

PHYSICS

Distribution of Marks:

Part-I (Class-XI)

Theory Marks: 85

Part-II (Class-XII)

Theory Marks: 85

Practical: 30

Total : 200

Marks: 85	PART –I (CLASS-XI)	Time: 3:00 Hours
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CHAPTER:1	Measurements
1.1	Physical Quantities and Their Units
1.2	International System of Units
1.3	Uncertainty In Measurement
1.4	Use of Significant Figures
1.5	Precision And Accuracy
1.6	Assessment of Total Uncertainty In The Final Result
1.7	Dimensions of Physical Quantities
CHAPTER:2	Force and Motion
2.1	Scalars
2.2	Vectors
2.3	Product of Two Vectors
2.4	Equations of Motions
2.5	Motion Under Gravity
2.6	Projectile Motion
2.7	Momentum
2.8	Elastic And Inelastic Collisions
2.9	Inelastic Collision in One Dimension
2.10	Elastic Collision In Two Dimensions
2.11	Inelastic Collision in Two Dimensions
2.12	Rocket Propulsion
CHAPTER:3	Circular and Rotational Motion
3.1	Angular Measurements
3.2	Centripetal Force
3.3	Artificial Satellites
3.4	Moment of Inertia
3.5	Angular Momentum
3.6	Law of Conservation of Angular Momentum
CHAPTER:4	WORK , ENERGY and Power
4.1	Work Done By a Constant Force
4.2	Work Done By a Variable Force
4.3	Conservative And NON-Conservative Forces
4.4	Power
4.5	Energy
4.6	Escape Velocity
4.7	Work-Energy Theorem
4.8	Interconversion Of Potential Energy And Kinetic Energy
CHAPTER:5	Solids and Fluid Dynamics
5.1	Classification Of Solids
5.2	Mechanical Properties Of Solids
5.3	Stress, Strain And Young's Modulus
5.4	Determination Of Young's Modulus Of a Wire
5.5	Elastic Deformation, Plastic Deformation And Elastic Limit
5.6	Strain Energy In Deformed Materials
5.7	Archimedes' Principle And Floatation
5.8	Steady, Non-Viscous And Ideal Fluid
5.9	Equation Of Continuity
5.10	Increase in Flow Velocity
5.11	Bernoulli's Equation

- 5.12 Uses Of Bernoulli's Equation
- 5.13 Visous Drag And Stokes' Law
- 5.14 Terminal Velocity
- 5.15 Real Fluids Are Visous Fluids
- 5.16 Superfluids
- CHAPTER:6 Heat and Thermodynamics
 - 6.1 Assumptions Of The Kinetic Theory Of Gases
 - 6.2 Internal Energy
 - 6.3 Heat And Work
 - 6.4 First Law Of Thermodynamics
 - 6.5 Reversible and Irreversible Processes
 - 6.6 Heat Engine
 - 6.7 Second Law of Thermodynamics
 - 6.8 Carnot Engine And Carnot's Theorem
 - 6.9 Referigerator
 - 6.10 Entropy
- CHAPTER:7 Waves and Vibrations
 - 7.1 Waves
 - 7.2 Principle of Superposition of Waves
 - 7.3 Interfernce and Its Types
 - 7.4 Stationary Waves & Their Formation
 - 7.5 Stationary Waves On a Stretched String
 - 7.6 Stationary Waves In Air Columns
 - 7.7 Experiment Demonstrating Stationary Waves Using Microwaves
 - 7.8 Diffraction of Waves
 - 7.9 Beats
 - 7.10 Intensity (I) Of A Wave
 - 7.11 Doppler Effect
 - 7.12 Applications Of Doppler Effect
- CHAPTER:8 Physical Optics And Gravitational Waves
 - 8.1 Polarization of Light
 - 8.2 Types Of Polarization
 - 8.3 Production and Detection Of Plane Polarized Lights
 - 8.4 Polarization Of Light ByThe Method Of Reflection
 - 8.5 Malus's Law
 - 8.6 Gravitational Waves (GWs)
 - 8.7 Interferometer
- CHAPTER:9 Electrostatics and Current Electricity
 - 9.1 Coulomb's law
 - 9.2 Electric Field Strength
 - 9.3 Electric Flux
 - 9.4 Gauss's Law
 - 9.5 Electric Potential
 - 9.6 Electron Volt
 - 9.7 Motion Of Charged Particles In a Uniform Electric Field
 - 9.8 Path Of a Charged Particle
 - 9.9 Shielding From External Electric Field
 - 9.10 Electric Current
 - 9.11 Current Through A Conductor
 - 9.12 OHM's Law
 - 9.13 Resistivity And Its Dependence Upon Temperature
 - 9.14 Electrical Power
 - 9.15 Electromotive Force (EMF) And Potential Difference
 - 9.16 KIRCHHOFF'S Rules
 - 9.17 Wheatstone Bridge
 - 9.18 Potentiometer
 - 9.19 Use of A Galvanometer
 - 9.20 Thermistors

9.21	Light Dependent Resistor
CHAPTER:10	Electromagnetism
10.1	Force On a Current-Carrying Conductor In a Uniform Magnetic Field
10.2	Magnetic Flux And Flux Density
10.3	Magnetic Flux Linkage
10.4	Motion Of a Charged Particle In a Magnetic Field
10.5	Velocity Selector
10.6	Induced EMF And FARADAY's Law
10.7	LENZ'S Law And Direction Of Induced EMF
10.8	Factors Affecting EMF
10.9	Ferrofluids
10.10	A Seismometer
CHAPTER:11	Special Theory Of Relativity
11.1	Relative Motion
11.2	Frames Of Reference
11.3	Special Theory Of Relativity
11.4	The Equivalence Between Mass and Energy
11.5	Space-Time In Relativity
CHAPTER:12	Nuclear and Particle Physics
12.1	Structure And Properties Of The Nucleus
12.2	Fundamental Forces Of Nature
12.3	Matter And Anti-Matter
12.4	Radioactivity
12.5	Fundamental Particles
12.6	Quarks
12.7	Higgs Boson
12.8	Conservation Laws
12.9	The Asymmetry Of Matter And Anti-Matter In The Universe
12.10	Most of The Matter in The Observable Universe Is Plasma
12.11	The Theories About The Forces Between The Masses Of Particles
12.12	The Standard Model

Recommended Book: Physics Part-I

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Marks: 85	PART –II(CLASS-XII)	Time: 3:00 Hours
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CHAPTER:12	ELECTROSTATICS Coulomb's Law. Fields of Force. Electric Field Lines. Applications of Electrostatics. Electric Flux. Electric Flux through a Surface enclosing a Charge. Gauss's Law. Applications of Gauss's Law. Electric Potential. Electron Volt. Electric and Gravitational Forces (A Comparison). Charge on an Electron by Millikan's Method. Capacitor. Capacitance of a Parallel Plate Capacitor. Electric Polarization of Dielectrics. Energy Stored in a Capacitor. Charging and Discharging Capacitor
CHAPTER:13	CURRENT ELECTRICITY Electric Current. Source of Current. Effects of Current. Ohm's Law. Resistivity and its Dependence upon Temperature. Colour code for Carbon Resistances. Electrical Power and Power Dissipation in Resistors. Electromotive force (EMF) and Potential Difference. Kirchhoff's Rules. Wheatstone Bridge. Potentiometer
CHAPTER:14	ELECTROMAGNETISM Magnetic Field due to Current in a long Straight Wire. Force on a Current Carrying Conductor in a Uniform Magnetic Field. Magnetic Flux and Flux Density. Ampere's Law and Determination of Flux Density B. Force on a Moving Charge in a Magnetic Field. Motion of Charged Particle in an Electric and Magnetic Field. Determination of e/m of an Electron. Cathode ray Oscilloscope Torque on a Current Carrying Coil. Galvanometer. Avo Meter - Multimeter
CHAPTER:15	ELECTROMAGNETIC INDUCTION Induced EMF and Induced Current. Motional EMF. Faraday's Law and Induced EMF. Lenz's Law and Direction of Induced EMF. Mutual Induction. Self Induction. Energy Stored in an Inductor. Alternating Current Generator. D.C. Generator. Back Motor Effect in Generators. D.C. Motor. Back EMF Effect in Motors. Transformer
CHAPTER:16	ALTERNATING CURRENT Alternating Current. A.C. Circuits. A.C. through a Resistor. A.C. through a Capacitor. A.C. through an Inductor. Impedance. R-C and R-L Series Circuits Power in A.C. Circuits. Series Resonance Circuit. Parallel Resonance Circuit Three Phase A.C. Supply. Principle of Metal Detectors. Choke. Electromagnetic Waves. Principle of Generation, Transmission and Reception of Electromagnetic Waves. Modulation
CHAPTER:17	PHYSICS OF SOLIDS Classification of Solids. Mechanical Properties of Solids. Electrical Properties of Solids. Superconductors. Magnetic Properties of Solid
CHAPTER:18	ELECTRONICS Brief Review of p-n Junction and its Characteristics. Rectification. Specially Designed p-n Junctions. Transistors. Transistor as an Amplifier. Transistor as a Switch. Operational Amplifier. Op-Amp as Inverting Amplifier. Op-Amp as Non-Inverting Amplifier. Op-Amp as A Comparator. Comparator as a Night Switch Digital Systems. Fundamental Logic Gates. Other Logic Gates. Application of Gates in control Systems
CHAPTER:19	DAWN OF MODERN PHYSICS Relative Motion. Inertial Frame of Reference. Special Theory of Relativity. Black Body Radiation. Interaction of Electromagnetic Radiation with matter. Annihilation of Matter. Wave Nature of Particles. Uncertainty Principle
CHAPTER:20	ATOMIC SPECTRA

CHAPTER:21	Atomic Spectra. Bohr's Model of the Hydrogen Atom. Inner Shell Transitions and Characteristic X-Rays. Uncertainty within the Atom. Laser
	NUCLEAR PHYSICS
	Atomic Nucleus. Isotopes. Mass Defect and Binding Energy. Radioactivity
	Half Life. Interaction of Radiation with matter. Radiation Detectors. Nuclear Reactions. Nuclear Fission. Fusion Reaction. Radiation Exposure. Biological Effects of Radiation. Biological and Medical uses of Radiation. Basic Forces of Nature. Building Blocks of Matter

LIST OF EXPERIMENTS IN PHYSICS FOR CLASS XII (PART-II)

- 1 To determine the resistance of wire by Slide Wire Bridge. Also calculate specific resistance of material of wire.
- 2 To determine the resistance of galvanometer by half deflection method. Also calculate the current for full scale deflection (or for 30 divisions).
- 3 To determine the resistance of a voltmeter by drawing a graph between R and $\frac{1}{V}$.
- 4 To study the variation of resistance of thermistor with temperature.
- 5 To convert a moving coil galvanometer into an ammeter of range (0 – 1 amp).
- 6 To convert a moving coil galvanometer into a voltmeter of range (0 – 3 volts).
- 7 To study the relation between current passing through a tungsten filament bulb and potential difference applied across it.
- 8 To determine the internal resistance of a cell by using potentiometer.
- 9 To determine the EMF of a cell by using potentiometer.
- 10 To compare EMF's of two cells by using potentiometer.
- 11 To study the charging and discharging of a capacitor and to measure time constant.
- 12 To study the relation between current and capacitance when different capacitors are used in A.C circuit.
- 13 To study the characteristics of semiconductor diode and to calculate forward and reverse current resistance.
- 14 To study the characteristics of N-P-N transistor.
- 15 To verify the truth table for basic logic gates.
- 16 To make burglar alarm by using NAND gates.
- 17 To make a fire alarm by using NOT gate.
- 18 To study the variation of electric current with intensity of light using a photo cell.
- 19 To measure the high resistance by Neon Flash Lamp.

ESTIMATED TIME ALLOCATION AND WEIGHTAGE FOR VARIOUS CHAPTERS PHYSICS CLASS XII (PART-II)

Theory	Content	Periods	Weightage,
Chapter 12	Electrostatic	18	12%
Chapter 13	Current electricity	15	10% •
Chapter 14	Electro Magnetism	16	10%
Chapter 15	Electromagnetism Induction	12	8%
Chapter 16	Alternating current	18	12%
Chapter 17	Physics of solids	8	5%
Chapter 18	Electronics	10	7%
Chapter 19	Dawn of Modern Physics	18	12%
Chapter 20	Atomic Spectra	15	10%
Chapter 21	Nuclear Physics	20	14%
Total	*	150	100% .

