UNIT-II : CURRENT ELECTRICITY

1. How does the drift velocity of e's in a metallic conductor vary with increase in temperature?
2. How does the resistivity of (i) a conductor and (ii) a semiconductor vary with temperature? Give reasons.
3. Define the term resistivity and write its SI unit. Derive the expression for the resistivity of a conductor in terms of number density of free electrons and relaxation time.
4. What is meant by drift velocity of free e's. Derive ohm's law on the basis of this theory.
5. A p.d. of V volts is applied to a conductor of length L and diameter D. How will the drift velocity of e's and the resistance of the conductor change when (i) V is doubled (ii) L is halved and (iii) D is halved , where is each case , the other two factors remain same . Give reason in each case.
6. In the potentiometer circuit shown, the balance point is at X. State with reason, where the balance point will be shifted when (i) R is increased, (ii) S is increased, keeping R constant. (iii) Cell P is replaced by another cell whose emf is lower than that of cell Q.
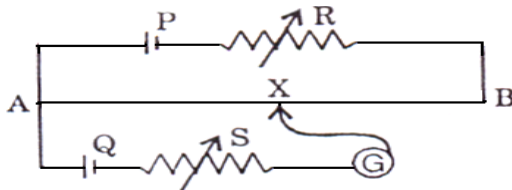
7. A wire of resistance 8R is bent in the form of the circle. What is effective resistance between ends of diameter?
8. Write any two factors on which internal resistance of cell depends.
9. Define drift velocity and derive expression between electric current and drift velocity.
10. State and explain Kirchhoff's law.
11. State the principle of Meter Bridge and how unknown resistance is measured by using Meter Bridge. Under what condition is the error in determining the un-known resistance can be minimized?
12. State the principle of potentiometer. Write its two applications. Draw the circuit diagram for comparing the emf's of two cells. How the sensitivity of potentiometer can be increased.

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