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REVOLUTION FOR LEARNING
COIMBATORE
12TH PHYSICS VOLUME -I
IMPORTANT QUESTIONS

Unit – 1 Electrostatics

Two marks

Book Back

1. Define 'Electric dipole'
2. Define 'Electric field'.
3. What is the general definition of electric dipole moment?
4. What are the properties of an equipotential surface?
5. What is Polarisation?
6. Write a short note on 'electrostatic shielding'.
7. Define 'electric flux'
8. What is meant by quantisation of charges?
9. What is an equipotential surface?
10. Give the relation between electric field and electric potential.
11. Define 'capacitance'. Give its unit.
12. What is corona discharge?

Book inside

1.Define Gauss law
2.Difference between polar and non polar molecule
3.Why it is safer to sit inside a bus rather than under a tree during rain with thunder and lightning
4.Define electrostatic induction
5.State Coulomb's law
6.Explain the principle and working of microwave oven
7.What are the applications of capacitors

Three marks

Book back

1. What are the differences between Coulomb force and gravitational force?
2. Derive an expression for the torque experienced by a dipole due to a uniform electric field.
3.Derive an expression for electrostatic potential due to a point charge.
4. Derive an expression for electrostatic potential energy of the dipole in a uniform electric field.
5. Obtain the expression for capacitance for a parallel plate capacitor.
6. Obtain the expression for energy stored in the parallel plate capacitor.
7. Discuss the various properties of conductors in electrostatic equilibrium.

Book inside

1.Write down rules are followed while drawing electric field lines for charges or properties of electric lines of force

Five marks

Book Back

1. Explain in detail the construction and working of a Van de Graaff generator.
2. Calculate the electric field due to a dipole on its axial line
3. Calculate the electric field due to a dipole on its equatorial plane.
4. Derive an expression for electrostatic potential due to an electric dipole and explain its special cases
5. Derive the expression for resultant capacitance, when capacitors are connected in series and in parallel.
6. Obtain the expression for electric field due to an infinitely long charged wire.

Unit -2 Current Electricity

Two marks

Book Back

1. Distinguish between drift velocity and mobility.
2. Define electrical resistivity. Give its unit
3. Define temperature coefficient of resistance.
4. What is superconductivity?
5. What is electric power and electric energy?
6. Define current density.
7. State the principle of potentiometer.
8. State Joule's law of heating.
9. What are ohmic and non ohmic devices?
10. State Ohm's law

Three marks

Book inside

1. State and explain Kirchhoff's rules.
2. Explain the equivalent resistance of a series and parallel resistor network
3. Explain about i) Seebeck effect ii)Thomson effect iii)Thermoelectric effect iv)Peltier effect
4. Derive relation between current and drift velocity

Five marks

Book Back

1. Obtain the condition for bridge balance in Wheatstone's bridge.
2. Explain the determination of the internal resistance of a cell using voltmeter and potentiometer
3. How the emf of two cells are compared using potentiometer?
4. Explain the determination of unknown resistance using meter bridge.
5. Describe the microscopic model of current and obtain general form of Ohm's law
6. Obtain the macroscopic form of Ohm's law from its microscopic form and discuss its limitation.

Unit - 3 MAGNETISM AND MAGNETIC EFFECTS OF ELECTRIC CURRENT

Two marks

Book Back

1. What is meant by magnetic induction?
2. Define magnetic flux.
3. Define magnetic dipole moment.
4. State Coulomb's inverse law.
5. What is magnetic susceptibility?
6. What is magnetic permeability?
7. State Ampere's circuital law.
8. What is meant by hysteresis?

Book inside

1. Define one ampere
2. State tangent law
3. Define magnetic flux density
4. Define Meissner effect
5. State Curie's law
6. State Curie's Weiss law
7. Define retentivity or remanence
8. Define coercivity ?
9. State right hand thumb rule for magnetic field
10. State Maxwell's right hand cork screw rule
11. Define one tesla
12. How can you increase the current sensitivity of a galvanometer?
13. State Fleming's left hand rule

Three marks

Book Back

1. Compare dia, para and ferro-magnetism.
2. Compute the torque experienced by a magnetic needle in a uniform magnetic field.
3. Discuss the conversion of galvanometer into an ammeter and also a voltmeter.
4. State and explain Biot-Savart law
5. Discuss Earth's magnetic field in detail.
6. Deduce the relation for the magnetic induction at a point due to an infinitely long straight conductor carrying current.

Book inside

1.Difference between hard and soft ferro magnets
2.Difference and similarities between Coulomb's law and Biot- Savart law

Five marks

Book Back

1. Explain the principle and working of a moving coil galvanometer.
2. Discuss the working and limitations of cyclotron in detail.
3. Calculate the magnetic induction at a point on the axial line of a bar magnet.
4.Obtain the magnetic induction at a point on the equatorial line of a bar magnet.
5. Find the magnetic induction due to a long straight conductor using Ampere's circuital law.
6. Calculate the magnetic field inside and outside of the long solenoid using Ampere's circuital law.
7. Obtain a relation for the magnetic induction at a point along the axis of a circular coil carrying current.

Book inside

1.Explain the principle and working of a tangent galvanometer.
2. Calculate the magnetic induction at a point due to an infinitely long straight conductor carrying current
3.Derive an expression for force between two long parallel current carrying conductors. Hence define one ampere
4.Explain the motion of a charged particle in a magnetic field. Deduce the period of rotation in it

Unit – 4 ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENT

Two marks

Book back

1. Mention the ways of producing induced emf.
2. State Fleming's right hand rule(generator rule)
3. State Lenz's law.
4. State Faraday's laws of electromagnetic induction.
5. What are step-up and step-down transformers?
6. What do you mean by self-induction?
7. What is meant by mutual induction?
8. Give the principle of AC generator.
9. How will you define Q-factor?
10. How will you define RMS value of an alternating current?
11. What do you mean by resonant frequency?
12.Define power factor
13.What are LC oscillations

Book inside

1.What is the advantage of stationary armature rotating field alternator
2.Define efficiency of a transformer
3.What is phasor
4.Define inductive reactance
5. Define capacitive reactance
6.An capacitor allows A.C but not D.C why
7.Define one henry

Three marks

Book Back

1. Show that Lenz's law is in accordance with the law of conservation of energy.
2. Using Faraday's law of electromagnetic induction, derive an equation for motional emf.
3. An inductor of inductance L carries an electric current i. How much energy is stored while establishing the current in it?

4. How will you induce an emf by changing the area enclosed by the coil?
5. Find out the phase relationship between voltage and current in a pure resistive circuit.
6. Obtain an expression for average power of AC over a cycle. Discuss its special cases.
7. Mention the various energy losses in a transformer.

Five marks

Book Back

1. Explain the construction and working of transformer.
2. Show mathematically that the rotation of a coil in a magnetic field over one rotation induces an alternating emf of one cycle.
3. Explain the working of a single-phase AC generator with necessary diagram.
4. Give the uses of Foucault or eddy current.
5. Derive an expression for phase angle between the applied voltage and current in a series RLC circuit.
6. Find out the phase relationship between voltage and current in a pure inductive circuit.

Book inside

1. Find out the phase relationship between voltage and current in a pure capacitive circuit.
2.Derive the mutual inductance between two coaxial solenoids.

Unit – 5 ELECTROMAGNETIC WAVES

Two marks

Book back

1. Write down the integral form of modified Ampere's circuital law.
2. What is meant by Fraunhofer lines?
3. What are electromagnetic waves?
4. What is displacement current?
5. Explain the concept of intensity of electromagnetic waves.

Book inside

1.What is pointing vector
2.What are the uses i)UV ii)microwave iii)X -rays

Three marks

Book Back

1. Write short notes on (a) microwave (b) X-ray (c) radio waves (d) visible spectrum

Five marks

Book Back

1. What is emission spectra?. Give their types.
2. What is absorption spectra?. Give their types.
3. Write down the properties of electromagnetic waves.
4. Discuss briefly the experiment conducted by Hertz to produce and detect electromagnetic spectrum.
5. Explain the Maxwell's modification of Ampere's circuital law.
6. Write down Maxwell equations in integral form.