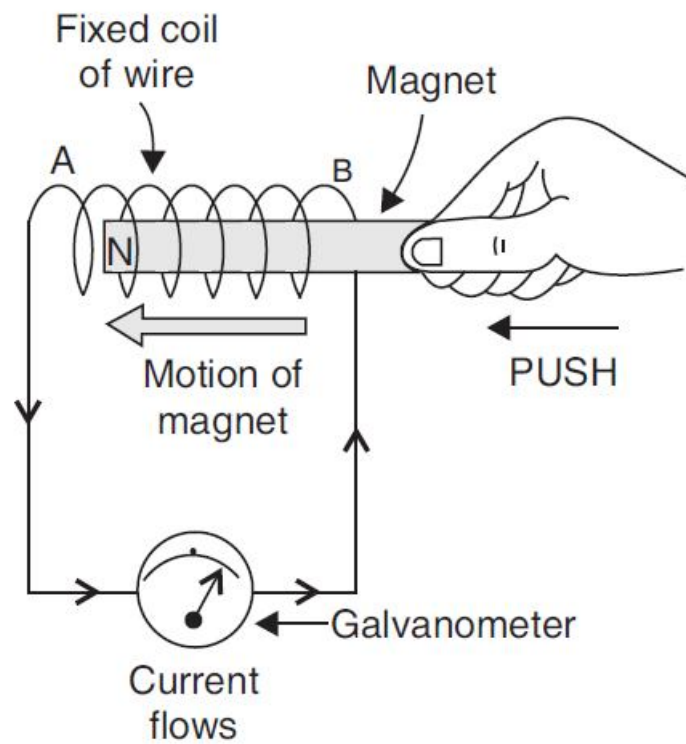


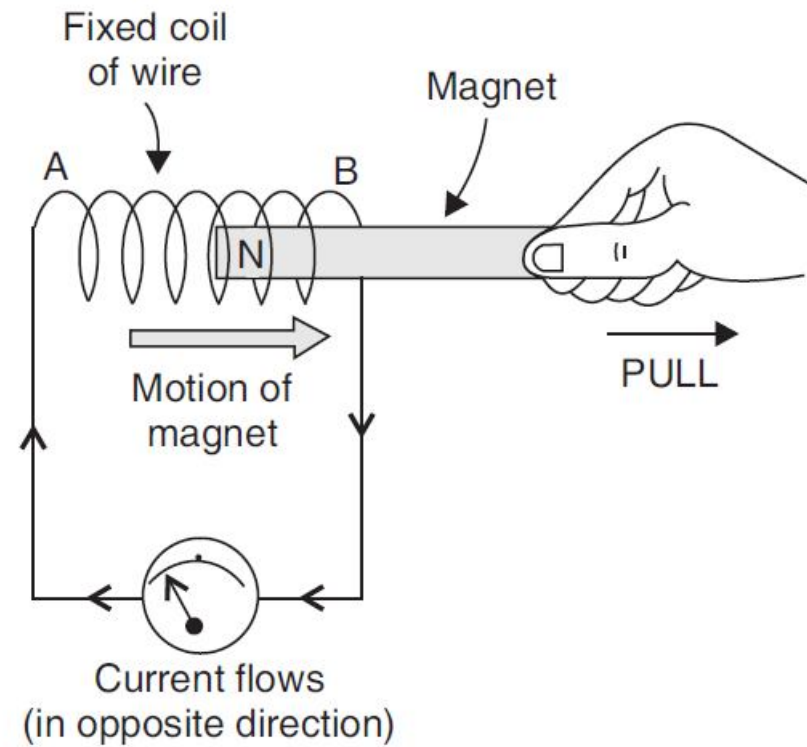
CASE STUDY QUESTION 16

Read the following and answer any four questions from (i) to (v)

Ram is doing one experiment on Electromagnetic induction. He has a fixed coil of wire AB and he connected the two ends of the coil galvanometer. Now, he observe that when a bar magnet is held standstill inside the hollow coil of wire, then there is no deflection in the galvanometer pointer showing that no electric current is produced in the coil of wire when the magnet is held stationary in it. After that he moved bar magnet quickly into a fixed coil of wire AB. He observes that When a bar magnet is moved quickly into a fixed coil of wire AB, then a current is produced in the coil. This current causes a deflection in the galvanometer pointer [see Figure (a)]. Similarly, he observes that when the magnet is moved out quickly from inside the coil, even then a current is produced in the coil [see Figure (b)]. This current also causes a deflection in the galvanometer pointer but in the opposite direction (showing that when the direction of movement of magnet changes, then the direction of current produced in the coil also changes). So, he confirms that the current produced in this case is also alternating current or a.c.



(a) As a magnet is pushed into the fixed coil, a current is produced in the coil



(b) When the magnet is pulled out from the fixed coil, even then a current is produced in the coil (but in the opposite direction)

(i) The phenomenon of electromagnetic induction is :

(a) the process of charging a body.

(b) the process of generating magnetic field due to a current passing through a coil.

(c) producing induced current in a coil due to relative motion between a magnet and the coil.

(d) the process of rotating a coil of an electric motor.

Ans: (c) producing induced current in a coil due to relative motion between a magnet and the coil.

(ii) A soft iron bar is inserted inside a current-carrying solenoid. The magnetic field inside the solenoid :

(a) will decrease (b) will increase

(c) will become zero (d) will remain the same

Ans: (b) will increase

(iii) The magnetic effect of current was discovered by :
(a) Maxwell (b) Fleming (c) Oersted (d) Faraday

Ans: (c) Oersted

(iv) The magnetic field inside a long straight solenoid carrying current :
(a) is zero
(b) decreases as we move towards its end.
(c) increases as we move towards its end.
(d) is the same at all points.

Ans: (d) is the same at all points.

(v) If the direction of electric current in a solenoid when viewed from a particular end is anticlockwise, then this end of solenoid will be :

(a) west pole (b) south pole (c) north pole (d) east pole

Ans: (c) north pole