Topic- Current Electricity

Assignment-6   Subject-Physics   Class-XII

1. Define specific resistance, and give its SI unit.   2
2. Which are conjugate arms in the Wheatstone's bridge? Why?   2
3. State the advantages and disadvantages of potentiometer over voltmeter.   2
4. State and explain principle of potentiometer.   2
5. Describe how a potentiometer is used to compare the e.m.f's of two cells by connecting them separately.   2
6. Explain the use of potentiometer for determining the internal resistance of cell.   2
7. State any two sources of errors in meter- bridge experiment. Explain how they can be minimized.   2
8. State Kirchhoff's First Law in electric circuit. State the sign convention. Explain it.   2
9. Explain the use of Wheatstone's meter bridge to determine an unknown resistance.   2
10. In a potentiometer experiment, e.m.f. of a cell is balanced by a length of 150 cm on the potentiometer wire. When the cell is shunted by a 10Ω resistance, the balancing length reduces to 90 cm. What is the internal resistance of the cell?   2
11. A potentiometer wire has a length of 2 m and resistance 10Ω. It is connected in series with resistance 990Ω and a cell of e.m.f. 2V. Calculate the potential gradient along the wire.   3
12. In meter bridge experiment with resistance R_1, in left gap, x in right gap, null point is obtained at 40 cm left end. With a resistance R_2 in left gap and same resistance x in right gap, null point is obtained 50 cm from left end. Where will be null point if $R_1 \& R_2$ are put first in the left gap and right gap still containing x?   3
13. The current flowing through external resistance of 2Ω is 0.5A when it is connected to a terminal of a cell. The current reduces to 0.25A when external resistance is 5Ω. Use Kirchhoff's law to find e.m.f. of cell.   3
14. Two cells of e.m.f 1.5 volt and internal resistance 1Ω and the other of e.m.f. 2 volt and internal resistance of 2Ω are connected in parallel to send a current through an external resistance 5Ω. Find the current in each branch.   3
15. A potentiometer wire has a length of 10 m and a resistance 20Ω. Its terminals are connected to a battery of e.m.f. 4V and internal resistance 5Ω. What are the distances at which null points are obtained when two cells of e.m.f. 1.5V and 1.3V are connected so as to (a) assist, (b) oppose each other?   3
16. An unknown resistance x is connected in the left gap and a known resistance R in the right gap of the meter-bridge. The balance point is obtained at 60 cm from the left end of the wire. When R is increased by 2Ω, the balance point shifts by 10 cm. Find x and R.   3

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