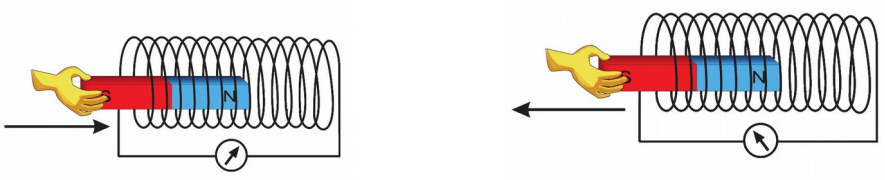
PHYSICS - X-PART-01 CLASS 19

Galvanometer

Galvanometer is a device used to understand the direction and magnitude of even a small current.

Electromagnetic Induction



1. Why did the galvanometer needle deflect in the experiment?
* Whenever there is a change in the magnetic flux linked with a coil, an emf is induced in the coil.

2. Which were the instances in which there was a flow of current through the solenoid?
* Whenever there is a relative motion between the magnet and the solenoid, there is flow of electricity.

Electromagnetic Induction

* Whenever there is a change in the magnetic flux linked with a coil, an emf is induced in the coil. This phenomenon is electro-magnetic induction.

* The current thus induced is the induced current. The voltage induced is the induced emf.

Sl. No.	Experimental procedure	Observation (Galvanometer needle)	
		Deflects/ does not deflect	Direction to the left/ to the right
1	The magnet is stationary near the solenoid	Does not deflect	
2	North pole of the magnet is moved into the solenoid	Deflect	To the left
3	The magnet is stationary inside the solenoid	Does not deflect	
4	The magnet is moved out of the solenoid.	Deflect	To the right
5	The south pole of the magnet is moved into the solenoid	Deflect	To the right
6	Magnet and solenoid are moved in the same direction at the same speed	Does not deflect	
7	The solenoid is moved keeping the magnet stationary	Deflect	left or right

Factors affecting the induced emf

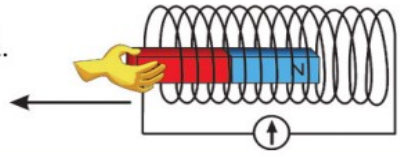
Repeat the experiment using magnets of greater strength, and increasing the number of turns in the solenoid. On the basis of the experiment, complete the table

Experiment	Deflection of the galvanometer needle	
	increases	decreases
Number of turns increased	Increased	
Strong magnet is used	Increased	
Magnet/solenoid moves with greater speed.	Increased	

1. What may be the factors affecting the induced emf?
   * Number of turns of the coiled conductor
   * Strength of the magnet
   * Movement of magnet and solenoid

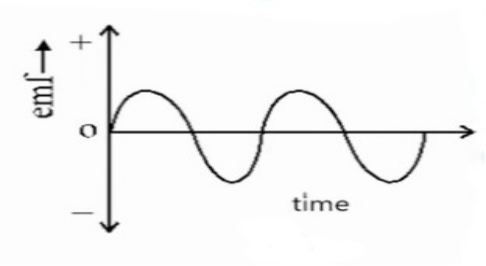
2. Which are the factors on which the direction of induced current in electromagnetic induction depend?
   * Direction of magnetic field
   * Direction of motion of the conductor

Alternating Current (AC), Direct Current (DC)

Activity	Movement of Galvanometer needle
Activity 1 The galvanometer, cell, resistor, and switch are connected in series. Circuit is switched on.	* Current flows in unidirection * Shows same magnitude
Activity 2 The galvanometer is connected to a solenoid. A magnet is moved in and out continuously in the solenoid. 	* Change direction periodically * Shows different magnitude

Direct Current (DC) - A current that flows only in one direction continuously is a direct current (DC).

Alternating Current (AC) - Current that changes direction at regular intervals of time, is an alternating current (AC).



Assignment

You are given

1. Bar Magnet
2. Solenoid
3. Galvanometer

a) Draw the complete circuit of the experiment done in class room to produce electric current using the components shown?

b) Which phenomenon causes the production of electricity through the circuit?

c) Define this phenomenon.

d) Write three factors that are helpful to increase the amount of electric current in this experiment.