
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu academy
Student activity planned/ homework given:	Explain in detail about N-type semi conductors and P-type semi conductors

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Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Diodes**
Learning objectives:	Student will be able to gain knowledge about Diodes and its applications.
Previous knowledge required:	Basic electrical components, electric circuits, types of semiconductors, doping , ac and dc currents etc
Synopsis:	P-NJunction diode Half wave rectifier Full wave rectifier Bridge rectifier Zener diode and its characteristics Zener diode – voltage regulator
Illustrations/ Demonstration shown:	P-NJunction diode
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about the construction and working of P-N Junction diode

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Bipolar Junction Transistor**
Learning objectives:	Student will be able to understand the basic concepts of BJT and its applications
Previous knowledge required:	Basic definitions-types of semiconductors, transistor, current, amplifier, frequency etc
Synopsis:	BJT –basic concept p-n-p and n-p-n transistors-construction and working current components in transistor CB,CE,CC configuration Transistor as amplifier RC coupled amplifier-frequency response
Illustrations/ Demonstration shown:	p-n-p and n-p-n transistors-construction and working
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the current components in a transistor

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Feedback and Oscillators**
Learning objectives:	Student will be able to understand the concept of feedback – its significance and oscillators –its applications
Previous knowledge required:	Basic definitions-Feedback and oscillators
Synopsis:	Concept of Feedback General theory of feedback Concepts of oscillators Barkhausen's criterion Phase shift oscillator
Illustrations/ Demonstration shown:	General theory of feedback
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about General theory of feedback

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Special Devices**
Learning objectives:	Students will gain knowledge about Special devices and their role in the manufacturing of electronic devices.
Previous knowledge required:	Basic concepts-semiconductors, P-N junction diodes, transistors, BJT etc
Synopsis:	Photo diode Schottky diode Solar cell FET-as amplifier UJT-as relaxation oscillator SCR-as a switch
Illustrations/ Demonstration shown:	Solar cell
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Photo diode

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Digital Electronics**
Learning objectives:	Students will gain knowledge about Digital Electronics and their applications
Previous knowledge required:	Basics concepts of electronics, number systems etc
Synopsis:	Binary number system Binary addition and subtraction 1's and 2's complement Decimal number system Hexa decimal number system
Illustrations/ Demonstration shown:	1's and 2's complement
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about 1's and 2's complement

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Logic Gates**
Learning objectives:	Student will be to understand the concepts of logic gates and their applications
Previous knowledge required:	Basic concepts of logic gates-Truth tables, Boolean algebra , Boolean laws etc
Synopsis:	OR gate AND gate NOT gate NAND and NOR gates-as universal gates EX-OR gate De-Morgan's laws- verification
Illustrations/ Demonstration shown:	Verification of Truth tables of Logic gates
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about OR gate, AND gate and NOT gate.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Nano Structures**
Learning objectives:	Student will be to understand concepts of Nano materials and their applications etc
Previous knowledge required:	Basic concepts like units and dimensions, different length scales, nanoscale etc
Synopsis:	1D,2D and 3D nanostructures Band structure and density of states Size effects in nano systems Quantum confinement in 1D Quantum confinement in 2D Quantum confinement in 3D Consequences of quantum confinement
Illustrations/ Demonstration shown:	1D,2D and 3D nanostructures
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Explain the 1D,2D and 3D nanostructures

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Synthesis of Nanostructure materials and Characterisation**
Learning objectives:	Student will be to gain knowledge about various methods of synthesis of nano structured materials
Previous knowledge required:	Basic concepts of nano materials- nanosize, quantum confinement, condensation, evaporation, colloids etc
Synopsis:	Top down and bottom up approach Physical vapour deposition Chemical vapour deposition Sol-Gel method X-Ray diffraction Scanning Electron Microscopy Transmission Electron Microscopy Scanning Tunneling Microscopy
Illustrations/ Demonstration shown:	Top down and bottom up approach
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Explain the construction and working of the Scanning Electron Microscopy in detail

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Optical Properties and Electron Transport**
Learning objectives:	Students will be able to understand the Optical properties of nanostructures and Electron Transport in nano structures
Previous knowledge required:	Basic concepts- nanostructures, dielectric constant, band gap, defects, impurities etc
Synopsis:	Dielectric constant for nanostructure Charging of nanostructure Quasi particles and excitons Radiative processes-absorption, emission and luminescence Optical properties of heterostructures Carrier transport in nanostructures Coulomb blockade effect Deep level and surface defects
Illustrations/ Demonstration shown:	Optical properties of nanostructures
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Explain the Optical properties of nanostructures

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Applications**
Learning objectives:	Students will be able to gain knowledge about the various applications of nanomaterials
Previous knowledge required:	Basic concepts –nano materials, quantum dots, nano wires, nano thin films ,carbon nanotubes etc
Synopsis:	Applications of nano materials Photonic devices-LED and Solar cell Single electron devices CNT based transistors Quantum dots heterostructure lasers Optical switching and data storage Micro Electromechanical Systems Nano Electromechanical Systems
Illustrations/ Demonstration shown:	Photonic devices-LED and Solar cell
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Write the applications of nano materials in detail

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (WOMEN)
HRD campus, DEVARAKONDA, NALGONDA-508248 (College code: 4133)
Recognized by UGC, India; Affiliated to Mahatma Gandhi University, Nalgonda.

DEPARTMENT OF PHYSICS

SYNOPSIS

2021-2022

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Vector Analysis**
Learning objectives:	Student will be able to understand the various methods to analyse the vector fields, theorems and simple applications.
Previous knowledge required:	Scalar and Vector quantities Properties of scalars and vectors Basics of Integration and Differentiation
Synopsis:	Scalar and vector fields Divergence and curl of vector field Vector Integration Stokes Theorem Gauss's Theorem Green's Theorem
Illustrations/ Demonstration shown:	Solid mechanics Electromagnetism
Teaching aids used:	Textbook, board and chalk
References:	First Year Physics-Telugu academy
Student activity planned/ homework given:	Problems related to the topics mentioned above.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Mechanics of Particles**
Learning objectives:	Student will be able to gain knowledge about laws of motion, motion of rocket and collisions
Previous knowledge required:	Basic definitions – motion, mass, energy, momentum, collision etc Newton's Laws of motion.
Synopsis:	Laws of motion Motion of variable mass system Motion of rocket Multi stage rocket Collisions in two and three dimensions Concept of impact parameter and scattering cross -section
Illustrations/ Demonstration shown:	Motion of rocket
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To explain the motion of system of variable mass.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Mechanics of Rigid Bodies**
Learning objectives:	Student will be able to understand the concepts related to rigid bodies, Euler's equations, Gyroscope etc
Previous knowledge required:	Basic definitions of mechanics-rigid body, rotational motion, angular momentum etc
Synopsis:	Concept of Rigid body Rotational kinematics relations Equation of motion of rotating body Angular momentum and inertial tensor Euler's equations Precession of top Gyroscope
Illustrations/ Demonstration shown:	Precession of top Gyroscope
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To describe the construction and working of gyroscope and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Central Forces**
Learning objectives:	Student will be able to understand concepts of central forces and Kepler's laws
Previous knowledge required:	Basic definitions – central forces ,potential energy, gravitational field and gravitational potential etc
Synopsis:	Central forces and examples Conservative nature of central forces Negative gradient of potential Equation of motion under central force Gravitational potential and gravitational field Motion under inverse square law Kepler's laws
Illustrations/ Demonstration shown:	Examples of central forces
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	State and derive Kepler's laws.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Special Theory of Relativity**
Learning objectives:	Students will gain knowledge about concepts of special theory of relativity-absolute frames, Lorentz transformation, mass-energy relation etc
Previous knowledge required:	Basic definitions and concepts of classical mechanics
Synopsis:	Galilean relativity Absolute frames Michelson –Morley experiment Postulates of Special theory of relativity Lorentz transformation Time dilation, Length contraction , addition of velocities Mass-Energy relation Four vector formalism
Illustrations/ Demonstration shown:	Postulates of Special theory of relativity
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Describe the Michel-Morley Experiment in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics and Oscillations	**Topic: Oscillations**
Learning objectives:	Students will gain knowledge about different types of oscillations and applications.
Previous knowledge required:	Basics definitions-motion, periodic motion, oscillations, Simple Harmonic motion etc
Synopsis:	Simple Harmonic Oscillator Physical characteristics of SHM Torsion and compound pendulum Combination of two mutually perpendicular Simple Harmonic Vibrations Lissajous figures Damped Harmonic Oscillator Forced Oscillator
Illustrations/ Demonstration shown:	Compound Pendulum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Physical Characteristics of SHM

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Kinetic Theory of Gases**
Learning objectives:	Student will be to understand kinetic theory gases, transport phenomena and its applications.
Previous knowledge required:	Basic definitions- kinetic energy, molecules, speed, velocity, viscosity, thermal conductivity, diffusion etc
Synopsis:	Postulates of kinetic theory of gases Maxwell's law of distribution of molecular speeds Viscosity of gases Thermal conductivity of gases Diffusion of gases
Illustrations/ Demonstration shown:	Diffusion of gases
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of Maxwell's law of distribution of molecular speeds

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamics**
Learning objectives:	Student will be to understand basics of thermodynamics and concept of entropy
Previous knowledge required:	Basic definitions –heat, temperature, entropy, reversible and irreversible processes etc
Synopsis:	Thermodynamic (Basics) Thermodynamic scale of temperature Change in entropy in reversible and irreversible processes Temperature –Entropy diagram and its applications Change of entropy of perfect gas Change of entropy when ice changes into steam
Illustrations/ Demonstration shown:	Change in entropy in reversible and irreversible processes
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Temperature –Entropy diagram and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamic potentials and Maxwell's relations**
Learning objectives:	Student will be to understand basics of thermodynamic potentials and Maxwell's equations
Previous knowledge required:	Basic definitions –heat, temperature, specific heats, perfect gas etc
Synopsis:	Thermodynamic potentials Maxwell's thermodynamic relations Ratio and difference of two specific heats for perfect gas Joule-Kelvin effect Joule-Kelvin coefficient for perfect gas and vanderwaals gas
Illustrations/ Demonstration shown:	Joule-Kelvin effect
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Thermodynamic potentials in detail.

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Low Temperature Physics**
Learning objectives:	Students will be able to understand the methods to produce low temperature and also applications
Previous knowledge required:	Basic definitions –heat, temperature, expansion, cooling, liquefaction, refrigeration etc
Synopsis:	Joule-Kelvin effect-Porous plug experiment Joule Thomson expansion Joule Thomson cooling Liquefaction of gases Principle of refrigeration
Illustrations/ Demonstration shown:	Joule-Kelvin effect-Porous plug experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Joule-Kelvin effect-Porous plug experiment

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Quantum theory of radiation**
Learning objectives:	Students will be able to gain knowledge about Quantum theory of radiation and Planck's law
Previous knowledge required:	Basic definitions –conduction, convection, radiation, heat, temperature, pyrometers, solar constant etc
Synopsis:	Ferry's black body-energy distribution in spectrum Wein's displacement law Quantum theory of radiation Planck's law Different pyrometers-Disappearing filament optical pyrometer, Angstrom's pyrometer etc
Illustrations/ Demonstration shown:	Ferry's black body-energy distribution in spectrum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Quantum theory of radiation and derive Planck's law

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Statistical Mechanics**
Learning objectives:	Students will be able to understand statistical mechanics concepts- ensembles, distribution laws and also applications
Previous knowledge required:	Basic concepts of classical mechanics , probability theorems etc
Synopsis:	Postulates of statistical mechanics Concept of ensembles Classical and quantum statistics Maxwell-Boltzmann statistics Bose-Einstein statistics Fermi-Dirac statistics
Illustrations/ Demonstration shown:	Concept of ensembles
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of statistical mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Electrostatics**
Learning objectives:	Students will be able to understand the concepts of electrostatics and its applications
Previous knowledge required:	Basic concepts-electric field, electric flux, types of charges and nature of charges, electric potential etc
Synopsis:	Gauss's law and its applications Conservative nature of electric field Concept Electric potential Relation between Electric field and Electric potential Potential energy of system of charges Energy density in an Electric field
Illustrations/ Demonstration shown:	Gauss's law and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression for Potential energy of system of charges

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Magnetostatics**
Learning objectives:	Students will be able to understand the concepts of Magnetostatics and its applications
Previous knowledge required:	Basic concepts-magnetic field, magnetic flux, magnetic poles, current, inductance, resistance etc
Synopsis:	Biot-Savart's law Force on a point charge in a magnetic fields Properties of Magnetic field Integral form of Ampere's law and applications Energy stored in magnetic field Ballistic galvanometer
Illustrations/ Demonstration shown:	Ballistic galvanometer
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Ballistic Galvanometer.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Electromagnetic Induction and Electromagnetic waves**
Learning objectives:	Students will be able to gain knowledge about Electromagnetic Induction and Electromagnetic waves and also applications.
Previous knowledge required:	Basic concepts-Electric field, Magnetic Field, Induction, Waves-longitudinal and transverse etc
Synopsis:	Faraday's laws of Induction Lenz's law Self and Mutual Induction Continuity equation Modification of Ampere's law Displacement current Maxwell equations Transverse nature of EM waves
Illustrations/ Demonstration shown:	Lenz's law Self and Mutual Induction
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Transverse nature of EM waves

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Varying and alternating currents**
Learning objectives:	Student will be able to understand varying and alternating currents and also applications
Previous knowledge required:	Basic concepts-current, voltage, power , resistor, inductor, capacitor etc
Synopsis:	Growth and decay of currents in LCR circuits Critical damping and Alternating currents Power in AC circuits Q-factor AC and DC motors
Illustrations/ Demonstration shown:	AC and DC motors
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu academy
Student activity planned/ homework given:	Explain about single phase and three phase motors.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Network Theorems**
Learning objectives:	Student will be able to gain knowledge about Network Theorems and also applications
Previous knowledge required:	Basic electrical components, electric circuits, various sources of current and voltage etc
Synopsis:	Passive Elements Active Elements Power sources Network models Network Theorems: Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, Maximum power transfer theorem.
Illustrations/ Demonstration shown:	Passive Elements Active Elements Power sources
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about passive elements and active elements.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Fundamentals of waves**
Learning objectives:	Student will be able to understand the fundamentals of waves and their significance.
Previous knowledge required:	Basic definitions-wave, amplitude, phase, frequency, vibrations, overtones etc
Synopsis:	Fundamentals of waves Transverse wave propagation along stretched string Overtones Energy Transport Transverse Impedance
Illustrations/ Demonstration shown:	Fundamentals of waves
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Transverse wave propagation along stretched string

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Longitudinal vibrations in bars**
Learning objectives:	Student will be able to understand longitudinal vibrations and transverse vibrations in bars.
Previous knowledge required:	Basic definitions – longitudinal waves, transverse waves, tuning fork etc
Synopsis:	Longitudinal vibrations in bars-wave equation and its general solution Transverse vibrations in bars-wave equation and its general solution Tuning fork
Illustrations/ Demonstration shown:	Tuning fork
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about Tuning Fork and its significance

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Interference(Division of wave front)**
Learning objectives:	Students will gain knowledge about interference and conditions for interference and its applications.
Previous knowledge required:	Basic definitions- light, coherence, wave front, reflection, Wavelength, phase etc
Synopsis:	Principle of Superposition Conditions for interference of light Fresnel's biprism experiment Change of phase on reflection Lloyd's mirror experiment
Illustrations/ Demonstration shown:	Fresnel's Biprism experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	State the Conditions for interference of light

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Wave and Optics	**Topic: Interference(Division of amplitude)**
Learning objectives:	Students will gain knowledge about interference by division of amplitude
Previous knowledge required:	Basics definitions- light, coherence, wave front, reflection, transmission, amplitude, wavelength, phase etc
Synopsis:	Colours of thin films Non-reflecting films Wedge shaped film Newton's rings Michelson interferometer Types of fringes
Illustrations/ Demonstration shown:	Colours of thin films
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Michelson interferometer in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Diffraction**
Learning objectives:	Student will be to understand the concepts of diffraction and its significance
Previous knowledge required:	Basic definitions- diffraction, slit, resolution, grating, convex lens etc
Synopsis:	Fraunhoffer diffraction-single slit, circular aperture, double slit and diffraction grating. Resolving power of grating Fresnel's diffraction- Fresnel's half period zones, zone plate , Phase reversal zone plate etc
Illustrations/ Demonstration shown:	Fraunhoffer diffraction-single slit
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about Fraunhoffer diffraction due to single slit

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Polarisation**
Learning objectives:	Student will be to understand concept of polarisation, methods of polarisation and also applications
Previous knowledge required:	Basic definitions –polarised light, polarisation, reflection, refraction, scattering , polariser, analyser etc
Synopsis:	Polarised light-methods of polarisation Brewster's law Malus law Nicol's prism Positive and Negative crystals Quater wave plate and Half wave plate Babinet's compensator Laurent's Half shade polarimeter
Illustrations/ Demonstration shown:	Laurent's Half shade polarimeter
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nicol's prism.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Atomic Spectra**
Learning objectives:	Student will be to understand basics of atomic spectra and its significance.
Previous knowledge required:	Basic concepts-atomic structure, atomic models and their drawbacks.
Synopsis:	Bohr's atomic model and its drawbacks Sommerfeld's atomic model Stern-Gerlach experiment Vector atom model and quantum numbers Spectra of alkali atoms Doublet fine structure Zeeman Effect and Stark effect Paschen-Back effect
Illustrations/ Demonstration shown:	Stern-Gerlach experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Zeeman Effect and Stark effect

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Molecular Spectroscopy**
Learning objectives:	Students will be able to understand the molecular spectroscopy and its significance
Previous knowledge required:	Basic concepts-atoms, elements, molecules ,spectrum, Inter nuclear distance, rotational energy, vibrational energy etc
Synopsis:	Types of molecular spectra Pure rotational energies and spectrum of diatomic molecule Vibrational energies and spectrum of diatomic molecule Classical theory of Raman effect Raman effect experiment and its applications
Illustrations/ Demonstration shown:	Raman effect experiment and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Raman effect experiment and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Matter waves and Uncertainty principle**
Learning objectives:	Students will be able to gain knowledge about matter waves and Uncertainty principle and its significance
Previous knowledge required:	Basic concepts of Classical Physics, atomic structure, atomic models, spectral radiation, matter waves etc
Synopsis:	Photoelectric effect Compton' effect De-Broglie hypothesis Phase and Group velocities Davisson and Germer experiment Heisenberg's uncertainty principle Complementary principle of Bohr
Illustrations/ Demonstration shown:	Photoelectric effect
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain in detail about Compton's effect and its experimental verification

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Schrodinger wave equation**
Learning objectives:	Students will be able to understand and derive Schrodinger's wave equations
Previous knowledge required:	Basic concepts of quantum mechanics, matter waves, wave equations, wave functions, operators, eigen functions ,eigen values etc
Synopsis:	Schrodinger time dependent wave equation Schrodinger time independent wave equation Wave function properties-significance Postulates of quantum mechanics Eigen functions and eigen values
Illustrations/ Demonstration shown:	Wave function properties-significance
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of quantum mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Nuclear Structure**
Learning objectives:	Students will be able to understand the basics concepts of atoms –nuclear structure, properties of nucleus, nuclear models etc
Previous knowledge required:	Basic concepts- atom, atomic structure, nulear structure, nuclear properties etc
Synopsis:	Basic properties of nucleus Binding energy of nucleus Nuclear forces and nature of nuclear forces Nuclear models- liquid drop model and shell model and significance of magic numbers
Illustrations/ Demonstration shown:	Basic properties of nucleus
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about Nuclear forces and nature of nuclear forces

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Alpha and Beta decay and Particle detectors**
Learning objectives:	Students will be able to understand the concepts of nuclear radiations, alpha and beta decay, particle detectors .
Previous knowledge required:	Basic concepts- radioactive elements, radioactivity, types of nuclear radiations etc
Synopsis:	Range of alpha particles Geiger-Nuttal law Gamow's theory of alpha decay Beta spectrum Neutrino hypothesis GM counter Proportional counter Scintillation counter
Illustrations/ Demonstration shown:	Proportional counter
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of GM counter

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Modern Physics	**Topic: Solid State Physics and Crystallography**
Learning objectives:	Students will be able to gain knowledge about Crystal structure, X-Ray diffraction, Bonding in Crystals etc
Previous knowledge required:	Basic concepts-Types of solids, crystals, diffraction , bonds in solids
Synopsis:	Crystalline nature of matter Crystal systems Miller Indices Simple crystal structure Diffraction of X-Rays by crystals Types of bonding in crystals Lattice energy of ionic crystals Born-Haber cycle
Illustrations/ Demonstration shown:	Crystalline nature of matter
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the different types of bonding in crystals

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Band theory of P-N junction**
Learning objectives:	Student will be able to understand band theory in solids, types of semiconductors etc
Previous knowledge required:	Basic concepts- Classification of solids, conductors, semi-conductors ,insulators etc
Synopsis:	Energy band in solids Intrinsic Semiconductors Extrinsic Semiconductors N-type semi conductors P-type semi conductors Fermi level Continuity Equation
Illustrations/ Demonstration shown:	Energy band in solids
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu academy
Student activity planned/ homework given:	Explain in detail about N-type semi conductors and P-type semi conductors

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Diodes**
Learning objectives:	Student will be able to gain knowledge about Diodes and its applications.
Previous knowledge required:	Basic electrical components, electric circuits, types of semiconductors, doping , ac and dc currents etc
Synopsis:	P-NJunction diode Half wave rectifier Full wave rectifier Bridge rectifier Zener diode and its characteristics Zener diode – voltage regulator
Illustrations/ Demonstration shown:	P-NJunction diode
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about the construction and working of P-N Junction diode

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Bipolar Junction Transistor**
Learning objectives:	Student will be able to understand the basic concepts of BJT and its applications
Previous knowledge required:	Basic definitions-types of semiconductors, transistor, current, amplifier, frequency etc
Synopsis:	BJT –basic concept p-n-p and n-p-n transistors-construction and working current components in transistor CB,CE,CC configuration Transistor as amplifier RC coupled amplifier-frequency response
Illustrations/ Demonstration shown:	p-n-p and n-p-n transistors-construction and working
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the current components in a transistor

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Feedback and Oscillators**
Learning objectives:	Student will be able to understand the concept of feedback – its significance and oscillators –its applications
Previous knowledge required:	Basic definitions-Feedback and oscillators
Synopsis:	Concept of Feedback General theory of feedback Concepts of oscillators Barkhausen's criterion Phase shift oscillator
Illustrations/ Demonstration shown:	General theory of feedback
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about General theory of feedback

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Special Devices**
Learning objectives:	Students will gain knowledge about Special devices and their role in the manufacturing of electronic devices.
Previous knowledge required:	Basic concepts-semiconductors, P-N junction diodes, transistors, BJT etc
Synopsis:	Photo diode Schottky diode Solar cell FET-as amplifier UJT-as relaxation oscillator SCR-as a switch
Illustrations/ Demonstration shown:	Solar cell
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Photo diode

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Digital Electronics**
Learning objectives:	Students will gain knowledge about Digital Electronics and their applications
Previous knowledge required:	Basics concepts of electronics, number systems etc
Synopsis:	Binary number system Binary addition and subtraction 1's and 2's complement Decimal number system Hexa decimal number system
Illustrations/ Demonstration shown:	1's and 2's complement
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about 1's and 2's complement

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Electronics	**Topic: Logic Gates**
Learning objectives:	Student will be to understand the concepts of logic gates and their applications
Previous knowledge required:	Basic concepts of logic gates-Truth tables, Boolean algebra , Boolean laws etc
Synopsis:	OR gate AND gate NOT gate NAND and NOR gates-as universal gates EX-OR gate De-Morgan's laws- verification
Illustrations/ Demonstration shown:	Verification of Truth tables of Logic gates
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about OR gate, AND gate and NOT gate.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Nano Structures**
Learning objectives:	Student will be to understand concepts of Nano materials and their applications etc
Previous knowledge required:	Basic concepts like units and dimensions, different length scales, nanoscale etc
Synopsis:	1D,2D and 3D nanostructures Band structure and density of states Size effects in nano systems Quantum confinement in 1D Quantum confinement in 2D Quantum confinement in 3D Consequences of quantum confinement
Illustrations/ Demonstration shown:	1D,2D and 3D nanostructures
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Explain the 1D,2D and 3D nanostructures

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Synthesis of Nanostructure materials and Characterisation**
Learning objectives:	Student will be to gain knowledge about various methods of synthesis of nano structured materials
Previous knowledge required:	Basic concepts of nano materials- nanosize, quantum confinement, condensation, evaporation, colloids etc
Synopsis:	Top down and bottom up approach Physical vapour deposition Chemical vapour deposition Sol-Gel method X-Ray diffraction Scanning Electron Microscopy Transmission Electron Microscopy Scanning Tunneling Microscopy
Illustrations/ Demonstration shown:	Top down and bottom up approach
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Explain the construction and working of the Scanning Electron Microscopy in detail

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Optical Properties and Electron Transport**
Learning objectives:	Students will be able to understand the Optical properties of nanostructures and Electron Transport in nano structures
Previous knowledge required:	Basic concepts- nanostructures, dielectric constant, band gap, defects, impurities etc
Synopsis:	Dielectric constant for nanostructure Charging of nanostructure Quasi particles and excitons Radiative processes-absorption, emission and luminescence Optical properties of heterostructures Carrier transport in nanostructures Coulomb blockade effect Deep level and surface defects
Illustrations/ Demonstration shown:	Optical properties of nanostructures
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Explain the Optical properties of nanostructures

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: NanoScience	**Topic: Applications**
Learning objectives:	Students will be able to gain knowledge about the various applications of nanomaterials
Previous knowledge required:	Basic concepts –nano materials, quantum dots, nano wires, nano thin films ,carbon nanotubes etc
Synopsis:	Applications of nano materials Photonic devices-LED and Solar cell Single electron devices CNT based transistors Quantum dots heterostructure lasers Optical switching and data storage Micro Electromechanical Systems Nano Electromechanical Systems
Illustrations/ Demonstration shown:	Photonic devices-LED and Solar cell
Teaching aids used:	Textbook, board and chalk ICT
References:	NanoScience (Unified Physics)
Student activity planned/ homework given:	Write the applications of nano materials in detail

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Vector Analysis**
Learning objectives:	Student will be able to understand the various methods to analyse the vector fields, theorems and simple applications.
Previous knowledge required:	Scalar and Vector quantities Properties of scalars and vectors Basics of Integration and Differentiation
Synopsis:	Scalar and vector fields Gradient of scalar field Divergence and curl of vector field Vector Integration Stokes Theorem Gauss's Theorem Green's Theorem
Illustrations/ Demonstration shown:	
Teaching aids used:	Textbook, board and chalk
References:	First Year Physics-Telugu academy
Student activity planned/ homework given:	Problems related to the topics mentioned above.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Mechanics of Particles**
Learning objectives:	Student will be able to gain knowledge about laws of motion, motion of rocket and collisions
Previous knowledge required:	Basic definitions – motion, mass, energy, momentum, collision etc Newton's Laws of motion.
Synopsis:	Laws of motion Motion of variable mass system Motion of rocket Multi stage rocket Collisions in two and three dimensions Concept of impact parameter and scattering cross -section
Illustrations/ Demonstration shown:	Motion of rocket
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To explain the motion of system of variable mass.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Mechanics of Rigid Bodies**
Learning objectives:	Student will be able to understand the concepts related to rigid bodies, Euler's equations, Gyroscope etc
Previous knowledge required:	Basic definitions of mechanics-rigid body, rotational motion, angular momentum etc
Synopsis:	Concept of Rigid body Rotational kinematics relations Equation of motion of rotating body Angular momentum and inertial tensor Euler's equations Precession of top Gyroscope
Illustrations/ Demonstration shown:	Precession of top Gyroscope
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To describe the construction and working of gyroscope and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Central Forces**
Learning objectives:	Student will be able to understand concepts of central forces and Kepler's laws
Previous knowledge required:	Basic definitions – central forces ,potential energy, gravitational field and gravitational potential etc
Synopsis:	Central forces and examples Conservative nature of central forces Negative gradient of potential Equation of motion under central force Gravitational potential and gravitational field Motion under inverse square law Kepler's laws
Illustrations/ Demonstration shown:	Examples of central forces
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	State and derive Kepler's laws.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Special Theory of Relativity**
Learning objectives:	Students will gain knowledge about concepts of special theory of relativity-absolute frames, Lorentz transformation, mass-energy relation etc
Previous knowledge required:	Basic definitions and concepts of classical mechanics
Synopsis:	Galilean relativity Absolute frames Michelson –Morley experiment Postulates of Special theory of relativity Lorentz transformation Time dilation, Length contraction , addition of velocities Mass-Energy relation Four vector formalism
Illustrations/ Demonstration shown:	Postulates of Special theory of relativity
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Describe the Michel-Morley Experiment in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Kinetic Theory of Gases**
Learning objectives:	Student will be to understand kinetic theory gases, transport phenomena and its applications.
Previous knowledge required:	Basic definitions- kinetic energy, molecules, speed, velocity, viscosity, thermal conductivity, diffusion etc
Synopsis:	Postulates of kinetic theory of gases Maxwell's law of distribution of molecular speeds Viscosity of gases Thermal conductivity of gases Diffusion of gases
Illustrations/ Demonstration shown:	Diffusion of gases
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of Maxwell's law of distribution of molecular speeds

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamics**
Learning objectives:	Student will be to understand basics of thermodynamics and concept of entropy
Previous knowledge required:	Basic definitions –heat, temperature, entropy, reversible and irreversible processes etc
Synopsis:	Thermodynamic (Basics) Thermodynamic scale of temperature Change in entropy in reversible and irreversible processes Temperature –Entropy diagram and its applications Change of entropy of perfect gas Change of entropy when ice changes into steam
Illustrations/ Demonstration shown:	Change in entropy in reversible and irreversible processes
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Temperature –Entropy diagram and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamic potentials and Maxwell's relations**
Learning objectives:	Student will be to understand basics of thermodynamic potentials and Maxwell's equations
Previous knowledge required:	Basic definitions –heat, temperature, specific heats, perfect gas etc
Synopsis:	Thermodynamic potentials Maxwell's thermodynamic relations Ratio and difference of two specific heats for perfect gas Joule-Kelvin effect Joule-Kelvin coefficient for perfect gas and vanderwaals gas
Illustrations/ Demonstration shown:	Joule-Kelvin effect
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Thermodynamic potentials in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Low Temperature Physics**
Learning objectives:	Students will be able to understand the methods to produce low temperature and also applications
Previous knowledge required:	Basic definitions –heat, temperature, expansion, cooling, liquefaction, refrigeration etc
Synopsis:	Joule-Kelvin effect-Porous plug experiment Joule Thomson expansion Joule Thomson cooling Liquefaction of gases Principle of refrigeration
Illustrations/ Demonstration shown:	Joule-Kelvin effect-Porous plug experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Joule-Kelvin effect-Porous plug experiment

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Quantum theory of radiation**
Learning objectives:	Students will be able to gain knowledge about Quantum theory of radiation and Planck's law
Previous knowledge required:	Basic definitions –conduction, convection, radiation, heat, temperature, pyrometers, solar constant etc
Synopsis:	Ferry's black body-energy distribution in spectrum Wein's displacement law Quantum theory of radiation Planck's law Different pyrometers-Disappearing filament optical pyrometer, Angstrom's pyrometer etc
Illustrations/ Demonstration shown:	Ferry's black body-energy distribution in spectrum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Quantum theory of radiation and derive Planck's law

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Statistical Mechanics**
Learning objectives:	Students will be able to understand statistical mechanics concepts- ensembles, distribution laws and also applications
Previous knowledge required:	Basic concepts of classical mechanics , probability theorems etc
Synopsis:	Postulates of statistical mechanics Concept of ensembles Classical and quantum statistics Maxwell-Boltzmann statistics Bose-Einstein statistics Fermi-Dirac statistics
Illustrations/ Demonstration shown:	Concept of ensembles
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of statistical mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Electrostatics**
Learning objectives:	Students will be able to understand the concepts of electrostatics and its applications
Previous knowledge required:	Basic concepts-electric field, electric flux, types of charges and nature of charges, electric potential etc
Synopsis:	Gauss's law and its applications Conservative nature of electric field Concept Electric potential Relation between Electric field and Electric potential Potential energy of system of charges Energy density in an Electric field
Illustrations/ Demonstration shown:	Gauss's law and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression for Potential energy of system of charges

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Magnetostatics**
Learning objectives:	Students will be able to understand the concepts of Magnetostatics and its applications
Previous knowledge required:	Basic concepts-magnetic field, magnetic flux, magnetic poles, current, inductance, resistance etc
Synopsis:	Biot-Savart's law Force on a point charge in a magnetic fields Properties of Magnetic field Integral form of Ampere's law and applications Energy stored in magnetic field Ballistic galvanometer
Illustrations/ Demonstration shown:	Ballistic galvanometer
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Ballistic Galvanometer.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Electromagnetic Induction and Electromagnetic waves**
Learning objectives:	Students will be able to gain knowledge about Electromagnetic Induction and Electromagnetic waves and also applications.
Previous knowledge required:	Basic concepts-Electric field, Magnetic Field, Induction, Waves-longitudinal and transverse etc
Synopsis:	Faraday's laws of Induction Lenz's law Self and Mutual Induction Continuity equation Modification of Ampere's law Displacement current Maxwell equations Transverse nature of EM waves
Illustrations/ Demonstration shown:	Lenz's law Self and manual induction
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Transverse nature of EM waves

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Varying and alternating currents**
Learning objectives:	Student will be able to understand varying and alternating currents and also applications
Previous knowledge required:	Basic concepts-current, voltage, power , resistor, inductor, capacitor etc
Synopsis:	Growth and decay of currents in LCR circuits Critical damping and Alternating currents Power in AC circuits Q-factor AC and DC motors
Illustrations/ Demonstration shown:	AC and DC motors
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu academy
Student activity planned/ homework given:	Explain about single phase and three phase motors.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electromagnetic Theory	**Topic: Network Theorems**
Learning objectives:	Student will be able to gain knowledge about Network Theorems and also applications
Previous knowledge required:	Basic electrical components, electric circuits, various sources of current and voltage etc
Synopsis:	Passive Elements Active Elements Power sources Network models Network Theorems: Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, Maximum power transfer theorem.
Illustrations/ Demonstration shown:	Passive Elements Active Elements Power sources
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about passive elements and active elements.

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Fundamentals of waves**
Learning objectives:	Student will be able to understand the fundamentals of waves and their significance.
Previous knowledge required:	Basic definitions-wave, amplitude, phase, frequency, vibrations, overtones etc
Synopsis:	Fundamentals of waves Transverse wave propagation along stretched string Overtones Energy Transport Transverse Impedance
Illustrations/ Demonstration shown:	Fundamentals of waves
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Transverse wave propagation along stretched string

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Longitudinal vibrations in bars**
Learning objectives:	Student will be able to understand longitudinal vibrations and transverse vibrations in bars.
Previous knowledge required:	Basic definitions – longitudinal waves, transverse waves, tuning fork etc
Synopsis:	Longitudinal vibrations in bars-wave equation and its general solution Transverse vibrations in bars-wave equation and its general solution Tuning fork
Illustrations/ Demonstration shown:	Tuning fork
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about Tuning Fork and its significance

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Interference(Division of wave front)**
Learning objectives:	Students will gain knowledge about interference and conditions for interference and its applications.
Previous knowledge required:	Basic definitions- light, coherence, wave front, reflection, Wavelength, phase etc
Synopsis:	Principle of Superposition Conditions for interference of light Fresnel's biprism experiment Change of phase on reflection Lloyd's mirror experiment
Illustrations/ Demonstration shown:	Fresnel's Biprism experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	State the Conditions for interference of light

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Wave and Optics	**Topic: Interference(Division of amplitude)**
Learning objectives:	Students will gain knowledge about interference by division of amplitude
Previous knowledge required:	Basics definitions- light, coherence, wave front, reflection, transmission, amplitude, wavelength, phase etc
Synopsis:	Colours of thin films Non-reflecting films Wedge shaped film Newton's rings Michelson interferometer Types of fringes
Illustrations/ Demonstration shown:	Colours of thin films
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Michelson interferometer in detail.

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Diffraction**
Learning objectives:	Student will be to understand the concepts of diffraction and its significance
Previous knowledge required:	Basic definitions- diffraction, slit, resolution, grating, convex lens etc
Synopsis:	Fraunhoffer diffraction-single slit, circular aperture, double slit and diffraction grating. Resolving power of grating Fresnel's diffraction- Fresnel's half period zones, zone plate , Phase reversal zone plate etc
Illustrations/ Demonstration shown:	Fraunhoffer diffraction-single slit
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about Fraunhoffer diffraction due to single slit

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Waves and Optics	**Topic: Polarisation**
Learning objectives:	Student will be to understand concept of polarisation, methods of polarisation and also applications
Previous knowledge required:	Basic definitions –polarised light, polarisation, reflection, refraction, scattering , polariser, analyser etc
Synopsis:	Polarised light-methods of polarisation Brewster's law Malus law Nicol's prism Positive and Negative crystals Quater wave plate and Half wave plate Babinet's compensator Laurent's Half shade polarimeter
Illustrations/ Demonstration shown:	Laurent's Half shade polarimeter
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nicol's prism.

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electrical Circuit Networking	**Topic: Basic Electricity principles ,Electrical circuits, Electrical drawing and symbols**
Learning objectives:	Student will be able to understand basic electricity principles, electrical circuits, electrical drawing and symbols.
Previous knowledge required:	Basic definitions-Voltage, Current, Resistance, Power, Ohm's law, AC and DC electricity, etc
Synopsis:	Series, parallel and combination circuits Familiarization with multi meter, voltmeter and ammeter Rules to analyse DC powered sourced electrical circuits Single phase and three phase AC sources Rules to analyse AC powered sourced electrical circuits Blueprints and reading schematics Reading of circuit schematics
Illustrations/ Demonstration shown:	Series, parallel and combination circuits
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Write about Series, parallel and combination circuits

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electrical Circuit Networking	**Topic: Generators and Transformers, Electric motors and Solid State devices**
Learning objectives:	Student will be able to gain knowledge about the Generators, Transformers, Electric motors and Solid State Devices and their significances
Previous knowledge required:	Basic definitions- Inductance, Capacitance, Impedance, Generators, Transformers, Electric motors , diodes, rectifiers etc
Synopsis:	AC and DC generators Working of transformers Single phase, Three phase and DC motors Diodes- PN Junction diode and Zener diode Rectifiers-Half wave rectifier and Full wave rectifier
Illustrations/ Demonstration shown:	DC generators
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Explain the construction and working of transformer

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Electrical Circuit Networking	**Topic: Electrical Protection, Electrical Wiring and Splices**
Learning objectives:	Student will be able to understand about the basic concepts of electrical protection
Previous knowledge required:	Basic definitions-relays, fuses, disconnect switches, circuit breakers etc
Synopsis:	Overload devices Ground fault protection Grounding and isolating Surge protection Different types conductors and cables Basics of wiring Wire nuts, terminal blocks, bolts etc Preparation of extension board
Illustrations/ Demonstration shown:	Different types conductors and cables
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Explain about Overload devices in detail

Sign of the faculty

Principal’s sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Basic Instrumentation	**Topic: Basics of measurement and Electronic voltmeter**
Learning objectives:	Students will be able to understand basics of measurements and principles of measurements
Previous knowledge required:	Basic definition – accuracy, precision, sensitivity, resolution range, errors, voltage, current, resistance , multi meter, voltmeter, rectifier, amplifier etc
Synopsis:	Errors in measurements and loading effects Measurement of voltage and current(dc) Measurement of voltage and current(ac) Specifications of multi meter Specifications of electronic voltmeter AC millivoltmeter
Illustrations/ Demonstration shown:	Multi meter and its specifications
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical technology- B L Theraja
Student activity planned/ homework given:	Write the about AC milli voltmeter with diagram

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Basic Instrumentation	**Topic: Cathode Ray Oscilloscope**
Learning objectives:	Students will be able to understand the about Cathode Ray Oscilloscope and its uses
Previous knowledge required:	Basic concepts- current, voltage, frequency, power, time period probes etc
Synopsis:	Block diagram of basic CRO Construction of CRT Specifications of CRO and their significance Use of CRO foe the measurement of voltage, ac and dc frequency, time period etc Digital Storage Oscilloscope-block diagram and principle of working
Illustrations/ Demonstration shown:	Working of CRO
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical technology- B L Theraja
Student activity planned/ homework given:	Write about the Construction of CRT

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Basic Instrumentation	**Topic: Signal Generators and Analysis Instruments**
Learning objectives:	Students will be able to understand the concepts of signal generators and analysis instruments
Previous knowledge required:	Basic definitions-wave, frequency, signal, pulse, distortion factor etc
Synopsis:	Signal generators-block diagram, explanation and specifications Pulse generators-block diagram, explanation and specifications Function generators-block diagram, explanation and specifications Brief idea for testing, wave analysis etc
Illustrations/ Demonstration shown:	Signal generators-block diagram, explanation and specifications
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical technology- B L Theraja
Student activity planned/ homework given:	Explain the specifications of function generators in detail

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Basic Instrumentation	**Topic: Impedance bridges and Q-meters** **Digital Instruments and Digital Multi meter**
Learning objectives:	Students will be able to gain knowledge about Impedance bridges, Q-meters, Digital Instruments and Digital Multi meter
Previous knowledge required:	Basic definitions-digital meter, analog and digital, time interval, frequency, accuracy, resolution etc
Synopsis:	Working principle of basic RLC Block diagram and working principles of Q-meters Principle and working of digital meters Comparison of analog and digital instruments Working principle of digital voltmeter Block diagram and working of digital multi meter
Illustrations/ Demonstration shown:	Principle and working of digital meters
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical technology- B L Theraja
Student activity planned/ homework given:	Comparison of analog and digital instruments

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Electrostatics**
Learning objectives:	Students will be able to understand the concepts of electrostatics and its applications
Previous knowledge required:	Basic concepts-electric field, electric flux, types of charges and nature of charges, electric potential etc
Synopsis:	Gauss's law and its applications Conservative nature of electric field Concept Electric potential Relation between Electric field and Electric potential Potential energy of system of charges Energy density in an Electric field
Illustrations/ Demonstration shown:	Gauss's law and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression for Potential energy of system of charges

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Magnetostatics**
Learning objectives:	Students will be able to understand the concepts of Magnetostatics and its applications
Previous knowledge required:	Basic concepts-magnetic field, magnetic flux, magnetic poles, current, inductance, resistance etc
Synopsis:	Biot-Savart's law Force on a point charge in a magnetic fields Properties of Magnetic field Integral form of Ampere's law and applications Energy stored in magnetic field Ballistic galvanometer
Illustrations/ Demonstration shown:	Ballistic galvanometer
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Ballistic Galvanometer.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Electromagnetic Induction**
Learning objectives:	Students will be able to gain knowledge about Electromagnetic Induction and its applications.
Previous knowledge required:	Basic concepts-Electric field, Magnetic Field, Induction, Lenz's law etc
Synopsis:	Faraday's laws of Induction Lenz's law Self and Mutual Induction Continuity equation Modification of Ampere's law Displacement current Maxwell equations
Illustrations/ Demonstration shown:	Lenz's law
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	State and explain Faraday's laws of Induction

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Electromagnetic Waves**
Learning objectives:	Student will be able to understand about propagation and nature of the electromagnetic waves
Previous knowledge required:	Basic concepts – types of waves, electric field , magnetic field, polarization, reflection, transmission etc
Synopsis:	Maxwell's equations in vacuum and dielectric medium Plane wave equation Transverse nature of EM waves Velocity of light in vacuum and in medium Polarisation of EM waves Linear, circular and elliptical polarization
Illustrations/ Demonstration shown:	Velocity of light in vacuum and in medium
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu academy
Student activity planned/ homework given:	Explain about Transverse nature of EM waves

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Solid State Physics	**Topic: Crystal structure and Elementary lattice dynamics**
Learning objectives:	Students will be able to understand the basics concepts of Crystal structure and elementary lattice dynamics
Previous knowledge required:	Basic concepts-solids, crystals, amorphous, lattice, basis, unit cell etc
Synopsis:	Amorphous and Crystalline materials Lattice translation vectors Miller indices Types of lattices Diffraction of X-rays by crystals Lattice vibrations and Phonons Dulong-Petit's law Einstein and Debye theories of specific heats
Illustrations/ Demonstration shown:	Amorphous and Crystalline materials
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain in detail about different types of lattices

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Solid State Physics	**Topic: Magnetic Properties of matter and Dielectric properties of materials**
Learning objectives:	Students will be able to understand magnetic properties of matter and dielectric properties of materials
Previous knowledge required:	Basic concepts- types of magnetic materials, polarization, Electric field, susceptibility etc
Synopsis:	Langevin's theory Curie's law Weiss's theory of ferromagnetism B-H curve Local Electric field of an atom Clausius Mostti equation
Illustrations/ Demonstration shown:	B-H curve
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Weiss's theory of ferromagnetism

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject:Solid State Physics	**Topic: Elementary Band Theory**
Learning objectives:	Students will be able to gain knowledge about elementary band theory in solids
Previous knowledge required:	Basic concepts- matter, solids, conductors, insulators, semi conductors, band gap etc
Synopsis:	Kronig Penny model Brillouin zones Effective mass of electron P and N type semi conductors Conductivity of semiconductor Four probe method Hall coefficient
Illustrations/ Demonstration shown:	P and N type semi conductors
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Student activity planned/ homework given:

Sign of the faculty

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Solid State Physics	**Topic: Lasers and Superconductivity**
Learning objectives:	Students will be able to gain knowledge about lasers and superconductivity
Previous knowledge required:	Basic concepts- light, laser, conductors, magnetic field superconductors, temperature, isotopes etc
Synopsis:	Einstein's A and B coefficients Spontaneous and stimulated emissions Three level and Four level lasers Ruby laser and He-Ne laser London' s equations BCS theory
Illustrations/ Demonstration shown:	Ruby laser and He-Ne laser
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive Einstein's A and B coefficients

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: Atomic Spectra and models Inadequacy of classical physics**
Learning objectives:	Student will be to understand basics of atomic spectra -atomic models and their significance
Previous knowledge required:	Basic concepts-atom, sub atomic particles, atomic structure etc.
Synopsis:	Photoelectric effect Compton effect Atomic spectra Alpha particle scattering Rutherford atomic model and its limitations Bohr's model of Hydrogen Frank Hertz Experiment Somerfeld's modification of Bohr's theory
Illustrations/ Demonstration shown:	Alpha particle scattering
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Bohr's model of Hydrogen

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: : Matter waves and Uncertainty principle**
Learning objectives:	Students will be able to understand the wave particle duality, matter waves and uncertainty principle
Previous knowledge required:	Basic concepts-matter waves, superposition of two waves, phase velocity and group velocity etc
Synopsis:	Davisson Germer Experiment Wave particle duality Gaussian wave packet Heisenberg's uncertainty principle Time independent Schrodinger's wave equation Time dependent Schrodinger's wave equation Non-existence of electron in nucleus
Illustrations/ Demonstration shown:	Davisson Germer Experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Heisenberg's uncertainty principle

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: : Nuclear Physics**
Learning objectives:	Students will be able to understand the basics concepts of atoms –nuclear structure, properties of nucleus, nuclear models etc
Previous knowledge required:	Basic concepts- atom, atomic structure, nuclear structure, nuclear properties etc
Synopsis:	Basic properties of nucleus Binding energy of nucleus Nuclear forces and nature of nuclear forces NZ graph Nuclear models- liquid drop model and Nuclear shell model and magic numbers
Illustrations/ Demonstration shown:	Basic properties of nucleus
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain in detail about Binding energy of nucleus

Sign of the faculty

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: Radioactivity and Nuclear Reactor**
Learning objectives:	Students will be able to understand about radioactivity, nuclear radiations, nuclear reactions, nuclear reactor etc
Previous knowledge required:	Basic concepts of atoms, sub atomic particles, atomic structure, stability of atoms , nuclear reactor etc
Synopsis:	Radioactivity Stability of nucleus Alpha decay and Beta decay Gamma ray emission Nuclear reactions-fusion and fission Nuclear reactor Classification of elementary particles
Illustrations/ Demonstration shown:	Nuclear reactions-fusion and fission
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nuclear reactor

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Basic Electronics	**Topic: Network Elements and Network Theorems**
Learning objectives:	Student will be able to gain knowledge about Network Elements and Network theorems
Previous knowledge required:	Basic electrical components, electric circuits, various sources of current and voltage etc
Synopsis:	Passive Elements Active Elements Power sources Network models Network Theorems: Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, Maximum power transfer theorem Two port networks
Illustrations/ Demonstration shown:	Passive Elements Active Elements Power sources
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about passive elements and active elements.

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Band theory of P-N junction**
Learning objectives:	Student will be able to understand band theory in solids, types of semiconductors etc
Previous knowledge required:	Basic concepts- Classification of solids, conductors, semi-conductors ,insulators etc
Synopsis:	Energy band in solids Intrinsic Semiconductors Extrinsic Semiconductors N-type semi conductors P-type semi conductors Fermi level Continuity Equation
Illustrations/ Demonstration shown:	Energy band in solids
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu academy
Student activity planned/ homework given:	Explain in detail about N-type semi conductors and P-type semi conductors

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Diodes**
Learning objectives:	Student will be able to gain knowledge about Diodes and its applications.
Previous knowledge required:	Basic electrical components, electric circuits, types of semiconductors, doping , ac and dc currents etc
Synopsis:	P-NJunction diode Half wave rectifier Full wave rectifier Bridge rectifier Zener diode and its characteristics Zener diode – voltage regulator
Illustrations/ Demonstration shown:	P-NJunction diode
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about the construction and working of P-N Junction diode

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Bipolar Junction Transistor**
Learning objectives:	Student will be able to understand the basic concepts of BJT and its applications
Previous knowledge required:	Basic definitions-types of semiconductors, transistor, current, amplifier, frequency etc
Synopsis:	BJT –basic concept p-n-p and n-p-n transistors-construction and working current components in transistor CB,CE,CC configuration Transistor as amplifier RC coupled amplifier-frequency response
Illustrations/ Demonstration shown:	p-n-p and n-p-n transistors-construction and working
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the current components in a transistor

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Feedback and Oscillators**
Learning objectives:	Student will be able to understand the concept of feedback –its significance and oscillators –its applications
Previous knowledge required:	Basic definitions-Feedback and oscillators
Synopsis:	Concept of Feedback General theory of feedback Concepts of oscillators Barkhausen's criterion Phase shift oscillator
Illustrations/ Demonstration shown:	General theory of feedback
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about General theory of feedback

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Digital Electronics**
Learning objectives:	Students will gain knowledge about Digital Electronics and their applications
Previous knowledge required:	Basics concepts of electronics, number systems etc
Synopsis:	Binary number system Binary addition and subtraction 1's and 2's complement Decimal number system Hexa decimal number system
Illustrations/ Demonstration shown:	1's and 2's complement
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about 1's and 2's complement

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Logic Gates**
Learning objectives:	Student will be to understand the concepts of logic gates and their applications
Previous knowledge required:	Basic concepts of logic gates-Truth tables, Boolean algebra , Boolean laws etc
Synopsis:	OR gate AND gate NOT gate NAND and NOR gates-as universal gates EX-OR gate De-Morgan's laws- verification
Illustrations/ Demonstration shown:	Verification of Truth tables of Logic gates
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about OR gate, AND gate and NOT gate.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Principles of Solar energy and collection**
Learning objectives:	Student will be to understand the principles of solar energy and collection
Previous knowledge required:	Basic concepts like sources of energy, renewable energy and non-renewable energy sources etc
Synopsis:	Non-Renewable energy sources-Principles of power generation and transmission Advantages and disadvantages of conventional power plants Environmental impact of solar power Solar constant and Solar radiation Instruments for measuring solar radiation
Illustrations/ Demonstration shown:	A model of conventional thermal power plant
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	What are the advantages and disadvantages of conventional power plants

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Solar energy storage and Applications**
Learning objectives:	Student will be to gain knowledge about Solar Energy Storage and its applications
Previous knowledge required:	Basic concepts of solar energy, solar constant, solar radiation, solar panels etc
Synopsis:	Solar Energy collectors Flate plate collectors Concentration collectors Advanced collectors Solar ponds Solar heating/cooling techniques Solar distillation and drying
Illustrations/ Demonstration shown:	Solar Energy collectors
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	Write about Solar heating/cooling techniques

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Wind and Bio-mass Energy**
Learning objectives:	Students will be able to understand the concepts of wind and bio-mass energy
Previous knowledge required:	Basic concepts- air, wind, wind turbine, bio-mass, windmill, bio-gas etc
Synopsis:	Resources and potentials Horizontal and vertical axis windmills Principles of Bio-conversion Types of Bio-gas Utilization for cooking LPG and CNG
Illustrations/ Demonstration shown:	LPG and CNG
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	Write about Principles of Bio-conversion and types of Bio-gas

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Geothermal and Ocean Energy**
Learning objectives:	Students will be able to gain knowledge about the Geothermal energy and Ocean energy
Previous knowledge required:	Basic concepts – energy, thermal energy, Geothermal energy, ocean, tides etc
Synopsis:	Resources of Geothermal and Ocean Energy Types of wells Methods of harvesting energy OTEC and setting of plants Tidal and wave energy Potential and conversion techniques Mini-hydel power plants
Illustrations/ Demonstration shown:	Tidal and wave energy
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	Write about the resources of Geothermal and Ocean Energy

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2019-2020

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Vector Analysis**
Learning objectives:	Student will be able to understand the various methods to analyse the vector fields, theorems and simple applications.
Previous knowledge required:	Scalar and Vector quantities Properties of scalars and vectors Basics of Integration and Differentiation
Synopsis:	Scalar and vector fields Gradient of scalar field Divergence and curl of vector field Vector Integration Stokes Theorem Gauss's Theorem Green's Theorem
Illustrations/ Demonstration shown:	Solid mechanics Electromagnetism
Teaching aids used:	Textbook, board and chalk
References:	First Year Physics-Telugu academy
Student activity planned/ homework given:	Problems related to the topics mentioned above.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Mechanics of Particles**
Learning objectives:	Student will be able to gain knowledge about laws of motion, motion of rocket and collisions
Previous knowledge required:	Basic definitions – motion, mass, energy, momentum, collision etc Newton's Laws of motion.
Synopsis:	Laws of motion Motion of variable mass system Motion of rocket Multi stage rocket Collisions in two and three dimensions Concept of impact parameter and scattering cross -section
Illustrations/ Demonstration shown:	Motion of rocket
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To explain the motion of system of variable mass.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Mechanics of Rigid Bodies**
Learning objectives:	Student will be able to understand the concepts related to rigid bodies, Euler's equations, Gyroscope etc
Previous knowledge required:	Basic definitions of mechanics-rigid body, rotational motion, angular momentum etc
Synopsis:	Concept of Rigid body Rotational kinematics relations Equation of motion of rotating body Angular momentum and inertial tensor Gyroscope
Illustrations/ Demonstration shown:	Precession of top Gyroscope
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To describe the construction and working of gyroscope and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Central Forces**
Learning objectives:	Student will be able to understand concepts of central forces and Kepler's laws
Previous knowledge required:	Basic definitions – central forces ,potential energy, gravitational field and gravitational potential etc
Synopsis:	Central forces and examples Conservative nature of central forces Negative gradient of potential Equation of motion under central force Gravitational potential and gravitational field Motion under inverse square law Kepler's laws
Illustrations/ Demonstration shown:	Examples of central forces
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	State and derive Kepler's laws.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Special Theory of Relativity**
Learning objectives:	Students will gain knowledge about concepts of special theory of relativity-absolute frames, Lorentz transformation, mass-energy relation etc
Previous knowledge required:	Basic definitions and concepts of classical mechanics
Synopsis:	Galilean relativity Absolute frames Michelson –Morley experiment Postulates of Special theory of relativity Lorentz transformation Time dilation, Length contraction , addition of velocities Mass-Energy relation Four vector formalism
Illustrations/ Demonstration shown:	Postulates of Special theory of relativity
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Describe the Michel-Morley Experiment in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Kinetic Theory of Gases**
Learning objectives:	Student will be to understand kinetic theory gases, transport phenomena and its applications.
Previous knowledge required:	Basic definitions- kinetic energy, molecules, speed, velocity, viscosity, thermal conductivity, diffusion etc
Synopsis:	Postulates of kinetic theory of gases Maxwell's law of distribution of molecular speeds Viscosity of gases Thermal conductivity of gases Diffusion of gases
Illustrations/ Demonstration shown:	Diffusion of gases
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of Maxwell's law of distribution of molecular speeds

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamics**
Learning objectives:	Student will be to understand basics of thermodynamics and concept of entropy
Previous knowledge required:	Basic definitions –heat, temperature, entropy, reversible and irreversible processes etc
Synopsis:	Thermodynamic (Basics) Thermodynamic scale of temperature Change in entropy in reversible and irreversible processes Temperature –Entropy diagram and its applications Change of entropy of perfect gas Change of entropy when ice changes into steam
Illustrations/ Demonstration shown:	Change in entropy in reversible and irreversible processes
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Temperature –Entropy diagram and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Thermodynamic potentials and Maxwell's relations**
Learning objectives:	Student will be to understand basics of thermodynamic potentials and Maxwell's equations
Previous knowledge required:	Basic definitions –heat, temperature, specific heats, perfect gas etc
Synopsis:	Thermodynamic potentials Maxwell's thermodynamic relations Ratio and difference of two specific heats for perfect gas Joule-Kelvin effect Joule-Kelvin coefficient for perfect gas and vanderwaals gas
Illustrations/ Demonstration shown:	Joule-Kelvin effect
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Thermodynamic potentials in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Low Temperature Physics**
Learning objectives:	Students will be able to understand the methods to produce low temperature and also applications
Previous knowledge required:	Basic definitions –heat, temperature, expansion, cooling, liquefaction, refrigeration etc
Synopsis:	Joule-Kelvin effect-Porous plug experiment Joule Thomson expansion Joule Thomson cooling Liquefaction of gases Principle of refrigeration
Illustrations/ Demonstration shown:	Joule-Kelvin effect-Porous plug experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Joule-Kelvin effect-Porous plug experiment

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Quantum theory of radiation**
Learning objectives:	Students will be able to gain knowledge about Quantum theory of radiation and Planck's law
Previous knowledge required:	Basic definitions –conduction, convection, radiation, heat, temperature, pyrometers, solar constant etc
Synopsis:	Ferry's black body-energy distribution in spectrum Wein's displacement law Quantum theory of radiation Planck's law Different pyrometers-Disappearing filament optical pyrometer, Angstrom's pyrometer etc
Illustrations/ Demonstration shown:	Ferry's black body-energy distribution in spectrum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Quantum theory of radiation and derive Planck's law

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Thermal Physics	**Topic: Statistical Mechanics**
Learning objectives:	Students will be able to understand statistical mechanics concepts- ensembles, distribution laws and also applications
Previous knowledge required:	Basic concepts of classical mechanics , probability theorems etc
Synopsis:	Postulates of statistical mechanics Concept of ensembles Classical and quantum statistics Maxwell-Boltzmann statistics Bose-Einstein statistics Fermi-Dirac statistics
Illustrations/ Demonstration shown:	Concept of ensembles
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of statistical mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Kinetic Theory of Gases**
Learning objectives:	Student will be to understand kinetic theory gases, transport phenomena and its applications.
Previous knowledge required:	Basic definitions- kinetic energy, molecules, speed, velocity, viscosity, thermal conductivity, diffusion etc
Synopsis:	Postulates of kinetic theory of gases Maxwell's law of distribution of molecular speeds Viscosity of gases Thermal conductivity of gases Diffusion of gases
Illustrations/ Demonstration shown:	Diffusion of gases
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of Maxwell's law of distribution of molecular speeds

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Thermodynamics**
Learning objectives:	Student will be to understand basics of thermodynamics and concept of entropy
Previous knowledge required:	Basic definitions –heat, temperature, entropy, reversible and irreversible processes etc
Synopsis:	Thermodynamic (Basics) Thermodynamic scale of temperature Change in entropy in reversible and irreversible processes Temperature –Entropy diagram and its applications Change of entropy of perfect gas Change of entropy when ice changes into steam
Illustrations/ Demonstration shown:	Change in entropy in reversible and irreversible processes
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Temperature –Entropy diagram and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Thermodynamic potentials and Maxwell's relations**
Learning objectives:	Student will be to understand basics of thermodynamic potentials and Maxwell's equations
Previous knowledge required:	Basic definitions –heat, temperature, specific heats, perfect gas etc
Synopsis:	Thermodynamic potentials Maxwell's thermodynamic relations Ratio and difference of two specific heats for perfect gas Joule-Kelvin effect Joule-Kelvin coefficient for perfect gas and vanderwaal's gas
Illustrations/ Demonstration shown:	Joule-Kelvin effect
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Thermodynamic potentials in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Low Temperature Physics**
Learning objectives:	Students will be able to understand the methods to produce low temperature and also applications
Previous knowledge required:	Basic definitions –heat, temperature, expansion, cooling, liquefaction, refrigeration etc
Synopsis:	Joule-Kelvin effect-Porous plug experiment Joule Thomson expansion Joule Thomson cooling Liquefaction of gases Principle of refrigeration
Illustrations/ Demonstration shown:	Joule-Kelvin effect-Porous plug experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Joule-Kelvin effect-Porous plug experiment

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Quantum theory of radiation**
Learning objectives:	Students will be able to gain knowledge about Quantum theory of radiation and Planck's law
Previous knowledge required:	Basic definitions –conduction, convection, radiation, heat, temperature, pyrometers, solar constant etc
Synopsis:	Ferry's black body-energy distribution in spectrum Wein's displacement law Quantum theory of radiation Planck's law Different pyrometers-Disappearing filament optical pyrometer, Angstrom's pyrometer etc
Illustrations/ Demonstration shown:	Ferry's black body-energy distribution in spectrum
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Quantum theory of radiation and derive Planck's law

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Statistical Mechanics**
Learning objectives:	Students will be able to understand statistical mechanics concepts- ensembles, distribution laws and also applications
Previous knowledge required:	Basic concepts of classical mechanics , probability theorems etc
Synopsis:	Postulates of statistical mechanics Concept of ensembles Classical and quantum statistics Maxwell-Boltzmann statistics and its application Bose-Einstein statistics and its application Fermi-Dirac statistics-white dwarfs and neutron stars
Illustrations/ Demonstration shown:	Concept of ensembles
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of statistical mechanics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Interference(Division of wave front)**
Learning objectives:	Students will gain knowledge about interference and conditions for interference and its applications.
Previous knowledge required:	Basic definitions- light, coherence, wave front, reflection, Wavelength, phase etc
Synopsis:	Principle of Superposition Conditions for interference of light Fresnel's biprism experiment Change of phase on reflection Lloyd's mirror experiment
Illustrations/ Demonstration shown:	Fresnel's Biprism experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	State the Conditions for interference of light

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Interference(Division of amplitude)**
Learning objectives:	Students will gain knowledge about interference by division of amplitude
Previous knowledge required:	Basics definitions- light, coherence, wave front, reflection, transmission, amplitude, wavelength, phase etc
Synopsis:	Colours of thin films Non-reflecting films Wedge shaped film Newton's rings Michelson interferometer Types of fringes
Illustrations/ Demonstration shown:	Colours of thin films
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Michelson interferometer in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Diffraction**
Learning objectives:	Student will be to understand the concepts of diffraction and its significance
Previous knowledge required:	Basic definitions- diffraction, slit, resolution, grating, convex lens etc
Synopsis:	Fraunhoffer diffraction-single slit, circular aperture, double slit and diffraction grating. Resolving power of grating Fresnel's diffraction- Fresnel's half period zones, zone plate , Phase reversal zone plate etc
Illustrations/ Demonstration shown:	Fraunhoffer diffraction-single slit
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about Fraunhoffer diffraction due to single slit

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Polarisation**
Learning objectives:	Student will be to understand concept of polarisation, methods of polarisation and also applications
Previous knowledge required:	Basic definitions –polarised light, polarisation, reflection, refraction, scattering , polariser, analyser etc
Synopsis:	Polarised light-methods of polarisation Brewster's law Malus law Nicol's prism Positive and Negative crystals Quater wave plate and Half wave plate Babinet's compensator Laurent's Half shade polarimeter
Illustrations/ Demonstration shown:	Laurent's Half shade polarimeter
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nicol's prism.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Aberrations and Fiber Optics**
Learning objectives:	Student will be to understand concept of aberrations and fiber optics
Previous knowledge required:	Basic concepts-monochromatic source, chromatic source, communication etc
Synopsis:	Monochromatic aberrations Spherical aberrations Chromatic aberrations Optical fibers Fiber materials Principles of fiber communication Advantages of fiber communication
Illustrations/ Demonstration shown:	Advantages of fiber communication
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Principles of fiber communication

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Electrostatics**
Learning objectives:	Students will be able to understand the concepts of electrostatics and its applications
Previous knowledge required:	Basic concepts-electric field, electric flux, types of charges and nature of charges, electric potential etc
Synopsis:	Gauss's law and its applications Conservative nature of electric field Concept Electric potential Relation between Electric field and Electric potential Potential energy of system of charges Energy density in an Electric field
Illustrations/ Demonstration shown:	Gauss's law and its applications
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression for Potential energy of system of charges

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Magnetostatics**
Learning objectives:	Students will be able to understand the concepts of Magnetostatics and its applications
Previous knowledge required:	Basic concepts-magnetic field, magnetic flux, magnetic poles, current, inductance, resistance etc
Synopsis:	Biot-Savart's law Force on a point charge in a magnetic fields Properties of Magnetic field Integral form of Ampere's law and applications Energy stored in magnetic field Ballistic galvanometer
Illustrations/ Demonstration shown:	Ballistic galvanometer
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Ballistic Galvanometer.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Electromagnetic Induction**
Learning objectives:	Students will be able to gain knowledge about Electromagnetic Induction and its applications.
Previous knowledge required:	Basic concepts-Electric field, Magnetic Field, Induction, Lenz's law etc
Synopsis:	Faraday's laws of Induction Lenz's law Self and Mutual Induction Continuity equation Modification of Ampere's law Displacement current Maxwell equations
Illustrations/ Demonstration shown:	Lenz's law
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	State and explain Faraday's laws of Induction

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Electromagnetism	**Topic: Electromagnetic Waves**
Learning objectives:	Student will be able to understand about propagation and nature of the electromagnetic waves
Previous knowledge required:	Basic concepts – types of waves, electric field , magnetic field, polarization, reflection, transmission etc
Synopsis:	Maxwell's equations in vacuum and dielectric medium Plane wave equation Transverse nature of EM waves Velocity of light in vacuum and in medium Polarisation of EM waves Linear, circular and elliptical polarization
Illustrations/ Demonstration shown:	Velocity of light in vacuum and in medium
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu academy
Student activity planned/ homework given:	Explain about Transverse nature of EM waves

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Solid State Physics	**Topic: Crystal structure and Elementary lattice dynamics**
Learning objectives:	Students will be able to understand the basics concepts of Crystal structure and elementary lattice dynamics
Previous knowledge required:	Basic concepts-solids, crystals, amorphous, lattice, basis, unit cell etc
Synopsis:	Amorphous and Crystalline materials Lattice translation vectors Miller indices Types of lattices Diffraction of X-rays by crystals Lattice vibrations and Phonons Dulong-Petit's law Einstein and Debye theories of specific heats
Illustrations/ Demonstration shown:	Amorphous and Crystalline materials
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain in detail about different types of lattices

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Solid State Physics	**Topic: Magnetic Properties of matter and Dielectric properties of materials**
Learning objectives:	Students will be able to understand magnetic properties of matter and dielectric properties of materials
Previous knowledge required:	Basic concepts- types of magnetic materials, polarization, Electric field, susceptibility etc
Synopsis:	Langevin's theory Curie's law Weiss's theory of ferromagnetism B-H curve Local Electric field of an atom Clausius Mostti equation
Illustrations/ Demonstration shown:	B-H curve
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Weiss's theory of ferromagnetism

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject:Solid State Physics	**Topic: Elementary Band Theory**
Learning objectives:	Students will be able to gain knowledge about elementary band theory in solids
Previous knowledge required:	Basic concepts- matter, solids, conductors, insulators, semi conductors, band gap etc
Synopsis:	Kronig Penny model Brillouin zones Effective mass of electron P and N type semi conductors Conductivity of semiconductor Four probe method Hall coefficient
Illustrations/ Demonstration shown:	P and N type semi conductors
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about P and N type semi conductors

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Solid State Physics	**Topic: Lasers and Superconductivity**
Learning objectives:	Students will be able to gain knowledge about lasers and superconductivity
Previous knowledge required:	Basic concepts- light, laser, conductors, magnetic field superconductors, temperature, isotopes etc
Synopsis:	Einstein's A and B coefficients Spontaneous and stimulated emissions Three level and Four level lasers Ruby laser and He-Ne laser London' s equations BCS theory
Illustrations/ Demonstration shown:	Ruby laser and He-Ne laser
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive Einstein's A and B coefficients

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: Atomic Spectra and models Inadequacy of classical physics**
Learning objectives:	Student will be to understand basics of atomic spectra -atomic models and their significance
Previous knowledge required:	Basic concepts-atom, sub atomic particles, atomic structure etc.
Synopsis:	Photoelectric effect Compton effect Atomic spectra Alpha particle scattering Rutherford atomic model and its limitations Bohr's model of Hydrogen Frank Hertz Experiment Somerfeld's modification of Bohr's theory
Illustrations/ Demonstration shown:	Alpha particle scattering
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Bohr's model of Hydrogen

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: : Matter waves and Uncertainty principle**
Learning objectives:	Students will be able to understand the wave particle duality, matter waves and uncertainty principle
Previous knowledge required:	Basic concepts-matter waves, superposition of two waves, phase velocity and group velocity etc
Synopsis:	Davisson Germer Experiment Wave particle duality Gaussian wave packet Heisenberg's uncertainty principle Time independent Schrodinger's wave equation Time dependent Schrodinger's wave equation Non-existence of electron in nucleus
Illustrations/ Demonstration shown:	Davisson Germer Experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Heisenberg's uncertainty principle

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: : Nuclear Physics**
Learning objectives:	Students will be able to understand the basics concepts of atoms –nuclear structure, properties of nucleus, nuclear models etc
Previous knowledge required:	Basic concepts- atom, atomic structure, nuclear structure, nuclear properties etc
Synopsis:	Basic properties of nucleus Binding energy of nucleus Nuclear forces and nature of nuclear forces NZ graph Nuclear models- liquid drop model and Nuclear shell model and magic numbers
Illustrations/ Demonstration shown:	Basic properties of nucleus
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain in detail about Binding energy of nucleus

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Modern Physics	**Topic: Radioactivity and Nuclear Reactor**
Learning objectives:	Students will be able to understand about radioactivity, nuclear radiations, nuclear reactions, nuclear reactor etc
Previous knowledge required:	Basic concepts of atoms, sub atomic particles, atomic structure, stability of atoms , nuclear reactor etc
Synopsis:	Radioactivity Stability of nucleus Alpha decay and Beta decay Gamma ray emission Nuclear reactions-fusion and fission Nuclear reactor Classification of elementary particles
Illustrations/ Demonstration shown:	Nuclear reactions-fusion and fission
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nuclear reactor

Sign of the faculty

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject: Basic Electronics	**Topic: Network Elements and Network Theorems**
Learning objectives:	Student will be able to gain knowledge about Network Elements and Network theorems
Previous knowledge required:	Basic electrical components, electric circuits, various sources of current and voltage etc
Synopsis:	Passive Elements Active Elements Power sources Network models Network Theorems: Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, Maximum power transfer theorem Two port networks
Illustrations/ Demonstration shown:	Passive Elements Active Elements Power sources
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about passive elements and active elements.

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Band theory of P-N junction**
Learning objectives:	Student will be able to understand band theory in solids, types of semiconductors etc
Previous knowledge required:	Basic concepts- Classification of solids, conductors, semi-conductors ,insulators etc
Synopsis:	Energy band in solids Intrinsic Semiconductors Extrinsic Semiconductors N-type semi conductors P-type semi conductors Fermi level Continuity Equation
Illustrations/ Demonstration shown:	Energy band in solids
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu academy
Student activity planned/ homework given:	Explain in detail about N-type semi conductors and P-type semi conductors

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Diodes**
Learning objectives:	Student will be able to gain knowledge about Diodes and its applications.
Previous knowledge required:	Basic electrical components, electric circuits, types of semiconductors, doping , ac and dc currents etc
Synopsis:	P-NJunction diode Half wave rectifier Full wave rectifier Bridge rectifier Zener diode and its characteristics Zener diode – voltage regulator
Illustrations/ Demonstration shown:	P-NJunction diode
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about the construction and working of P-N Junction diode

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Bipolar Junction Transistor**
Learning objectives:	Student will be able to understand the basic concepts of BJT and its applications
Previous knowledge required:	Basic definitions-types of semiconductors, transistor, current, amplifier, frequency etc
Synopsis:	BJT –basic concept p-n-p and n-p-n transistors-construction and working current components in transistor CB,CE,CC configuration Transistor as amplifier RC coupled amplifier-frequency response
Illustrations/ Demonstration shown:	p-n-p and n-p-n transistors-construction and working
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the current components in a transistor

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Feedback and Oscillators**
Learning objectives:	Student will be able to understand the concept of feedback –its significance and oscillators –its applications
Previous knowledge required:	Basic definitions-Feedback and oscillators
Synopsis:	Concept of Feedback General theory of feedback Concepts of oscillators Barkhausen's criterion Phase shift oscillator
Illustrations/ Demonstration shown:	General theory of feedback
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about General theory of feedback

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Digital Electronics**
Learning objectives:	Students will gain knowledge about Digital Electronics and their applications
Previous knowledge required:	Basics concepts of electronics, number systems etc
Synopsis:	Binary number system Binary addition and subtraction 1's and 2's complement Decimal number system Hexa decimal number system
Illustrations/ Demonstration shown:	1's and 2's complement
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about 1's and 2's complement

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: VI**
Subject:Basic Electronics	**Topic: Logic Gates**
Learning objectives:	Student will be to understand the concepts of logic gates and their applications
Previous knowledge required:	Basic concepts of logic gates-Truth tables, Boolean algebra , Boolean laws etc
Synopsis:	OR gate AND gate NOT gate NAND and NOR gates-as universal gates EX-OR gate De-Morgan's laws- verification
Illustrations/ Demonstration shown:	Verification of Truth tables of Logic gates
Teaching aids used:	Textbook, board and chalk ICT
References:	Final Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about OR gate, AND gate and NOT gate.

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Electrical Circuits and Network Skills	**Topic: Basic Electricity Principles, and Electrical Circuits**
Learning objectives:	Student will be able to understand basic electricity principles, electrical circuits, electrical drawing and symbols.
Previous knowledge required:	Basic definitions-Voltage, Current, Resistance, Power, Ohm's law, AC and DC electricity, etc
Synopsis:	Series, parallel and combination circuits Familiarization with multi meter, voltmeter and ammeter Rules to analyse DC powered sourced electrical circuits Single phase and three phase AC sources Rules to analyse AC powered sourced electrical circuits Real, imaginary and complex power components of AC source Power factor- Saving energy and money
Illustrations/ Demonstration shown:	Series, parallel and combination circuits
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Write about Power factor- Saving energy and money

Sign of the faculty Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Electrical Circuits and Network Skills	**Topic: Electrical Drawing and Symbols**
Learning objectives:	Students will gain knowledge about Electrical drawing and Electrical symbols
Previous knowledge required:	Basic concepts- current, Voltage, resistance, circuit, power etc
Synopsis:	Drawing symbols Blueprints Reading schematics Ladder diagrams Electrical Schematics Power circuits Control circuits Reading of circuit schematics
Illustrations/ Demonstration shown:	Drawing symbols
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Write the procedure of Reading schematics

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Electrical Circuits and Network Skills	**Topic: Generators and Transformers and Components with DC or AC sources**
Learning objectives:	Students will gain knowledge about Generators and transformers, components with DC or AC sources
Previous knowledge required:	Basics concepts AC, DC, Generator, transformer, inductance, capacitance, impedance etc
Synopsis:	DC power sources AC/DC generators Operation of transformer Diodes and rectifiers Components in series or in shunt
Illustrations/ Demonstration shown:	DC power sources
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Explain the working of Transformer in detail

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Electrical Circuits and Network Skills	**Topic: Electrical Protection**
Learning objectives:	Student will be to gain knowledge about Electrical protection devices and methods
Previous knowledge required:	Basic concepts of current, voltage, resistance, power, fuse etc
Synopsis:	Relays Fuses Disconnect switches Circuit breakers Overload devices Ground fault protection Grounding and isolating Phase reversal Surge protection Relay protection device
Illustrations/ Demonstration shown:	Illustrations/ Demonstration shown:
Teaching aids used:	Textbook, board and chalk ICT
References:	A text book in Electrical Technology-BL Theraja
Student activity planned/ homework given:	Explain about Circuit breakers and Overload devices

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Principles of Solar energy and collection**
Learning objectives:	Student will be to understand the principles of solar energy and collection
Previous knowledge required:	Basic concepts like sources of energy, renewable energy and non-renewable energy sources etc
Synopsis:	Non-Renewable energy sources-Principles of power generation and transmission Advantages and disadvantages of conventional power plants Environmental impact of solar power Solar constant and Solar radiation Instruments for measuring solar radiation
Illustrations/ Demonstration shown:	A model of conventional thermal power plant
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	What are the advantages and disadvantages of conventional power plants

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Solar energy storage and Applications**
Learning objectives:	Student will be to gain knowledge about Solar Energy Storage and its applications
Previous knowledge required:	Basic concepts of solar energy, solar constant, solar radiation, solar panels etc
Synopsis:	Solar Energy collectors Flate plate collectors Concentration collectors Advanced collectors Solar ponds Solar heating/cooling techniques Solar distillation and drying
Illustrations/ Demonstration shown:	Solar Energy collectors
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	Write about Solar heating/cooling techniques

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Wind and Bio-mass Energy**
Learning objectives:	Students will be able to understand the concepts of wind and bio-mass energy
Previous knowledge required:	Basic concepts- air, wind, wind turbine, bio-mass, windmill, bio-gas etc
Synopsis:	Resources and potentials Horizontal and vertical axis windmills Principles of Bio-conversion Types of Bio-gas Utilization for cooking LPG and CNG
Illustrations/ Demonstration shown:	LPG and CNG
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	Write about Principles of Bio-conversion and types of Bio-gas

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: V**
Subject: Renewable Energy Resources	**Topic: Geothermal and Ocean Energy**
Learning objectives:	Students will be able to gain knowledge about the Geothermal energy and Ocean energy
Previous knowledge required:	Basic concepts – energy, thermal energy, Geothermal energy, ocean, tides etc
Synopsis:	Resources of Geothermal and Ocean Energy Types of wells Methods of harvesting energy OTEC and setting of plants Tidal and wave energy Potential and conversion techniques Mini-hydel power plants
Illustrations/ Demonstration shown:	Tidal and wave energy
Teaching aids used:	Textbook, board and chalk ICT
References:	Non-conventional energy sources-GD Rai
Student activity planned/ homework given:	Write about the resources of Geothermal and Ocean Energy

Sign of the faculty

Principal's sign

2018-2019

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Vector Analysis**
Learning objectives:	Student will be able to understand the various methods to analyse the vector fields, theorems and simple applications.
Previous knowledge required:	Scalar and Vector quantities Properties of scalars and vectors Basics of Integration and Differentiation
Synopsis:	Scalar and vector fields Gradient of scalar field Divergence and curl of vector field Vector Integration Stokes Theorem Gauss's Theorem Green's Theorem
Illustrations/ Demonstration shown:	Solid mechanics Electromagnetism
Teaching aids used:	Textbook, board and chalk
References:	First Year Physics-Telugu academy
Student activity planned/ homework given:	Problems related to the topics mentioned above.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty: N.Swetha	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Mechanics of Particles**
Learning objectives:	Student will be able to gain knowledge about laws of motion, motion of rocket and collisions
Previous knowledge required:	Basic definitions – motion, mass, energy, momentum, collision etc Newton's Laws of motion.
Synopsis:	Laws of motion Motion of variable mass system Motion of rocket Multi stage rocket Collisions in two and three dimensions Concept of impact parameter and scattering cross -section
Illustrations/ Demonstration shown:	Motion of rocket
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To explain the motion of system of variable mass.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Mechanics of Rigid Bodies**
Learning objectives:	Student will be able to understand the concepts related to rigid bodies, Euler's equations, Gyroscope etc
Previous knowledge required:	Basic definitions of mechanics-rigid body, rotational motion, angular momentum etc
Synopsis:	Concept of Rigid body Rotational kinematics relations Equation of motion of rotating body Angular momentum and inertial tensor Euler's equations Precession of top Gyroscope
Illustrations/ Demonstration shown:	Precession of top Gyroscope
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	To describe the construction and working of gyroscope and its applications

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Central Forces**
Learning objectives:	Student will be able to understand concepts of central forces and Kepler's laws
Previous knowledge required:	Basic definitions – central forces ,potential energy, gravitational field and gravitational potential etc
Synopsis:	Central forces and examples Conservative nature of central forces Negative gradient of potential Equation of motion under central force Gravitational potential and gravitational field Motion under inverse square law Kepler's laws
Illustrations/ Demonstration shown:	Examples of central forces
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	State and derive Kepler's laws.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: I**
Subject: Mechanics	**Topic: Special Theory of Relativity**
Learning objectives:	Students will gain knowledge about concepts of special theory of relativity-absolute frames, Lorentz transformation, mass-energy relation etc
Previous knowledge required:	Basic definitions and concepts of classical mechanics
Synopsis:	Galilean relativity Absolute frames Michelson –Morley experiment Postulates of Special theory of relativity Lorentz transformation Time dilation, Length contraction , addition of velocities Mass-Energy relation Four vector formalism
Illustrations/ Demonstration shown:	Postulates of Special theory of relativity
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Describe the Michel-Morley Experiment in detail.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Waves and oscillations	**Topic: Fundamentals of vibrations**
Learning objectives:	Student will be to understand fundamentals of vibrations.
Previous knowledge required:	Basic definitions- Oscillator, vibrations, simple harmonic oscillator etc
Synop	SHO and it's solution Physical characteristics of SHM Compound pendulum
Illustrations/ Demonstration shown:	Compound pendulum
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of simple harmonic oscillator and it's solution

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Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Waves and oscillations	**Topic: Fundamentals of vibrations**
Learning objectives:	Student will be to understand fundamentals of vibrations
Previous knowledge required:	Basic definitions –vibrations, frequency,simple harmonic vibrations etc
Synopsis:	Combination of simple harmonic vibrations Lissajous figures
Illustrations/ Demonstration shown:	
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about Lissajous figures.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Waves and oscillations	**Topic: Damped and forced oscillations**
Learning objectives:	Student will be to understand damped harmonic oscillator and forced oscillations
Previous knowledge required:	Basic definitions – oscillations, damped harmonic oscillations,forced oscillations etc
Synopsis:	Damped harmonic oscillator and it's cases Forced oscillations
Illustrations/ Demonstration shown:	DDamped harmonic oscillator
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about forced oscillations.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Waves and oscillations	**Topic: Vibrating strings**
Learning objectives:	Students will be able to understand vibrating strings
Previous knowledge required:	Basic definitions –vibrations,strings,waves etc
Syno	Transverse waves propagation along strings Modes of vibrations of stretched strings
Illustrations/ Demonstration shown:	Modes of vibrations in strings
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about transverse waves along strings

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject: Waves and oscillations	**Topic: Longitudinal vibrations in bars**
Learning objectives:	Students will be able to gain knowledge about longitudinal vibrations in bars
Previous knowledge required:	Basic definitions –waves, vibrations,bars etc
S	Longitudinal vibrations in bars and it's special cases
Illustrations/ Demonstration shown:	
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about longitudinal vibrations in bars.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: II**
Subject:Waves and oscillations	**Topic: Transverse vibrations in bars**
Learning objectives:	Students will be able to understand transverse vibrations in bars
Previous knowledge required:	Basic terms like transverse waves,bars,vibrations etc
Syn	Transverse vibrationsin bars and special cases Tuning fork
Illustrations/ Demonstration shown:	Tuning fork
Teaching aids used:	Textbook, board and chalk ICT
References:	First Year Physics-Telugu Academy
Student activity planned/ homework given:	Write about transverse vibrations in bars.

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Kinetic Theory of Gases**
Learning objectives:	Student will be to understand kinetic theory gases, transport phenomena and its applications.
Previous knowledge required:	Basic definitions- kinetic energy, molecules, speed, velocity, viscosity, thermal conductivity, diffusion etc
Synopsis:	Postulates of kinetic theory of gases Maxwell's law of distribution of molecular speeds Viscosity of gases Thermal conductivity of gases Diffusion of gases
Illustrations/ Demonstration shown:	Diffusion of gases
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Derive an expression of Maxwell's law of distribution of molecular speeds

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Thermodynamics**
Learning objectives:	Student will be to understand basics of thermodynamics and concept of entropy
Previous knowledge required:	Basic definitions –heat, temperature, entropy, reversible and irreversible processes etc
Synopsis:	Thermodynamic (Basics) Thermodynamic scale of temperature Change in entropy in reversible and irreversible processes Temperature –Entropy diagram and its applications Change of entropy of perfect gas Change of entropy when ice changes into steam
Illustrations/ Demonstration shown:	Change in entropy in reversible and irreversible processes
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Temperature –Entropy diagram and its applications

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TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Thermodynamic potentials and Maxwell's relations**
Learning objectives:	Student will be to understand basics of thermodynamic potentials and Maxwell's equations
Previous knowledge required:	Basic definitions –heat, temperature, specific heats, perfect gas etc
Synopsis:	Thermodynamic potentials Maxwell's thermodynamic relations Ratio and difference of two specific heats for perfect gas Joule-Kelvin effect Joule-Kelvin coefficient for perfect gas and vanderwaal's gas
Illustrations/ Demonstration shown:	Joule-Kelvin effect
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Thermodynamic potentials in detail.

Sign of the faculty

Principal’s sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Low Temperature Physics**
Learning objectives:	Students will be able to understand the methods to produce low temperature and also applications
Previous knowledge required:	Basic definitions –heat, temperature, expansion, cooling, liquefaction, refrigeration etc
Synopsis:	Joule-Kelvin effect-Porous plug experiment Joule Thomson expansion Joule Thomson cooling Liquefaction of gases Principle of refrigeration
Illustrations/ Demonstration shown:	Joule-Kelvin effect-Porous plug experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Joule-Kelvin effect-Porous plug experiment

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Quantum theory of radiation**
Learning objectives:	Students will be able to gain knowledge about Quantum theory of radiation and Planck's law
Previous knowledge required:	Basic definitions –conduction, convection, radiation, heat, temperature, pyrometers, solar constant etc
Synopsis:	Ferry's black body-energy distribution in spectrum Wein's displacement law Quantum theory of radiation Planck's law Different pyrometers-Disappearing filament optical pyrometer, Angstrom's pyrometer etc
Illustrations/ Demonstration shown:	Ferry's black body-energy distribution in spectrum
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain Quantum theory of radiation and derive Planck's law

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: III**
Subject: Thermal Physics	**Topic: Statistical Mechanics**
Learning objectives:	Students will be able to understand statistical mechanics concepts- ensembles, distribution laws and also applications
Previous knowledge required:	Basic concepts of classical mechanics , probability theorems etc
Synopsis:	Postulates of statistical mechanics Concept of ensembles Classical and quantum statistics Maxwell-Boltzmann statistics and its application Bose-Einstein statistics and its application Fermi-Dirac statistics-white dwarfs and neutron stars
Illustrations/ Demonstration shown:	Concept of ensembles
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Write the Postulates of statistical mechanics

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Interference(Division of wave front)**
Learning objectives:	Students will gain knowledge about interference and conditions for interference and its applications.
Previous knowledge required:	Basic definitions- light, coherence, wave front, reflection, Wavelength, phase etc
Synopsis:	Principle of Superposition Conditions for interference of light Fresnel's biprism experiment Change of phase on reflection Lloyd's mirror experiment
Illustrations/ Demonstration shown:	Fresnel's Biprism experiment
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	State the Conditions for interference of light

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Interference(Division of amplitude)**
Learning objectives:	Students will gain knowledge about interference by division of amplitude
Previous knowledge required:	Basics definitions- light, coherence, wave front, reflection, transmission, amplitude, wavelength, phase etc
Synopsis:	Colours of thin films Non-reflecting films Wedge shaped film Newton's rings Michelson interferometer Types of fringes
Illustrations/ Demonstration shown:	Colours of thin films
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Michelson interferometer in detail.

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Diffraction**
Learning objectives:	Student will be to understand the concepts of diffraction and its significance
Previous knowledge required:	Basic definitions- diffraction, slit, resolution, grating, convex lens etc
Synopsis:	Fraunhoffer diffraction-single slit, circular aperture, double slit and diffraction grating. Resolving power of grating Fresnel's diffraction- Fresnel's half period zones, zone plate , Phase reversal zone plate etc
Illustrations/ Demonstration shown:	Fraunhoffer diffraction-single slit
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain about Fraunhoffer diffraction due to single slit

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Polarisation**
Learning objectives:	Student will be to understand concept of polarisation, methods of polarisation and also applications
Previous knowledge required:	Basic definitions –polarised light, polarisation, reflection, refraction, scattering , polariser, analyser etc
Synopsis:	Polarised light-methods of polarisation Brewster's law Malus law Nicol's prism Positive and Negative crystals Quater wave plate and Half wave plate Babinet's compensator Laurent's Half shade polarimeter
Illustrations/ Demonstration shown:	Laurent's Half shade polarimeter
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the construction and working of Nicol's prism.

Sign of the faculty

Principal's sign

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE FOR WOMEN DEVARAKONDA	
Name of the Faculty:	**Department: Physics**
Course/Group: B.Sc / MPCS	**Semester: IV**
Subject: Optics	**Topic: Aberrations and Fiber Optics**
Learning objectives:	Student will be to understand concept of aberrations and fiber optics
Previous knowledge required:	Basic concepts-monochromatic source, chromatic source, communication etc
Synopsis:	Monochromatic aberrations Spherical aberrations Chromatic aberrations Optical fibers Fiber materials Principles of fiber communication Advantages of fiber communication
Illustrations/ Demonstration shown:	Advantages of fiber communication
Teaching aids used:	Textbook, board and chalk ICT
References:	Second Year Physics-Telugu Academy
Student activity planned/ homework given:	Explain the Principles of fiber communication

Sign of the faculty

Principal's sign