



S.G.A.GOVERNMENT DEGREE COLLEGE

(Re-accredited by NAAC with 'A' Grade, Affiliated to Andhra University)

YELLAMANCHILI - 531055, ANDHRA PRADESH



Department of Physics

Assignments given to students:2016-17

1st -year, Semester-I, Paper-I

1. State and prove Gauss divergence theorem.
2. Derive an expression for final velocity of a Rocket.
3. Derive Euler 's equations of rotational motion for a rigid body fixed at one end
4. Define the three elastic moduli. Derive the relation among them.
5. State Kepler's laws and prove Kepler's first law of planetary motion.

1st -year, Semester-II, Paper-II

1. Explain combination of two mutually perpendicular simple harmonic vibrations having frequencies in the ratio 1:1.
2. Derive equation for damped harmonic Oscillator and obtain its solution
3. Derive an equation for the velocity of a transverse wave along a stretched string
4. Analyze the square wave by using Fourier theorem
5. Explain the method of production Ultrasonics waves by Piezo electric method.

2nd Year, Semester-III, Paper-III

1. Describe the construction and working of a Michelson Interferometer.
2. Define diffraction, Describe the diffraction pattern due to a single slit.
3. Describe the construction and working of a Nicol's prism. Explain how it can be used as polariser and analyser.
4. What is Spherical Aberration. Write any three methods to minimize Spherical Aberration
5. Explain the construction and working of He-Ne Laser.

2nd Year, Semester-IV, Paper-IV

1. Devire an expression for Thermal conductivity and Viscosity of a gas by using Kinetic theory of gases.
2. Explain the working of Carnot's heat Engine and derive an expression for its efficiency .
3. Write Thermo dynamic potentials. Derive Maxwell Thermo -dynamic equations.
4. Explain the production of Helium liquid by using Kapitza's method.

5. Define Solar constant and explain the experiment to find out Solar constant.

3rd Year, Semester-V, Paper-V

1. Define potential and find the potential due to Uniformly charged sphere.
2. Find the Magnetic induction at a point due to long straight current carrying conductor.
3. Derive an expression for Self Inductance of a Solenoid.
4. Explain LCR series Resonant circuit. Explain Q-factor.
5. State and prove Poynting theorem.

3rd Year, Semester-V, Paper-VI

1. Derive the expressions for the radii of Bohr's orbits and for orbital frequencies of the electron.
2. Describe the Vector atom model of the atom and explain the different quantum numbers associated with it.
3. What is Ramon effect. Describe the experimental set-up used in the study of Ramon effect in liquids.
4. Explain de-Broglie concept of matter waves. How they were verified by Davisson and Germer experiment?
5. Derive the time independent Schrodinger equation and apply it to the harmonic oscillator.

Signature of the Lecturer

Signature of the Principal



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Department of Physics

Assignments given to students:2017-2018

1st -year, Semester-I, Paper-I

1. State and explain Stokes theorem.
2. Explain the motion of a system of variable mass. Derive the expression for final velocity of a rocket.
3. Derive Euler equations of motion rigid rotating body and verify conservation of energy.
4. Derive equation of motion of a body under the influence central force.
5. Explain the construction and working of Michelson-Morley experiment.

1st Year, Semester -II, Paper-II

1. Derive the equation of Forced harmonic motion and obtain its solution.
2. Analyze a triangle wave with the help of Fourier's theorem.
3. Discuss the modes of vibrations of a Stretched String fixed at both ends.
4. Explain how Ultrasonics are produced by Magnetostriction method.
5. Explain the formation of Lissajous figures when two simple harmonic waves acting on a particle simultaneously.

2nd Year, Semester-III, Paper-III

1. Explain the occurrence of interference fringes in Lloyd's mirror arrangement.
2. Derive an expression for Fraunhofer diffraction pattern with N slits (Diffraction grating).
3. Describe the construction and working of a Nicol's prism. Explain how it can be used as polarizer and as analyzer.
4. Draw the block diagram of an optical fiber communication system and explain the function of each block.
5. Describe the construction and working of Ruby laser.

2nd Year, Semester-IV, Paper-IV

1. Explain and Derive Maxwell velocity distribution law of gases.
2. Derive the relation between two specific heats of gas.
3. Derive Planck's formula of black body radiation.
4. What is refrigeration. Explain the working of refrigerator.
5. Explain Joule Thomson effect.

3rd Year, Semester-V, Paper-V

1. Define potential and find the potential due to Dipole.
2. Find the magnetic Induction due to a current carrying circular loop.
3. Define and Explain Hall effect and derive the equation for Hall co-efficient.
4. Explain working of P-N Junction Diode and Draw its characteristics
5. Define transistor hybrid parameters. Explain the determination of hybrid parameters from transistor characteristics

3rd Year, Semester-VI, Paper-VI

1. Describe the construction and working of Stern-Gerlach experiment.
2. Describe the construction and working of Davisson and Germer experiment.
3. Derive the expression for Schrodinger time independent and dependent wave equations.
4. Explain Liquid Drop, Shell Models of Nuclei.
5. Explain classification of Nano Materials.
6. Explain Type-I and Type-II Super conductors.

S. O. I. Iqbaluddin
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Department of Physics

Assignments given to students:2018-19

1st -year, Semester-I, Paper-I

1. State and prove Gauss-Divergence Theorem.
2. Derive an expression for scattering cross section in a Rutherford alpha ray scattering experiment.
3. Derive relation among young's modulus, Bulk modulus and rigidity modulus.
4. Explain in detail about precession of a symmetric top.
5. Explain the importance of Michelson - Morley experiment.

1st -year, Semester-II, Paper-II

1. Derive an equation of motion of a damped oscillator and find its solution
2. Analyze the Saw tooth wave using Fourier analysis
3. Derive an expression for a velocity of a transverse wave along a stretched string and also discuss its solution
4. Explain the method of production of Ultrasonics using Piezo electric method
5. Explain in detail about various shapes of Lissajous figures formed with the two perpendicular waves having frequency ratio of 1:1

2nd Year, Semester-III, Paper-III

1. Discuss about formation of Newton rings in a reflected light and also explain how one can find the wavelength of given monochromatic light using Newton interferometer
2. Explain intensity pattern formed by the double slit using Fraunhofer diffraction theory
3. Explain construction and working of a Nicol's prism. Explain how it can be used as polarizer and analyzer

4. What is spherical Aberration. Write any three methods of minimization of spherical Aberration.
5. Explain the construction and working of Ruby laser.

2nd Year, Semester-IV, Paper-IV

1. Derive an expression for thermal conductivity and viscosity of gas by using kinetic theory of gases.
2. Explain the working of Carnot's engine and derive an expression for its efficiency
3. Define thermodynamic potentials. Derive Maxwell thermodynamic equations.
4. Explain the production of Helium liquid by using Kapitza's method.
5. Define Solar constant and explain the experiment to find out Solar constant.

3rd Year, Semester-V, Paper-V

1. Define potential and find the potential due to uniformly charged sphere.
2. Find the magnetic induction due to long straight conductor.
3. Derive an expression for self-inductance of a Solenoid.
4. Explain the resonance phenomenon in series LCR circuit. Explain Q-Factor
5. State and prove Poynting theorem.

3rd Year, Semester-V, Paper-VI

1. Explain in detail about BCS Theory of super-conductivity and write some applications of it.
2. Describe the vector atom model of the atom and explain the different quantum number associated with it.
3. What is Raman effect describe the experimental setup used in the study of Raman effect.
4. Explain de-Broglie concept of matter waves. How they were verified by Davisson and Germer experiment.
5. Derive the time independent Schrodinger equation and applied it to the harmonic oscillator

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DEPARTMENT OF PHYSICS

Assignments Given To Students, 2019-2020

I-Year, Semester-I, Paper-I

1. State and prove stokes theorem.
2. Derive expression for a instantaneous velocity of a rocket and also multi stage rocketing.
3. Derive an expression for a equation of motion of rotating rigid body.
4. Derive an expression for larentz transformation equations.
5. State and prove kepler's first law of motion.

I-Year ,Semester-II, Paper-II

1. Derive an equation for a forced oscillator.
2. Analyse the rectangle wave using fourier analysis.
3. Discus about different modes of vibration formed in a stretched string and about harmonics and overtones formed in it.
4. Discuss the method of production of ultrasonics using magnetostriction method.
5. Derive an expression for a differential equation for a simple harmonic oscillator and discuss its solution.

II-Year, Semester-III, Paper-III

1. Explain in detail about working of a Michelson interferometer and also explain how one can wavelength of a given monochromatic light using it.
2. Explain the construction and working of a zone plate and also write it's applications.
3. Explain how one can find specific rotatory power Laurent`s half shade Polarimeter.
4. Describe with suitable diagrams the longitudinal and later chromatic aberration. Derive the condition for achromatic when two lenses are in contact.
5. Explain the construction and working of He-Ne Laser.

II-Year, Semester-IV, Paper-IV

1. Derive an expression for Thermal Conductivity and Viscosity of a Gas by using Kinetic theory of gases.
2. Derive the expressions for workdone in Isothermal and Adiabatic process.
3. Write a Thermo Dynamic potentials. Derive Maxwell Thermo Dynamic equations.
4. Describe Adiabatic Dimagnetisation, Explain how can you attain low temperature by using it.
5. Define Solar constant and explain the experiment to find out Solar constant.

III- Year, Semister-V, Paper-V

1. Derive an expression for the electric field intensity due to uniformly charged sphere.
2. Calculate the magnetic Induction at a point on the axis passing through the center of a circular wire carrying current.
3. Explain LCR parallel Resonant circuit.
4. Explain Characteristics of Common emitter Transistor Circuit.
5. State and prove De-Morgan's Theorems.

III- Year, Semister-V, Paper-VI

1. Explain the signification of Davison – Germer Experiment in detail.
2. Derive an Expression for schrodinger wave Equation in case of
 - (i) Schrodinger time – Independent Case
 - (ii) Time – Independent Case
3. Explain in detail about the Nuclear Shell model.
4. Explain the signification of Law's method in studying the Crystal Properties.
5. Explain in detail about the Gammas theory of α -decay.

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Department of Physics

Assignments given to students:2020-2021

1st -year, Semester-I, Paper-I

1. Expression for instantaneous velocity of a rocket and also explain about multi- stage rocketing.
2. Derive an expression for equation of motion of a rotating rigid body.
3. Derive an expression for Lorentz transformation equations.
4. State and prove Kepler's first law of motion.
5. Derive an equation for a forced oscillator and find its solution.
6. Discuss about different modes of vibration formed in a stretched string and about harmonics and overtones formed in it.
7. Discuss the method of production of Ultrasonics using Magnetostriction method.
8. Derive an expression for a differential equation for a simple harmonic oscillator and find its solution.

1st Year, Semester -II, Paper-II

1. Explain in detail about working of a Michelson interferometer and also explain how one can find wavelength of a given monochromatic light using it.
2. Explain the construction and working of a zone plate and also write its applications.
3. Explain how one can find specific rotatory power by Laurent's half shade Polarimeter.
4. Describe with suitable diagrams the longitudinal and lateral chromatic aberrations. Derive the condition for achromatism when two lenses are in contact.
5. Explain the construction and working of He-Ne Laser.

2nd Year, Semester-III, Paper-III

1. Derive an expression for Thermal Conductivity and Viscosity of a Gas by using Kinetic theory of gases.
2. Derive the expressions for work done in Isothermal and Adiabatic process.
3. Describe construction and working of Carnot's engine.

- ## 2nd Year, Semester-IV, Paper-IV

- ## 2nd Year, Semester-IV, Paper-V

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Department of Physics

Assignments given to students:2021-2022

I -year, Semester-I, Paper-I

1. Derive an expression for final velocity of a Rocket.
2. Derive Euler's equations of rotational motion for a rigid body fixed at one end
3. State Kepler's laws and prove Kepler's first law of planetary motion.
4. Derive an equation for damped harmonic Oscillator and obtain its solution
5. Derive an equation for the velocity of a transverse wave along a stretched string
6. Explain the method of production of Ultrasonic waves by Piezo electric method.

I- Year, Semester-II, Paper-II

1. Describe the construction and working of a Michelson Interferometer.
2. Define diffraction, Describe the diffraction pattern due to a single slit.
3. Describe the construction and working of a Nicol's prism. Explain how it can be used as polariser and analyser.
4. What is Spherical Aberration. Write any three methods to minimize Spherical Aberration
5. Explain the construction and working of He-Ne Laser.

II- Year, Semester-III, Paper-III

1. Derive an expression for Thermal conductivity and Viscosity of a gas by using Kinetic theory of gases.
2. Explain the working of Carnot's heat Engine and derive an expression for its efficiency
3. Write Thermo dynamic potentials. Derive Maxwell Thermo-dynamic equations.
4. Explain the production of Helium liquid by using Kapitza's method.
5. Define Solar constant and explain the experiment to find out Solar constant.

II- Year, Semester-IV, Paper-IV

1. Define potential and find the potential due to Uniformly charged sphere.
2. Find the Magnetic induction at a point due to long straight current carrying conductor.
3. Derive an expression for Self Inductance of a Solenoid.
4. Explain LCR series Resonant circuit. Explain Q-factor.
5. State and prove Poynting theorem.

II- Year, Semester-IV, Paper-V

1. Derive the expressions for the radii of Bohr's orbits and for orbital frequencies of the electron.
2. Describe the Vector atom model of the atom and explain the different quantum numbers associated with it.
3. What is Ramon effect. Describe the experimental set-up used in the study of Ramon effect in liquids.
4. Explain de-Broglie concept of matter waves. How they were verified by Davisson and Germer experiment?
5. Derive the time independent Schrodinger equation and apply it to the harmonic oscillator.


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