

WORKSHEET

CURRENT ELECTRICITY

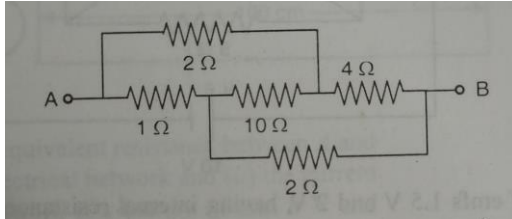
Answer the following questions

- The electrical resistance of a conductor depends upon
 - Size of the conductor
 - Temperature of the conductor
 - Geometry of the conductor
 - All of these
- A cylindrical rod is reformed to half its original length keeping volume constant. If its resistance before this change were R , then the resistance after reformation of rod will be
 - R
 - $R/4$
 - $3R/4$
 - $R/2$
- The resistivity of alloy manganin is
 - Nearly independent of temperature
 - Increases rapidly with increase in temperature
 - Decreases with increase in temperature
 - Increases rapidly with decrease in temperature
- For which of the following dependences of drift velocity V_d on electric field E , is Ohm's law obeyed?
 - $V_d \propto E$
 - $V_d \propto E^2$
 - $V_d \propto \sqrt{E}$
 - $V_d \propto 1/E$
- In parallel combination of n cells, we obtain
 - More voltage
 - More current
 - Less voltage
 - Less current
- Three resistances 4Ω , 5Ω , 8Ω are combined in series and this combination is connected to a battery of $15V$ emf and negligible internal resistance. Calculate the potential drop across each resistance.
- The resistance of a heating element is 99Ω at room temperature. What is the temperature of the element if the resistance is found to be 116Ω ? (Temperature coefficient of the material of the resistor is $1.7 \times 10^{-4} \text{ }^\circ\text{C}^{-1}$)
- A battery of emf $15V$ and internal resistance of 4Ω is connected to a resistor. If the current in the circuit is $2A$ and the circuit is closed. Find the resistance of the resistor.
- Calculate the electrical conductivity of the material of a conductor of length $3m$, area of cross section 0.02mm^2 , having a resistance of 2 ohm .
- A heating element is marked $210V$, $630W$. What is the current drawn by the element when connected to a $210 V$ dc? What is the resistance of the element?

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11. When a current of 1A is drawn from a battery, the potential difference between its terminals is 20V. The potential difference becomes 16V when a current of 2A is drawn from it. Find the emf and the internal resistance of the battery.
12. A 10Ω thick wire is stretched so that its length becomes 3 times. Assuming that there is no change in its density on stretching. Calculate the resistance of the new wire.
13. A current of 5A flows in a 10Ω resistor for 4 minutes. Find the charge and the number of electrons that pass through any cross section of the resistor in this time
14. Calculate the resistance between A and B



15. Calculate the current drawn from the battery in the given network

