CLASS 12 CBSE PHYSICS

NOTE : PLEASE REFER TO THE NOTES THAT I HAVE UPLOADED ON MY YOUTUBE CHANNEL. THEY ARE THE BEST NOTES YOU CAN HAVE FOR CLASS 12 BOARDS. THE LINK FOR THOSE NOTES IS GIVEN IN THE DESCRIPTION BOX OF THE VIDEO. YOU CAN ALSO SEARCH "AMAN DHATTARWAL PHYSICS NOTES" FOR THE SAME.

BEST OF LUCK :)

Chapter : EMI
- Faraday's law // V.Important
- Lenz rule and priciple of conservation of energy
- Motional EMF - induced emf
- Energy consideration (learn formula's for P, delta Q)
- Eddy Current, its disadvantage and its USES (V.Important) - 4 uses (magnetic braking …etc)
- Self Inductace - work done (derivation)
- Mutual Inducatance
- Coefficient of mutual inductance of Pair of Coils i)

Chapter - Ray Optics
- Laws of reflection
- Relation b/w 'f' & 'r' using i) concave mirror (ii) convex mirror
- Mirror Formula using i) concave mirror (ii) convex mirror
- Magnification formula & uses of mirrors (simple :))
- Spherical Aberration
- Law of refraction. Refraction through a i) Glass slab (ii) Multiple media
- Real and Apparent depth - optical density
- Total Internal Reflection - critical angle, TIR applications (V.Important , learn all - mirage, brilliance of diamond, optical fibre etc)
- Refraction through convex surface
- Lens maker formula (derivation) // tought but frequently asked
- Power of a lens - combination of lens
- Refraction through a glass prism - minimum angle of deviation (derivation) // Imp.
- Optical Instrument - refer to Pradeep Kshterapal's video on Youtube for better understanding

Chapter : Current Electricity
- Expression for current - derivation (I =neAvd)
- Derivation of Ohm's Law
- Temprature dependence of resistance
- Kirchof's Law
- Combination of Cells- series,parrallel,mixed) - just learn Eeq & Req (derivation not imp)
- Combination of resistance
- Wheat Stone Bridge & its Application & how is it used to measure unknown temprature
- Ammeter , Voltmeter, Potentiometer
- House Hold Circuit

Chapter - Magnetism
- Magnetic field due to magnetic dipole i) at any point on axis or tanA position (ii) at any point on equitorial plane (iii) magnetic field intensity due to a short dipole
- (i) Force and torque acting (ii) Work done - on a magnetic dipole in a uniform external magnetic field
- Terrestrial magnetism - element of earth's magnetic field
- Magnetic dipole movement of a revolving electron in an atom
- Behaviour of dia, para and fero magnetic substances in an external magnetic field
- Relative magnetic permeability

- Curie law
- Magnetic Saturation

Chapter - Magnetic Effect of Current & Magnetism

- Biot Savart Law
- Magnetic Field Intensity due to a current carrying conductor of i) finite length (ii) infinite length (iii) semi-infinite length (iv) if the point is along the length of the conductor (v) point is beyond the finite end at some perpendicular distance X.
- Magnetic field due to a loop of current carrying conductor at i) centre of the loop (ii) at any point on the axis of a circular loop
- Ampere's circuit law and it's application
- Motion of a charged particle in a magnetic field - Lorentz force and it's application
- Motion of a charged particle in a magnetic field when its velocity is i) Perpendicular to magnetic field (ii) not perpendicular to magnetic field
- Cyclotron - construction, working, construction // V.Important
- i) Force (ii) Torque acting on a current carrying loop/coil in a uniform magnetic field
- Moving Coil Galvanometer : Construction, Working, Principle // V. Important
- Force b/w parallel current carrying conductors.
- Definition of Ampere :)

Chapter : Electric Charge and Fields

- Verify Gauss theorem and write it's applications.
- Prove electric field is conservative in nature.
- Derive an expression for the electric field at a point on the axial / equatorial position of an electric dipole.
- State Coulomb's law and express it in vector form.
- Find the expression for electric fields intensity at a point on the axial of a uniformly charged ring.
- Define electric flux. Write its SI unit
- Define Equipotential surfaces. Draw equipotential surface for (a) Isolated point charge (b) Uniform Electric Field (c) for a system of two point charges
- Define an expression for work done in rotating an electric dipole in a uniform electric field. **
- Derive an expression for torque on an electric dipole in a uniform electric field. **
- State Gauss theorem and use it to find the electric field at a point due to -
  i) An infinitely charged thin plane sheet has a uniform surface charge density.
  ii) A uniformly charged spherical conducting shell of radius R
  iii) A uniformly charged spherical non-conducting shell of radius R

Chapter : Communication Systems : Do the notes uploaded by me . The link will also be given in the description of the video.

Chapter : Atoms

- Explain Bohr's theory of hydrogen in the form of three postulates & also point out the limitation of Bohr's model.
- Using the postulates of Bohr's model of hydrogen atom, obtain an expression for the frequency of radiation emitted when the atom makes a transition from the higher energy state with quantum number ni to the lower energy state with quantum energy nf. Where nf is smaller than ni.
- Using Bohr's postulates, obtain the expression for the total energy of the electron in the stationary states of the hydrogen atom. Hence draw teh energy level diagram showing how the line spectra corresponding to Balmer series occur due to trasition between energy levels.

- What do you mean by distance of closest approach and also write the formula with proper symbols explanation.
- Write basic assumptions of Rutherford's atomic model & also explain the drawbacks of Rutherfords model.
- Using postulates of Bohr's theory of hydrogen atom, show that i) Radii of orbits increases as n^2 (ii) the total energy of electron increases as 1/n^2, where n is the principal quantum number of the atom
- Explain how one gets the information on the size of the nucleus from study of Geiger-Marsden experiment. From the relation R=R*A^1/3, where R* is constant and A is the mass number of the nucleus, show that nuclear matter density is independent of A.

Important Numericals from NCERT book -

Chapter 7 : Alternating Current
Example : 3,4,5,6,8,9,11

Chapter 8 : Electromagnetic Waves
Example : 2,3,4,5

Chapter 9: Ray Optics
Example : 8,9,10

- A ray of light passes through an equilateral prism (refractive index 1.5) such that angle of incidence is equal to angle of emergence and the latter is equal to 3/4th the angle of the prism. Calculate the angle of prism. Ans : 30 degree
- How much water should be filled in a container 21 cm in height, so that it appears half filled when viewed from top of the container (refractive index of water wrt air = 4/3)

Chapter 4: Moving Charge and Magnetism
Example : 2,3,4,6,13

Chapter 3: Current Electricity
Example : 1,3,4,7,9,10

Chapter 5: Magnetism and Matter
Example : 1,2,3,6,7,8,9,10,11
Chapter 6 : Electromagnetic Induction
Example : 1,3,4,5,6,9,10

Chapter 10 : Wave Optics
Example : 3,4,5,6,7,8,9

Chapter 11 : An electrona and a proton each has a de Broglie length of 1.00nm. (i) Find the ratio of their momenta (ii) Compare the Kinetic Energy of the proton with that of the electron. Ans : i) 1:1 (ii) 5.4 * 10^-4

Chapter 2 : Electrostatic Potential and Capacitance
Examples : 2,5,8,9,10

Chapter 1 : Electric Charges and Fields
Example : 7,9,11,12

Chapter 12 : Atoms

- The value of a ground state energy of hydrogen atom is -13.6eV. (i) Find the energy required to move an electron from the ground state to the first excited state of the atom. Ans : 10.2 eV.

(ii) Determine (a) Kinetic energy and (b) Orbital radius of the first excited state of the atom. (Given, the value of the Bohr's radius= O.53A*) Ans: (a) 3.4eV (b) 2.12 A*