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Class : X Physics

Q1)A battery of emf 10V and internal resistance 3Ω is connected to a resistor. If the current in the circuit is 0.5 A. Find i) The resistance of the resistor and ii) The terminal voltage of the battery.

Q2) In the circuit diagram given in the figure the cells E1 and E2 have emfs 4v and 8 v and internal resistances 0.5Ω and 1.0Ω respectively. Calculate the current in each resistance.
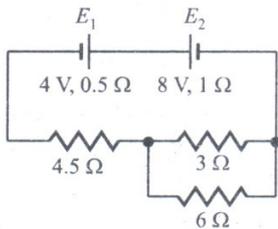

Q3) Network PQRS is given as in the figure: PQ has the battery of 4 V and negligible resistance with positive terminal connected to P, QR has a resistance of 60Ω. PS has a battery of 5V and negligible resistance, with positive terminal connected to P, RS has a resistance of 200Ω. If a milliammeter, of 20Ω resistance is connected between P and R , calculate the reading of the milliammeter.
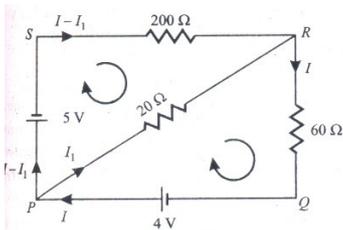
Q4) Using Kirchhoff 's laws in the electrical network shown in the figure, calculate the values of I_1, I_2 and I_3
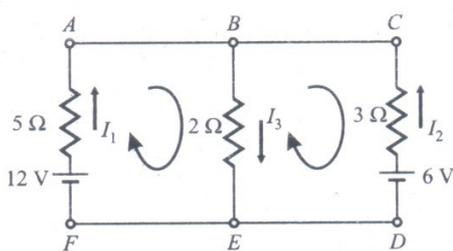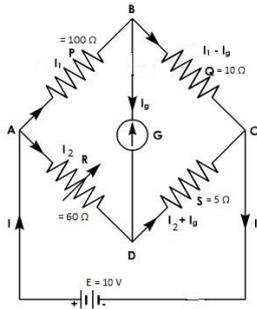

Q5) Using Kirchhoff 's laws, calculate the potential difference across the 8Ω resistor.
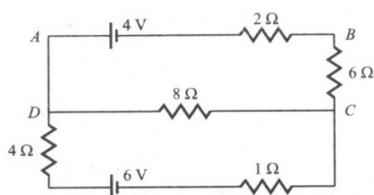
Q6) When a 2Ω resistance is connected to a cell then 2A current flow in it and when 9Ω resistance is connected to the cell then 0.5A current flow in it. Find out the internal resistance in the cell.

Q7) 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.

Q8) A battery of emf 12 V is connected to a resistor of 105Ω through an ammeter of resistance 5Ω. If 10mA current flows through the resistor, find internal resistance of the battery.

Q9) The potential difference across the cell is 1.8V. When a current of 0.5A is drawn from it, the potential difference falls to 1.6V when a current of 1A is drawn. Find the emf and internal resistance of the cell.

Q10) Can Kirchhoff's rules be applied to simple series and parallel circuits or are they restricted for use in more complicated circuits that are not combinations of series and parallel?