

O P JINDAL SCHOOL, SAVITRINAGAR

CLASS TEST & PRACTICE

ANSWER KEY

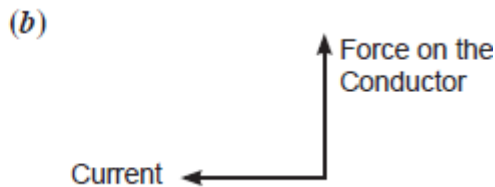
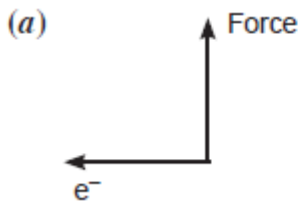
CLASS X PHYSICS

TOPIC : MAGNETIC EFFECT
OF CURRENT AND
MAGNETISM

- 1 State important features of the magnetic field obtained inside the solenoid. Write one use of solenoid. 1

ANS: The field lines inside the solenoid are parallel and closely spaced showing the field is highly uniform, same in strength at all the points and in the same direction. Solenoid is used for making electromagnet.

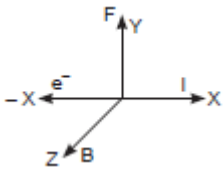
- 2 State the direction of magnetic field in the case as shown.



ANS: (a) In given situation, according to Fleming's Left-Hand Rule Force is along y-axis. Current is along x-axis.

Then magnetic field is along z-axis.

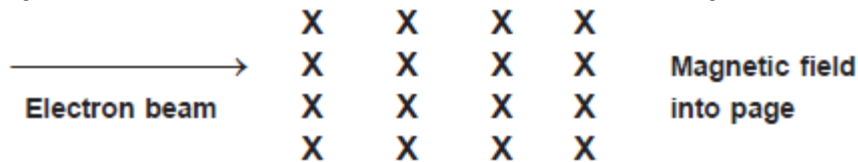
(b) Perpendicular to plane of paper in the outward direction by using Fleming's Left-Hand Rule.



- 3 An electron does not suffer any deflection while passing through a region of uniform magnetic field. What is the direction of magnetic field? 1

ANS: Magnetic field will be parallel or antiparallel to the direction of motion of a charged particle, i.e. electron. This is because parallel or antiparallel magnetic field does not exert any force on the charge particle which moves along the direction of magnetic field.

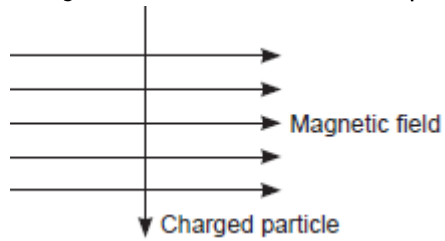
- 4 The diagram shows a beam of electrons about to enter a magnetic field. The direction of the field is into the



page. 1
What will be the direction of deflection, if any, as the beam passes through the field?

ANS: Direction of current is from right to left as electron beam enters from left to right and magnetic field is into the page. So, according to Fleming's left hand rule, force is perpendicular to the flow of current and in its left side. So, electron beam deflects towards bottom of the page.

- 5 A charged particle enters at right angles into a uniform magnetic field as shown. What should be the nature of charge on the particle if it begins to move in a direction pointing vertically out of the page due to its interaction



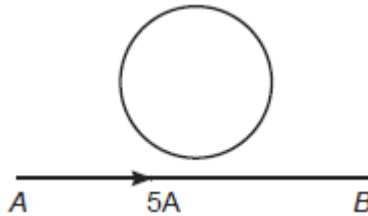
with the magnetic field?

ANS: Using Fleming's Left-Hand Rule, the nature of charge particle is positive.

- 6 An electron beam is moving vertically upwards. If it passes through a magnetic field which is directed from south to north in a horizontal plane, then in which direction will the beam deflect?

ANS: Using Fleming's Left-Hand Rule, electron beam will be deflected towards the west.

- 7 A steady current of 5 A is flowing through a conductor AB. Will the current be induced in the circular wire of radius 1m?



ANS: No, because circular coil is placed in a constant magnetic field produced by a steady current of 5A.

- 8 What type of core should be used inside a solenoid to make an electromagnet?

ANS: Soft iron core.

- 9 Name the device used to prevent damage to the electrical appliances and the domestic circuit due to overloading.

ANS: Electric fuse.

- 10 Give one difference between the wires used in the element of an electric heater and in a fuse.

ANS: Electric wire used in electric heater has a high melting point whereas fuse wire has a low melting point.