PHYSICS

BOOKS - OSWAAL PUBLICATION

PHYSICS (KANNADA ENGLISH)

MOVING CHARGES & MAGNETISM

Topic 1 Magnetic Field Very Short Answer Type Questions

1. Write the condition under which an electron will move undeflected in the presence of corssed electric and magnetic fields.

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2. Write the expression, in vector form, for the Lorentz magnetic force $\vec{F}$ due to a charge moving with velocity $\vec{v}$ in a magnetic field $\vec{B}$. What is the direction of the magnetic force ?

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3. Define tesla. using the expression for the force on a charged particle moving in a magnetic field.

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4. Two bar magnets are quikly moved towards a metallic loop connected across a capacitor 'C' as shown in the figure. Predict the polarity of the capacitor.

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5. A beam of a particles projected along + x-axis, experiences a force due to a magnetic field along the + y-axis . What is the direction of the magnetic field ?

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Topic 1 Magnetic Field Short Answer Type Questions I

1. List the properties of magnetic field lines.

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2. Two very small identical circular loops, (1) and (2), carrying equal currents I are placed vertically (with respect to the plane of the paper) with their geometrical axes perpendicular to each other as shows in the figure. Find the magnitude and direction of the net magnetic field produced at the point

O.

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3. A proton and a deuteron with the same initial kinetic energy enter a magnetic field in a direction perpendicular to the direction of the field.The ratio of the radii of the circular trajectories described by them is

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4. A long straight wire AB carries a current I. A proton P travels with a speed v, parallel to the wire, at a distance d from it in a direction opposite to the current as shown in the figure. What is the force experienced by the proton and what is its direction ?

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Topic 1 Magnetic Field Long Answer Type Question

1. Derive the expression for magnetic field at a point on the axis of a circular current loop.

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Topic 1 Magnetic Field Numerical Problem

1. A straight wire of length $\pi / 2$ m is bent into a circular shape. O is the centre of the circle formed and P is a point on its axis which is at a distance of 3 times the radius from O. A

current of 1 A is passed throught it. Calculate the magnitude of the magnetic field at the point O and P .

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Topic 2 Ampere S Law And Its Applications Very Short Answer Type Question

1. State Ampere's circuital law and represent it mathematically.

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Topic 2 Ampere S Law And Its Applications Short Answer Type Questions Ii

1. Give the principle of cyclotron and draw the neat labelled schematic diagram of cyclotron.

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2. (a) How is a toroid different from a solenoid ?

(b) Use Ampere's circuital law to obtain the

magnetic field inside a toroid.

(c) Show that in an ideal toroid. The magnetic field

(i) inside the toroid and (ii) outside the toroid at any point in the open space is zero.

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3. Using Ampere's circutial law, obtain the expression for the magnetic field due to a long solenoid a point inside the solenoid on its axis.

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Topic 3 Current Carrying Conductor Galvanometer Short Answer Type Questions I

1. Why is the pole pieces of a magnet are concave shaped in a moving coil galvanometer ? What is the role of soft iorn cylinder kept within the coil of the moving coil of the galvanometer ?

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2. Explain giving reasons, the basic difference in converting a galvanometer into (i) a voltmeter and (ii) an ammeter.

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Topic 3 Current Carrying Conductor Galvanometer Short Answer Type Questions Ii

1. How is galvanometer converted into an ammeter?

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2. Write the expression, for the force acting on a charge moving in a uniform magnetic field. Mention the nature of a trajectory of the charged particle which is moving (i) parallel and (ii) perpendicular to the magnetic field.

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3. When is the force experienced by current carrying conductor placed in a magnetic field

largest ?

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Topic 3 Current Carrying Conductor Galvanometer Long Answer Type Question

1. Draw a labelled diagram of a moving coil galvanometer. Describe briefly its principle and working.

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Topic 3 Current Carrying Conductor Galvanometer Numerical Problem

1. An ammeter of resistance 0.80Ω can measure current upto 1.0 A.

(i) What must be the value of shunt resistance to enable the ammeter to measure current upto 5.0 A ?

(ii) What is the combined resistance of the ammeter and the shunt ?

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