SNS COLLEGE OF ENGINEERING

(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

23EET101 / BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

I YEAR / I SEMESTER

UNIT-I: ELECTRICAL CIRCUITS AND MEASUREMENTS

2. MOVING IRON INSTRUMENTS

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MOVING IRON INSTRUMENTS

Types of moving iron instruments:

1. Attraction type
2. Repulsion type

Principle of Attraction type MI:

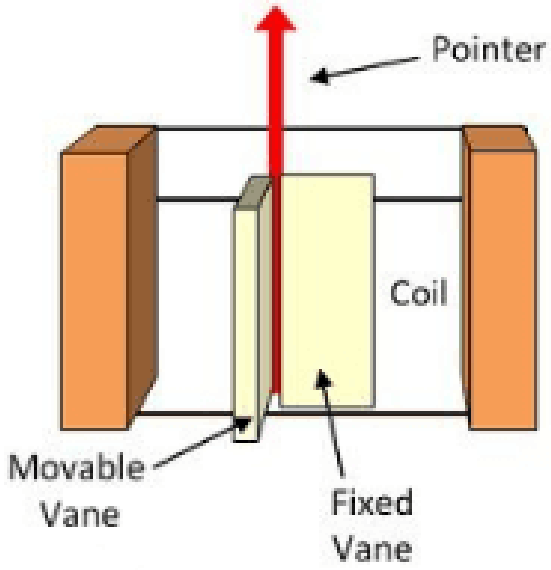
- A soft iron piece gets magnetized when it is brought into a magnetic field produced by a permanent magnet.
- The same phenomenon happens when the soft iron piece is brought near either of the ends of a coil carrying current.
- The iron piece is attracted towards that portion where the magnetic flux density is more.

MOVING IRON INSTRUMENTS

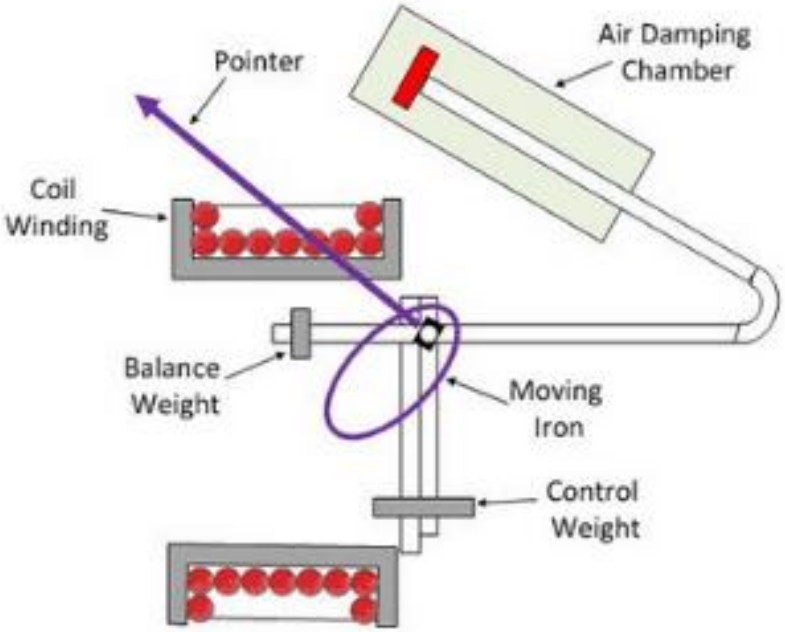
Construction:

- The moving iron, i.e. the disc of soft iron, is eccentrically mounted.
- Coil is situated around the disc. When the coil is excited it produces magnetic field.
- Due to magnetic field the moving iron moves from the weaker field outside the coil to the stronger field inside the coil.
- Thus moving iron gets attracted inwards and pointer attached to it moves over the scale

MOVING IRON INSTRUMENTS



FRONT VIEW



TOP VIEW

MOVING IRON INSTRUMENTS

Advantages MI :

- Suitable of AC as well as DC measurements.
- Good accuracy.
- Cheaper in cost as compared to permanents magnet moving coil instruments.
- The instrument has high torque to weight ratio.

Disadvantages of MI:

- Power consumed by the instrument is high as compared to that of the permanent magnet moving coil instrument.
- The scale is non-uniform

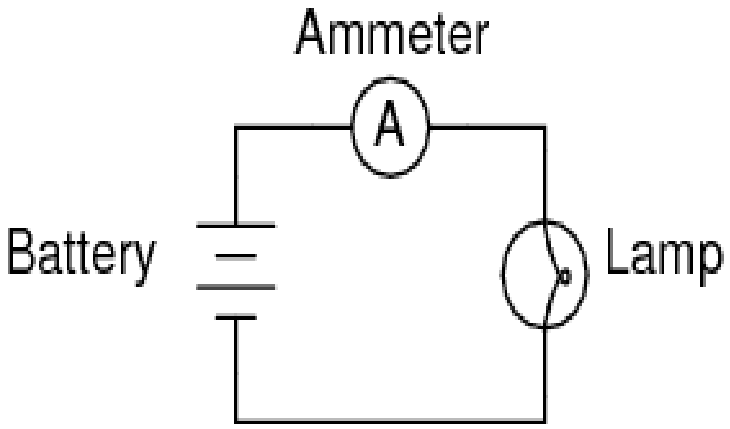
CONNECTION DIAGRAMS

- **Connection diagram of an Ammeter:**

➢ Ammeter is used for the measurement of current.

➢ Ammeter is always connected in series with the load

➢ Resistance offered by an ammeter is very small



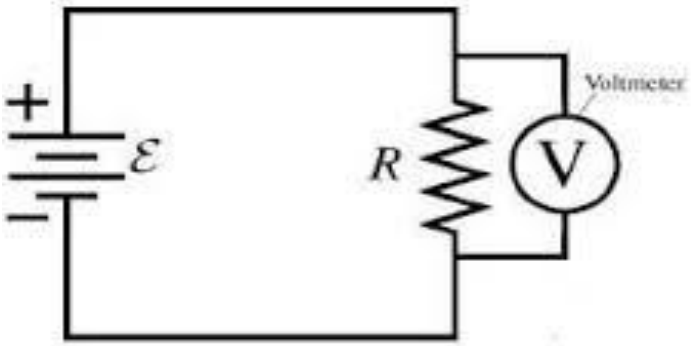
CONNECTION DIAGRAMS

- **Connection diagram of a voltmeter:**

➢ A voltmeter is used for the measurement of voltage (potential difference).

➢ Connected across the points between which the potential difference is to be measured.

➢ A voltmeter has a high resistance, so it draws very small current.



ASSESSMENT

…THANK YOU