

# BRAIN INTERNATIONAL SCHOOL

PHYSICS ASSIGNMENT

CLASS X

JUNE, 2021

## CH: 13 MAGNETIC EFFECT OF ELECTRIC CURRENT

- Choose the incorrect statement from the following regarding magnetic lines of field
  - The direction of magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points
  - Magnetic field lines are closed curves
  - If magnetic field lines are parallel and equidistant, they represent zero field strength
  - Relative strength of magnetic field is shown by the degree of closeness of the field lines
- Commercial electric motors do not use
  - an electromagnet to rotate the armature
  - effectively large number of turns of conducting wire in the current carrying coil
  - a permanent magnet to rotate the armature
  - a soft iron core on which the coil is wound
- Choose the incorrect statement
  - Fleming's right-hand rule is a simple rule to know the direction of induced current
  - The right-hand thumb rule is used to find the direction of magnetic fields due to current carrying conductors
  - The difference between the direct and alternating currents is that the direct current always flows in one direction, whereas the alternating current reverses its direction periodically
  - In India, the AC changes direction after every  $1/50$  second
- The strength of magnetic field inside a long current carrying straight solenoid is
  - more at the ends than at the centre
  - minimum in the middle
  - same at all points
  - found to increase from one end to the other
- The most important safety method used for protecting home appliances from short circuiting or overloading is
  - earthings
  - use of fuse
  - use of stabilizers
  - use of electric meter
- What does the direction of thumb indicate in the right-hand thumb rule? In what way this rule is different from Fleming's left-hand rule?
- What is the role of fuse, used in series with any electrical appliance? Why should a fuse with defined rating not be replaced by one with a larger rating?
- Explain with the help of a labelled diagram the distribution of magnetic field due to a current through a circular loop. Why is it that if a current carrying coil has  $n$  turns the field produced at any point is  $n$  times as large as that produced by a single turn?
- Under what conditions permanent electromagnet is obtained if a current carrying solenoid is used? Support your answer with the help of a labelled circuit diagram.
- Why does a magnetic compass needle pointing North and South in the absence of a nearby magnet get deflected when a bar magnet or a current carrying loop is brought near it. Describe some salient features of magnetic lines of field concept.