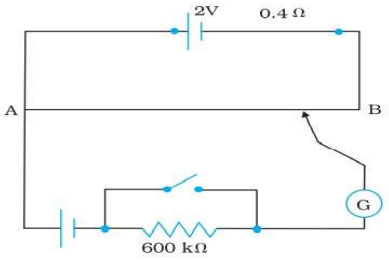
in series are required with the galvanometer. What is full-scale reading in the galvanometer?

16. A galvanometer of resistance 5 Ω can bear a maximum current of 25 mA. Find the suitable resistance to convert it into,
    a. An ammeter of range (0-10A) [Ans: 0.0125 Ω]
    b. Voltmeter of range (0-2V) [Ans: 75 Ω]
17. a) What difference are there between super conductor and conductor? Discuss with necessary plots.
    b) What is Meissner effect? Why does super conductor show this effect?
    c) Write two applications of superconductor.

LAQs (8 Marks questions)

1. Kirchhoff's law in electricity is very useful in solving the complicated circuit connections, [NEB 2079]
    a) What is the significance of first law?
    b) State and explain second law with circuit diagram.
    c) Apply these laws to calculate unknown value of resistance.
    d) What is meter bridge? Write name of material used to construct meter bridge.
2. Potentiometer measures emf of a cell accurately and it is called ideal voltmeter.
    a) Why do we prefer a potentiometer with longer wire? (why 10m wire is more sensitive than a 4m wire in potentiometer)
    b) How sensitivity of potentiometer can be increased?
    c) Figure shows a potentiometer with a cell of 2.0 V and internal resistance 0.40 Ω maintaining a potential drop across the resistor wire AB. A standard cell which maintains a constant emf of 1.02 V (for very moderate currents upto a few mA) gives a balance point at 67.3 cm length of the wire. To ensure very low currents drawn from the standard cell, a very high resistance of 600 kΩ is put in series with it, which is shorted close to the balance point. The standard cell is then replaced by a cell of unknown emf E and the balance point found similarly, turns out to be at 82.3 cm length of the wire.



    i. What is the value E?
    ii. What purpose does the high resistance of 600 kΩ have?
    iii. Does this high resistance affect the balance point?
    iv. Would the method work in the above situation if the driver cell of the potentiometer had an emf of 1.0V instead of 2.0V?
3. Kirchhoff's law is useful for solving complex electrical circuit connections.
    a) What is the significance of first law?
    b) Describe the possibility of charge accumulation at the junction point.
    c) Can Kirchhoff's law be applicable in AC circuits?
    d) The four arms of a Wheatstone bridge have the following resistances: AB = 100Ω, BC = 10Ω, CD = 5Ω, and DA = 60Ω. A galvanometer of 15Ω resistance is connected across BD. Calculate the current through the galvanometer when a potential difference of 10 V is maintained across AC.