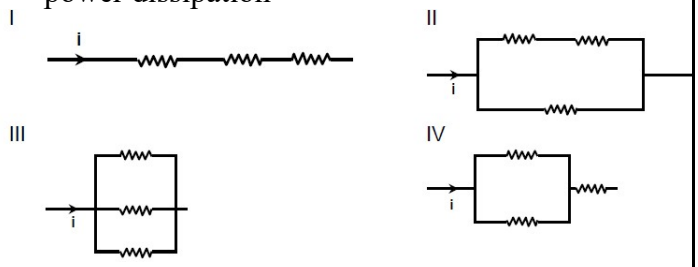
41. The three resistances of equal value are arranged in the different combinations shown below. Arrange them in increasing order of power dissipation



(1) III < II < IV < I
(2) II < III < IV < I
(3) I < IV < III < II
(4) I < III < II < IV

42. Masses of 3 wires of same metal are in the ratio 1 : 2 : 3 and their lengths are in the ratio 3 : 2 : 1. The electrical resistances are in ratio
(1) 1 : 4 : 9
(2) 9 : 4 : 1
(3) 1 : 2 : 3
(4) 27 : 6 : 1

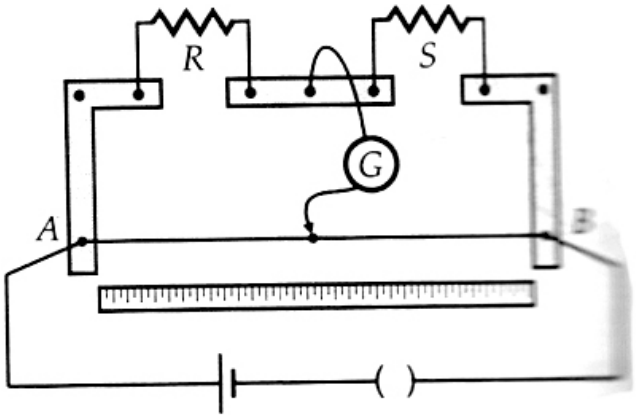
43. Three resistances P, Q, R each of 2Ω and an unknown resistances S form the four arms of a Wheatstone's bridge circuit. When a resistance of 6 Ω is connected in parallel to S, the bridge gets balanced. What is the value of S?
(1) 2 Ω
(2) 3 Ω
(3) 6 Ω
(4) 1 Ω

44. A 25W-220 V bulb and a 100W-220V bulb are joined in series and connected to the mains. Which bulb will glow brighter?
(1) 25 W bulb
(2) 100 W bulb
(3) First 25 W bulb and then 100 W bulb
(4) Both will glow with some brightness

45. The potential difference in open circuit for a cell is 2.2 volts. When a 4 ohm resistor is connected between its two electrodes the potential difference becomes 2 volts. The internal resistance of the cell will be
(1) 1 ohm
(2) 0.2 ohm
(3) 2.5 ohm
(4) 0.4 ohm

46. A potentiometer wire is 10 m long and has a resistance of 18 Ω. It is connected to a battery of emf 5 V and internal resistance 2 Ω. Calculate the potential gradient along the wire.
(1) 0.65 Vm^{-1}
(2) 0.45 Vm^{-1}
(3)0.35 Vm^{-1}
(4) 0.25 Vm^{-1}

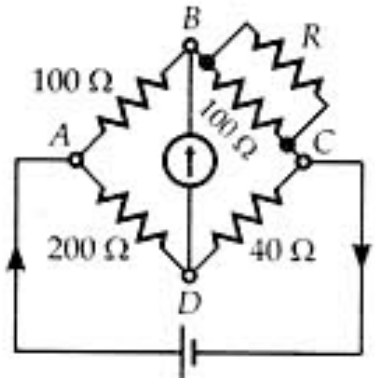
47. In metre bridge, the null point is found at a distance of 60.0 cm from A. If now a resistance of 5Ω is connected in series with S, the null point occurs at 50 cm. Determine the values of R and S.



(1) 25Ω (2) 15Ω
(3) 35Ω (4) 45Ω

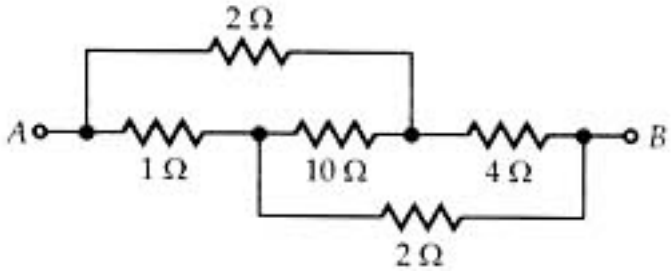
48. The emf of a cell is 1.5 V. On connecting a 14 Ω resistance across the cell, the terminal p. d. falls to 1.4 V. Calculate the internal resistance of the cell
(1) 4Ω
(2) 3Ω
(3) 2Ω
(4) 1Ω

49. The Wheatstone's bridge is showing no deflection in the galvanometer joined between the points B and D. The value of R is



(1) 25 Ω
(2) 45 Ω
(3) 35 Ω
(4) 15 Ω

50. Calculate the equivalent resistance between points A and B of the network shown in figure.



(1) 2Ω
(2) 4Ω
(3) 1Ω
(4) 3Ω