

Most Important Derivation for class 12th PHYSICS

Session 2020-21

Chapter-1st Electric Charges and Fields

- 01 Derive an expression for Coulomb's Law, it's Vector Form & Superposition Principle.
- 02 Derive an expression for Electric Field due to dipole at axial and equatorial line.
- 03 Derive an expression for Electric field due to infinite long thin uniformly charged wire.
- 04 Derive an expression for Electric Field due to uniformly charged thin sheet (All Cases).
- 05 Derive an expression for torque on dipole placed in Uniform External Field.
- 06 Derive an expression for Potential Energy Stored in a Dipole placed in Uniform External Field.

Chapter-2nd Electrostatics Potential & Capacitance

- 07 Derive an Expression for Electric Potential due to dipole.
- 08 Derive an expression for Electric Potential at any point due to a Point Charge.
- 09 Derive an Expression for Capacitance of a Parallel Plate Capacitor.

- 10 Derive an expression for capacitance of a parallel plate capacitor on introducing dielectric Slab partially Filled and completely filled.
- 11 Derive an Expression for Energy stored in a capacitor.

Chapter-3rd Current Electricity

- 12 Derive an Expression for Concept of Drift Velocity.
- 13 Derive an expression for Relation between Current and Drift Velocity. And also, with current density.
- 14 Deduction of Ohm's law from idea of drift velocity.
- 15 Derive an expression for combination of Cells.
- 16 Derive an Expression for Electric Power and Electric Energy.

Chapter-4th Moving Charges and Magnetism

- 17 Derive an expression for Biot-Savart Law.
- 18 Derive an expression for Magnetic field on the axis of a circular current loop.
- 19 Derive an expression for Magnetic field due to The Solenoid and The Toroid.
- 20 Derive an expression for Force between two parallel currents.
- 21 Derive an expression for Torque on a current loop, Magnetic Dipole.

Chapter-5th Magnetism and Matter

22 Derive an expression for the Horizontal and Vertical Components of the Earth's Magnetism.

Chapter-6th Electromagnetic Induction

23 Derive an expression for Motional EMF.

24 Derive an expression for Self-Inductance of a Solenoid.

25 Derive an expression for Mutual Inductance of Two Mutually Placed Solenoid.

Chapter-7th Alternating Current

26 Derive an expression for Impedance of Series LCR Circuit.

27 Derive an expression for Root Mean Square Value of Current and Voltage.

28 Derive an expression for Current and Voltage

a). AC applied to a Resistor Only

b). AC applied to a Inductor Only

c). AC applied to a Capacitor Only

29 Derive an expression for (Resonant Series LCR circuit) Resonant Frequency.

30 Derive an expression for Power in an AC circuit.

Chapter-8th Electromagnetic waves

31 Derive an expression for the Transverse nature of Electromagnetic Waves.

Chapter-9th Ray Optics and Optical Instruments

32 Derive an Expression for the Refraction through a Glass Slab (Lateral Shift).

33 Derive an Expression for the Real and Apparent depth.

34 Derive an Expression for the Refraction from Concave and Convex Spherical Surfaces.

35 Derive an expression for Lens Maker's Formula.

36 Derive an expression for Refraction through Prism.

37 Derive an Expression for the Magnifying Power of

a). Microscope

b). Telescope

38 Derive an Expression for the Power of Lens.

Chapter-10th WAVE Optics

39 Derive an expression for the Refraction of Plane wave using Huygens Principle.

40 Derive an expression for the reflection of plane waves using Huygens Principle.

- 41 Derive an expression for the Intensity distribution & Condition for sustained Interference of light (Interference of light).
- 42 Derive an expression for the Fringe width, Path Difference (conditions for constructive and destructive interference), Angular Fringe Width.
- 43 Derive an expression for the Diffraction due to a single slit (all conditions).

Chapter-11th Dual Nature of Radiation & Matter.

- 44 Derive an expression for the DE Broglie's wavelength.
- 45 Derive an expression for the Wavelength of Electron.
- 46 Derive an expression for Work function.

Chapter-12th Atoms

- 47 Derive an expression for Radius, Velocity, Potential Energy, Kinetic Energy and Total Energy of Hydrogen atom.
- 48 Derive an Expression for Transition of Electron or Wave Number.
- 49 Derive an expression for wave number for all Series.
- 50. Learn the Impact parameter and Distance of Closest Approach.

Chapter-13th Nuclei

No Derivation

Chapter-14th Semiconductor Devices

No Derivation

Pewton Study