1. Ten million electrons pass from point P to point Q in one micro second. The current and its direction is

(a) 1.6×10^{-14} A, from point P to point Q
(b) 3.2×10^{-14} A, from point P to point Q
(c) 1.6×10^{-6} A, from point Q to point P
(d) 3.2×10^{-12} A, from point Q to point P

2. Principle of Wheatstone's bridge is used in as
(a) galvanometer (b) potentiometer (c) ammeter (d) voltmeter

3. In an atom electrons revolves around the nucleus along a path of radius 0.72 Å making 9.4×10^{18} revolution per second. The equivalent current is ($e = 1.6 \times 10^{-19}$ C)
(a) 1.2 A (b) 1.5 A (c) 1.4 A (d) 1.8 A

4. Figure (a) and figure (b) both are showing the variation of resistivity (ρ)with temperature (T) for some materials. Identify the type of these materials.

(a) Conductor and semi conductor
(b) Conductor and Insulator
(c) Insulator and semiconductor
(d) Both are conductors

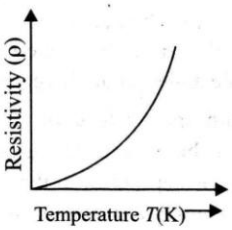


Fig. (a)

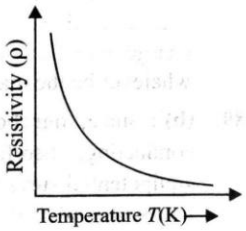


Fig. (b)

5. Nichrome or Manganin is widely used in wire bound standard resistors because of their
(a) temperature independent resistivity. (b) very weak temperature dependent resistivity.
(c) strong dependence of resistivity with temperature. (d) mechanical strength.

6. Arrange the following materials in increasing order of their resistivity,
Nichrome, copper, Germanium Silicon
(a) Copper < Nichrome < Germanium < Silicon (b) Germanium < Copper < Nichrome < Silicon
(c) Nichrome < Copper < Germanium < Silicon (d) Silicon < Nichrome < Germanium < Copper

7. Wire bound resistors are made by
(a) winding the wires of an alloy *viz*, Cu, Al, Ag (b) winding the wires of an alloy *viz*, Si, Tu, Fe
(c) winding the wires of an alloy *viz*, Ge, Au, Gr (d) winding the wires of an alloy *viz*, manganin, constantan, nichrome.

8. With increase in temperature the conductivity of
(a) metals increases and of semiconductor decreases. (b) semiconductors increases and of metals decreases.
(c) in both metals and semiconductors increases. (d) in both metal and semiconductor decreases.

9. Match the following

A	Ohm's law is applicable	P	to metals
B	Ohm's law is not applicable to	Q	greater resistivity
C	alloys have	R	diodes, electrolytes, semiconductors

(a) A-R, B-Q, C-P, (b) A-P, B-R, C-Q, (c) A-R, B-P, C-Q, (d) A-Q, B-R, C-P

10. A battery of emf 15 V and internal resistance of 4 Ω is connected to a resistor. If the current in the circuit is 2 A and the circuit is closed. Resistance of the resistor and terminal voltage of the battery will be
(a) 2.5 Ω, 6 V (b) 3.5 Ω, 6 V (c) 2.5 Ω, 7 V (d) 3.5 Ω, 7 V

11. The resistance of a heating element is 99 Ω at room temperature. What is the temperature of the element if the resistance is found to be 116 Ω ? (Temperature coefficient of the material of the resistor is $1.7 \times 10^{-40}\ °C^{-1}$)
(a) 999. 9 °C (b) 1005. 3 °C (c) 1020.2 °C (d) 1037. 1 °C

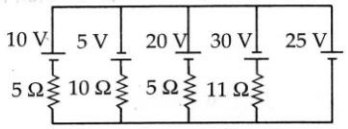
12. Point out the right statements about the validity of kirchhoff's junction rule
(a) it is based on conservation of charge.
(b) outgoing currents add up and are equal to incoming currents at a junction.
(c) bending or reorienting the wire does not change the validity of kirchhoff's junction rule.
(d) all of above.

13. The direction of the flow of current through electric circuit is
(a) from low potential to high potential. (b) from high potential to low potential.
(c) does not depend upon potential value. (d) current cannot flow through circuit.

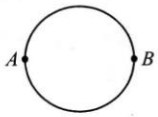
14. In the series combination of two or more than two resistances
(a) the current through each resistance is same
(b) the voltage through each resistance is same
(c) neither current nor voltage through each resistance is same
(d) both current and voltage through each resistance are same.

15. Biot-Savart law indicates that the moving electrons (velocity v) produce a magnetic field B such that
(a) $B \perp v$ (b) $B \parallel v$
(c) it obeys inverse cube law (d) it is along the line joining the electron and point of observation.

16. In the circuit shown, current flowing through 25 V cell is
(a) 7.2 A
(b) 10 A
(c) 12 A
(d) 14.2 A



17. A wire of resistance 12 ohms per meter is bent to form a complete circle of radius 10 cm. The resistance between its two diametrically opposite points, A and B as shown in the figure is
(a) 3 Ω (b) 6π Ω (c) 6 Ω (d) 0.6π Ω



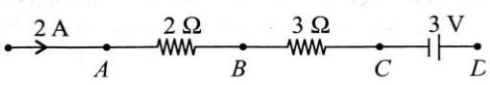
18. In a wheatstone bridge if the battery and galvanometer are interchanged then the deflection in galvanometer will
(a) change in previous direction (b) not change
(c) change in opposite direction (d) none of these.

19. Which of the following velocity of electrons determines the current in a conductor?
(a) Drift velocity only (b) Thermal velocity only
(c) Both drift velocity and thermal velocity (d) Neither drift nor thermal velocity

20. In a potentiometer of 10 wires, the balance point is obtained on the 7th wire. To shift the balance point to 9th wire, we should
(a) decrease resistance in the main circuit.
(b) increase resistance in the main circuit.
(c) decrease resistance in series with the cell whose emf is to be measured.
(d) increase resistance in series with the cell whose emf is to be determined.

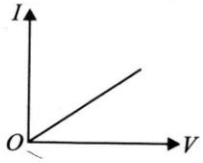
21. The resistance of the wire in the platinum resistance thermometer at ice point is 5 Ω and at steam point is 5.25 Ω. When the thermometer is inserted in an unknown hot bath its resistance is found to be 5.5 Ω. The temperature of the hot bath is
(a) 100°C (b) 200°C (c) 300°C (d) 350°C

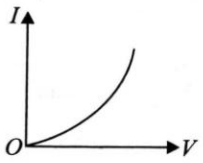
22. In the given circuit the potential at point B is zero, the potential at point A will be
(a) $V_A = 4$ V; $V_D = 9$ V (b) $V_A = 3$ V; $V_D = 4$ V
(c) $V_A = 9$ V; $V_D = 3$ V (d) $V_A = 4$ V; $V_D = 3$ V

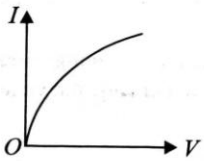


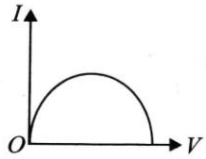
23. An electric heater is connected to the voltage supply. After few seconds, current get its steady value then its initial current will be
(a) equal to its steady current (b) slightly higher than its steady current
(c) slightly less than its steady current (d) zero

24. The resistance of wire in a heater at room temperature is 65 Ω. When the heater is connected to a 220 V supply the current settles after a few seconds to 2.8 A. What is the steady temperature of the wire. (Temperature coefficient of resistance $\alpha = 1.70 \times 10^{-4}\ °C^{-1}$)
(a) 955 °C (b) 1055 °C (c) 1155 °C (d) 1258 °C

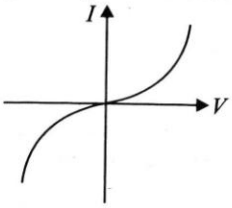
25. Which of the following *I-V* graph represents for ohmic conductors?
(a) 

(b) 

(c) 

(d) 

26. The electrical resistance of a conductor depends upon
(a) size of conductor (b) temperature of conductor (c) geometry of conductor (d) all of above

27. The *I-V* characteristics shown in figure represents
(a) ohmic conductors
(b) non-ohmic conductors
(c) insulators
(d) superconductors


28. A charge is moving across a junction, then
(a) momentum will be conserved. (b) momentum will not be conserved.
(c) at some places momentum will be conserved and at some other places momentum will not be conserved.
(d) none of these.

29. In a circuit a cell with internal resistance *r* is connected to an external resistance *R*. The condition for the maximum current that drawn from the cell is
(a) $R = r$ (b) $R < r$ (c) $R > r$ (d) $R = 0$

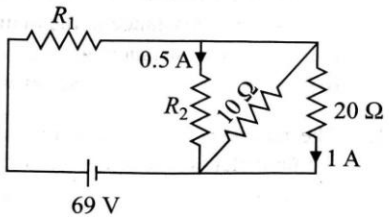
30. In parallel combination of *n* cells, we obtain
(a) more voltage (b) more current (c) less voltage (d) less current

31. If *n* cells each of emf ε and internal resistance *r* are connected in parallel, then the total emf and internal resistances will be
(a) $\varepsilon, \frac{r}{n}$ (b) ε, nr (c) $n\varepsilon, \frac{r}{n}$ (d) $n\varepsilon, nr$

32. In the series combination of *n* cells each cell having emf ε and internal resistance *r*. If three cells are wrongly connected, then total emf and internal resistance of this combination will be
(a) $n\varepsilon, (nr - 3r)$ (b) $(n\varepsilon - 2\varepsilon), nr$ (c) $(n\varepsilon - 4\varepsilon), nr$ (d) $(n\varepsilon - 6\varepsilon), nr$

33. 1 Ampere current is equivalent to
(a) 6.25×10^{18} electrons s^{-1} (b) 2.25×10^{18} electrons s^{-1}
(c) 6.25×10^{14} electrons s^{-1} (d) 2.25×10^{14} electrons s^{-1}

34. A current in a wire is given by the equation, $I = 2t^2 - 3t + 1$, the charge through cross section of wire in time interval $t = 3$ s to $t = 5$ s is
(a) 32.33 C (b) 43.34 C (c) 45.5 C (d) 42 C

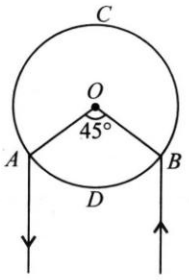
35. In the circuit shown in the given figure, the resistances R_1 and R_2 are respectively
(a) 14 Ω and 40 Ω
(b) 40 Ω and 14 Ω
(c) 40 Ω and 30 Ω
(d) 14 Ω and 30 Ω


36. A cylindrical rod is reformed to half of its original length keeping volume constant. If its resistance before this change were *R*, then the resistance after reformation of rod will be
(a) *R* (b) *R*/4 (c) 3*R*/4 (d) *R*/2

37. A current carrying wire in the shape of a circle as the current progresses along the wire the direction of current density changes in an exact manner while the current I remains unaffected. The responsible factor for it is
(a) the charges ahead.
(b) electric field produced by charges accumulated on the surface of wire.
(c) the charges just behind a given segment of wire which push them. Just right way by repulsion.
(d) none of these.

38. A wire with 15 Ω resistance is stretched by one tenth of its original length and kept volume of wire is constant. Then its resistance will be
(a) 15.18 Ω (b) 81.15 Ω (c) 51.18 Ω (d) 18.15 Ω

39. A and B are two points on a uniform ring of resistance 15 Ω. The $\angle AOB = 45°$. The equivalent resistance between A and B is
(a) 1.64 Ω
(b) 2.84 Ω
(c) 4.57 Ω
(d) 2.64 Ω



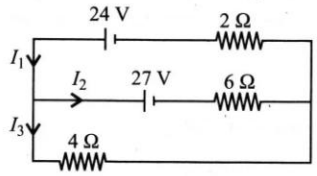
40. The battery of a trunk has an emf of 24 V. If the internal resistance of the battery is 0.8 Ω. What is the maximum current that can be drawn from the battery ?
(a) 30 A (b) 32 A (c) 33 A (d) 34 A

41. A battery having 12 V emf and internal resistance 3 Ω is connected to a resistor. If the current in the circuit is 1 A, then the resistance of resistor and lost voltage of the battery when circuit is closed will be
(a) 7 Ω, 7 V (b) 8 Ω, 8 V (c) 9 Ω, 9 V (d) 9 Ω, 10 V

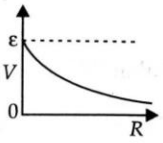
42. Combine three resistors 5 Ω, 4.5 Ω and 3 Ω in such a way that the total resistance of this combination is maximum
(a) 12.5 Ω (b) 13.5 Ω (c) 14.5 Ω (d) 16.5 Ω

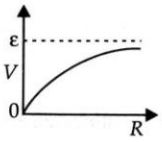
43. Three resistors of resistances 3 Ω, 4 Ω and 5 Ω are combined in parallel. This combination is connected to a battery of emf 12 V and negligible internal resistance, current through each resistor in ampere is
(a) 4, 3, 2.4 (b) 8, 7, 3.4 (c) 2, 5, 1.8 (d) 5, 5, 8.2

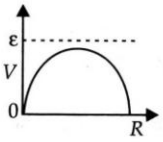
44. In given circuit, the value of currents I_1, I_2 and I_3 are
(a) 3 A, $\frac{-3}{2}$ A, $\frac{9}{2}$ A
(b) $\frac{9}{2}$ A, 3 A, $\frac{-3}{2}$ A
(c) 5 A, 4 A, –3 A
(d) 7 A, $\frac{5}{4}$ A, $\frac{9}{2}$ A

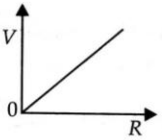


45. A cell having an emf ε and internal resistance r is connected across a variable external resistance R. As the resistance R is increased, the plot of potential difference V across R is given by

(a) 

(b) 

(c) 

(d) 

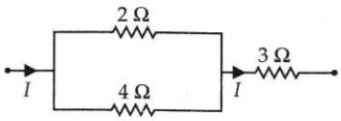
46. Two metal wires of identical dimensions are connected in series. If σ_1 and σ_2 are the conductivities of the metals respectively, the effective conductivity of the combination is
(a) $\sigma_1 + \sigma_2$ (b) $\frac{\sigma_1 + \sigma_2}{2}$ (c) $\sqrt{\sigma_1 \sigma_2}$ (d) $\frac{2\sigma_1 \sigma_2}{\sigma_1 + \sigma_2}$

47. Range of resistivity for metals is
(a) 10^{-6} Ω m to 10^{-4} Ω m (b) 10^{-7} Ω m to 10^{-5} Ω m (c) 10^{-8} Ω m to 10^{-6} Ω m (d) 10^{-9} Ω m to 10^{-7} Ω m

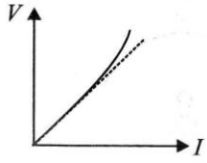
48. When a current of 2 A flows in a battery from negative to positive terminal, the potential difference across it is 12 V. If a current of 3 A flowing in the opposite direction produces a potential difference of 15 V, the emf of the battery is
(a) 12.6 V (b) 13.2 V (c) 13.5 V (d) 14.0 V

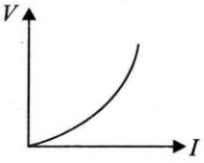
49. Two copper wires of length l and $2l$ have radii, r and $2r$ respectively. What is the ratio of their specific resistances?
(a) 1 : 2 (b) 2 : 1 (c) 1 : 1 (d) 1 : 3

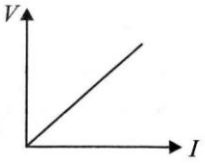
50. In the circuit shown in figure heat developed across 2 Ω, 4 Ω and 3 Ω resistances are in the ratio of
(a) 2 : 4 : 3
(b) 8 : 4 : 12
(c) 4 : 8 : 27
(d) 8 : 4 : 27

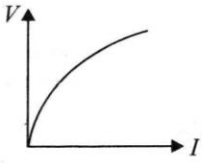


51. Which of the following is correct for V-I graph a good conductor?

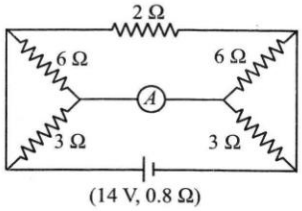
(a) 

(b) 

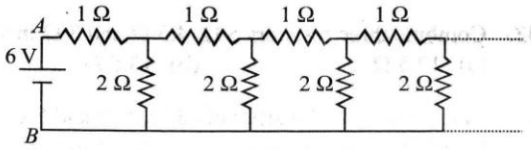
(c) 

(d) 

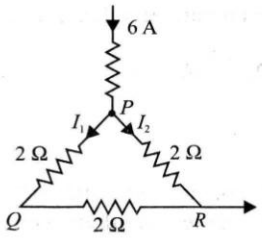
52. The reading of ammeter shown in figure is
(a) 6.56 A
(b) 3.28 A
(c) 2.18 A
(d) 1.09 A



53. An infinite ladder network of resistances is constructed with 1 Ω and 2 Ω resistance as shown in figure. The 6 V battery between A and B has negligible internal resistance. The equivalent resistance between A and B is
(a) 1 Ω
(b) 2 Ω
(c) 3 Ω
(d) 4 Ω



54. A current of 6 A enters one corner P of an equilateral triangle PQR having 3 wires of resistances 2 Ω each and leaves by the corner R. Then the currents I_1 and I_2 are
(a) 2 A, 4 A
(b) 4 A, 2 A
(c) 1 A, 2 A
(d) 2 A, 3 A



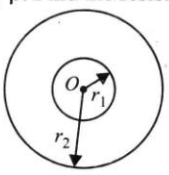
55. A charged particle having drift velocity of 7.5×10^{-4} m s^{-1} in electric field of 3×10^{-10} V m^{-1}, mobility is
(a) 6.5×10^{6} m^2 V^{-1} s^{-1} (b) 2.5×10^{4} m^2 V^{-1} s^{-1} (c) 6.5×10^{6} m^2 V^{-1} s^{-1} (d) 6.5×10^{4} m^2 V^{-1} s^{-1}

56. Three resistances 2 Ω, 4 Ω, 5 Ω are combined in series and this combination is connected to a battery of 12 V emf and negligible internal resistance. The potential drop across these resistances are
(a) (5.45, 4.36, 2.18) V (b) (2.18, 5.45, 4.36) V (c) (4.36, 2.18, 5.45) V (d) (2.18, 4.36, 5.45) V

57. The total resistance in the parallel combination of three resistances 9 Ω, 7 Ω and 5 Ω is
(a) 1.22 Ω (b) 2.29 Ω (c) 4.22 Ω (d) 2.02 Ω

58. A copper cylindrical tube has inner radius a and outer radius b. The resistivity is ρ. The resistance of the cylinder between the two ends is
(a) $\frac{\rho l}{b^2 - a^2}$ (b) $\frac{\rho l}{2\pi (b - a)}$ (c) $\frac{\rho l}{\pi (b^2 - a^2)}$ (d) $\frac{\pi (b^2 - a^2)}{\rho l}$

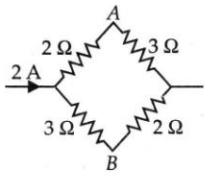
59. Space between two concentric spheres of radii r_1 and r_2, such that $r_1 < r_2$, is filled with a material of resistivity ρ. Find the resistance between inner and outer surface of the material.



(a) $\frac{r_1}{r_2}\frac{\rho}{2}$ (b) $\frac{r_2 - r_1}{r_1 r_2}\frac{\rho}{4\pi}$

(c) $\frac{r_1 r_2}{r_2 - r_1}\frac{\rho}{4\pi}$ (d) None of these

60. The potential difference between A and B as shown in figure is



(a) 1 V

(b) 2 V

(c) 3 V

(d) 4 V

61. A wire has a resistance of 2.5 Ω at 28 °C and a resistance of 2.9 Ω at 100 °C. The temperature coefficient of resistivity of material of the wire is

(a) 1.06×10^{-3} °C^{-1} (b) 3.5×10^{-2} °C^{-1} (c) 2.22×10^{-3} °C^{-1} (d) 3.95×10^{-2} °C^{-1}

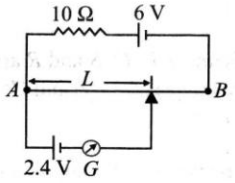
62. If voltage across a bulb rated 220 V 100 W drops by 2.5% of its rated value, the percentage of the rated value by which the power would decrease is

(a) 20% (b) 2.5% (c) 5% (d) 10%

63. The current in a wire varies with time according to the equation $i = 4 + 2t$, where i is in ampere and t is in second. The quantity of charge which has to be passed through a cross-section of the wire during the time $t = 2$ s to $t = 6$ s is

(a) 40 C (b) 48 C (c) 38 C (d) 43 C

64. A potentiometer wire of length 200 cm has a resistance of 20 Ω. It is connected in series with a resistance of 10 Ω and an accumulator of emf 6 V having negligible internal resistance. A source of 2.4 V is balanced against a length L of the potentiometer wire. The value of L is



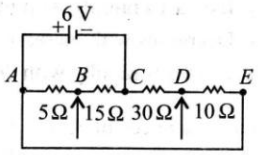
(a) 100 cm

(b) 120 cm

(c) 110 cm

(d) 140 cm

65. Four resistors are connected as shown in the figure. A 6 V battery of negligible resistance is connected across terminals A and C. The potential difference across terminals B and D will be



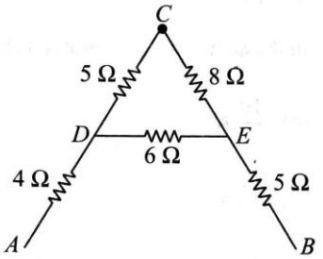
(a) Zero

(b) 1.5 V

(c) 2 V

(d) 3 V.

66. The equivalent resistance between A and B for the circuit shown in figure is



(a) 13.1 Ω

(b) 15.1 Ω

(c) 17.1 Ω

(d) 19.1 Ω

67. n resistors each of resistance R first combine to give maximum effective resistance and then combine to give minimum effective resistance. The ratio of the maximum to minimum resistance is

(a) n (b) n^2 (c) $n^2 - 1$ (d) n^3

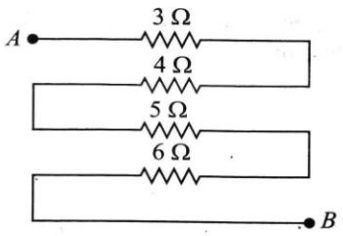
68. Equivalent resistance of the given network is

(a) 28

(b) 18

(c) 26

(d) 25



69. The correct combination of three resistances 1 Ω, 2 Ω and 3 Ω to get equivalent resistance $\frac{11}{5}\Omega$ is

(a) All three are combines in parallel

(b) All three are combine in series

(c) 1 Ω and 2 Ω in parallel and 3 Ω is in series to both

(d) 2 Ω and 3 Ω are combined in parallel and 1 Ω is in series to both.

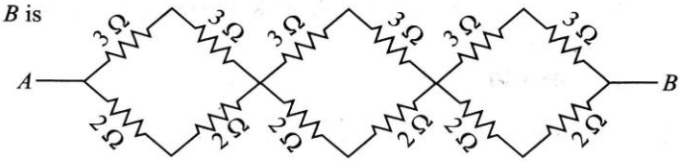
70. Equivalent resistance of the given network between points A and B is

(a) 31/5 Ω

(b) 41/5 Ω

(c) 36/5 Ω

(d) 49/5 Ω



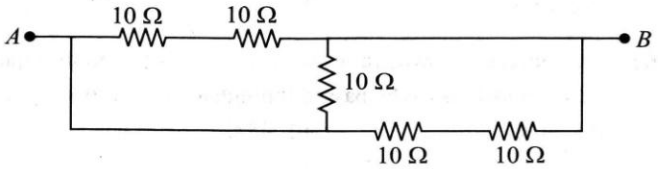
71. Five equal resistances of 10 Ω are connected between A and B as shown in figure. The resultant resistance is

(a) 10 Ω

(b) 5 Ω

(c) 15 Ω

(d) 6 Ω



72. The equivalent resistance of series combination of four equal resistors is S. If they are joined in parallel, the total resistance is P. The relation between S and P is given by $S = nP$. then the minimum possible value of n is

(a) 12 (b) 14 (c) 16 (d) 10

73. Resistances P, Q, S and R are arranged in a cyclic order to form a balanced Wheatstone's network. The ratio of power consumed in the branches $(P + Q)$ and $(R + S)$ is

(a) 1 : 1 (b) $R : P$ (c) $P^2 : Q^2$ (d) $P^2 : R^2$

74. The resistivity of alloy manganin is

(a) Nearly independent of temperature

(b) Increases rapidly with increase in temperature

(c) Decreases with increase in temperature

(d) Increases rapidly with decrease in temperature

75. Four resistances of 3, 3, 3 and 4 Ω respectively are used to form a Wheatstone bridge. The 4 Ω resistance is short circuited with a resistance R in order to get bridge balanced. The value of R will be

(a) 10 Ω (b) 11 Ω (c) 12 Ω (d) 13 Ω

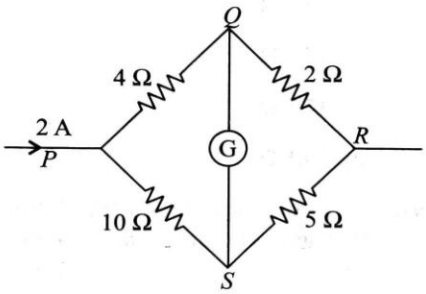
76. In the adjacent figure bridge is balanced, the current flowing through 2 Ω resistance is

(a) $\frac{10}{7}$ A

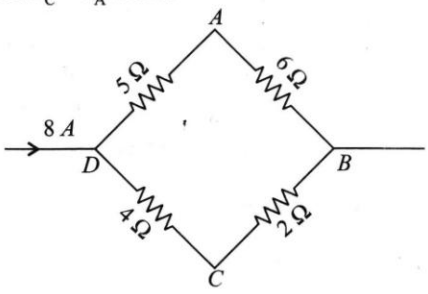
(b) $\frac{11}{7}$ A

(c) $\frac{13}{7}$ A

(d) $\frac{8}{7}$ A



77. A current of 8 A flows in a system of resistors as shown in figure. The potential difference $V_C - V_A$ will be



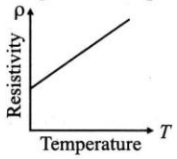
(a) $\frac{45}{23}$ V

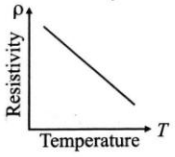
(b) 6.6 V

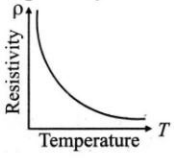
(c) 3.3 V

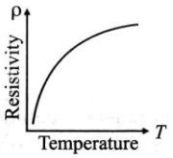
(d) 9.9 V

78. The temperature dependence of the resistivity of a semiconductor is given by

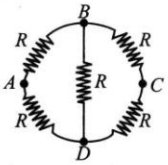
(a) 

(b) 

(c) 

(d) 

79. Five equal resistances each of value R are connected to form a network as shown in figure. The equivalent resistance of the network between the points A and B is

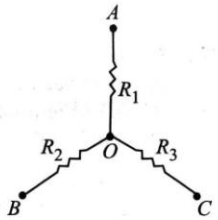


(a) $\frac{1}{2}R$ (b) $2R$ (c) $\frac{5}{8}R$ (d) $\frac{8}{5}R$

80. A potentiometer wire of length 100 cm has a resistance of 10 Ω. It is connected in series with a resistance and a cell of emf 2 V and of negligible internal resistance. A source of emf 10 mV is balanced against a length of 40 cm of the potentiometer wire. What is the value of external resistance ?

(a) 790 Ω (b) 890 Ω (c) 990 Ω (d) 1090 Ω

81. A circuit has a section ABC as shown in figure. If the potentials at points A, B and C are V_1, V_2 and V_3 respectively. The potential at point O is



(a) $V_1 + V_2 + V_3$

(b) $\left[\frac{V_1}{R_1} + \frac{V_2}{R_2} + \frac{V_3}{R_3}\right]\left[\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}\right]^{-1}$

(c) Zero

(d) $\left[\frac{V_1}{R_1} + \frac{V_2}{R_2} + \frac{V_3}{R_3}\right](R_1 + R_2 + R_3)$

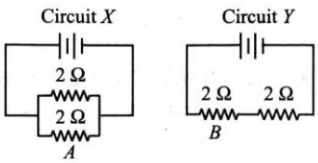
82. In a Wheatstone's network, $P = 2\ \Omega$, $Q = 2\ \Omega$, $R = 2\ \Omega$ and $S = 3\ \Omega$. The resistance with which S is to be shunted in order that the bridge may be balanced is

(a) 1 Ω (b) 2 Ω (c) 4 Ω (d) 6 Ω

83. A boy has two spare light bulbs in his drawer. One is marked 240 V and 100 W and the other is marked 240 V and 60 W. He tries to decide which of the following assertions are correct?

(a) The 60 W light bulb has more resistance and therefore burns less brightly.
(b) The 60 W light bulb has less resistance and therefore burns less brightly.
(c) The 100 W bulb has more resistance and therefore burns more brightly.
(d) The 100 W bulb has less resistance and therefore burns less brightly.

84. Two 2 Ω resistances are connected in parallel in circuit X and in series in circuit Y. The batteries in the two circuits are identical and have zero internal resistance. Assume that the energy transferred to resistor A in circuit X within a certain time is W. The energy transferred to resistor B in circuit Y in the same time will be

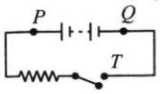


(a) $\frac{1}{4}W$ (b) $\frac{1}{2}W$ (c) $2\,W$ (d) $4\,W$

85. What is the order of magnitude of the resistance of a dry human body?

(a) 10 Ω (b) 10 kΩ (c) 10 MΩ (d) 10 μΩ

86. A battery, an open switch and a resistor are connected in series as shown below. Consider the following three statements concerning the circuit. A voltmeter will read zero if it is connected across points

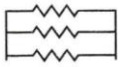
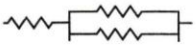
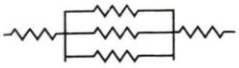


(i) P and T (ii) P and Q (iii) Q and T

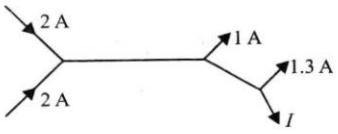
Which one of the above is/are true?

(a) only (i) (b) only (iii) (c) only (i) and (iii) (d) (i), (ii) and (iii)

87. Which arrangement of 3 Ω resistors will give a total resistance of 7 Ω?

(a) (b)  (c)  (d) 

88. Figure shows currents in a part of an electric circuit, then current I is



(a) 1.7 A
(b) 3.7 A
(c) 1.3 A
(d) 1 A

89. In a potentiometer a cell of emf 1.5 V gives a balanced point at 32 cm length of the wire. If the cell is replaced by another cell then the balance point shifts to 65.0 cm then the emf of second cell is

(a) 3.05 V (b) 2.05 V (c) 4.05 V (d) 6.05 V

90. In a potentiometer the balancing with a cell is at length of 220 cm. On shunting the cell with a resistance of 3 Ω balance length becomes 130 cm. What is the internal resistance of this cell ?

(a) 4.5 Ω (b) 7.8 Ω (c) 6.3 Ω (d) 2.08 Ω

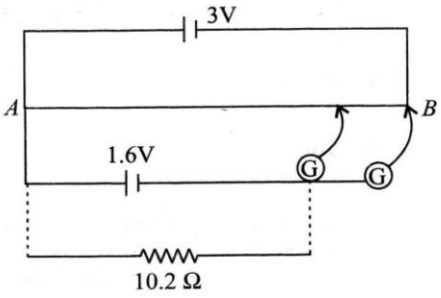
91. A resistor is marked with the rings coloured brown, black, green and gold. The resistance in ohm is

(a) $(3.5 \times 10^5 \pm 5\%)$ (b) $(1.10 \times 10^5 \pm 10\%)$ (c) $(8 \times 10^6 \pm 5\%)$ (d) $(1 \times 10^6 \pm 5\%)$

92. With a resistance R connected in series with a galvanometer of resistance 100 Ω, it acts as a voltmeter of range 0 to 10 V. To double the range a resistance of 1000 Ω is to be connected in series with R. Then the value of R (in Ω) is

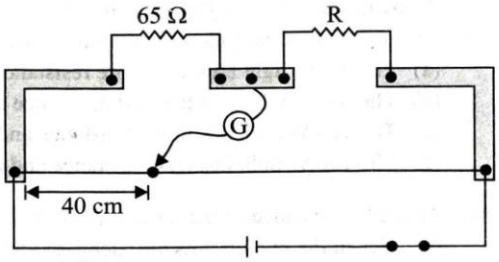
(a) 1100 (b) 1000 (c) 900 (d) 800

93. 3 V potentiometer used for the determination of internal resistance of a 2.4 V cell. The balance point of the cell in open circuit is 75.8 cm. When a resistor of 10.2 Ω is used in the external circuit of the cell the balance point shifts to 68.3 cm length of the potentiometer wire. The internal resistance of the cell is



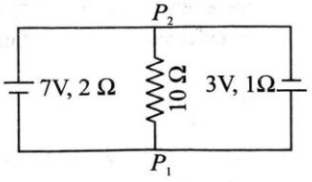
(a) 2.5 Ω
(b) 2.25 Ω
(c) 1.12 Ω
(d) 3.2 Ω

94. What is the value of unknown resistance R, if galvanometer shows null deflection in the given meter bridge set up ?



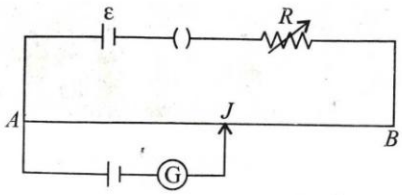
(a) 97.50 Ω
(b) 105 Ω
(c) 150 Ω
(d) 110 Ω

95. A of battery 7 V with internal resistance 3 Ω and a 3 V battery with internal resistance 1 Ω are connected to a 10 Ω resistor as shown in figure, the current in 10 Ω resistor is



(a) 0.27 A
(b) 0.31 A
(c) 0.031 A
(d) 0.53 A

96. AB is a wire of potentiometer with the increase in the value of resistance R, the shift in the balance point J will be



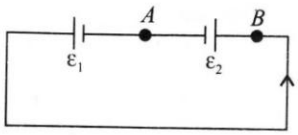
(a) towards B

(b) towards A

(c) remains constant

(d) first towards B then back towards A.

97. Two cells ε_1 and ε_2 connected in opposition to each other as shown in figure. The cell ε_1 is of emf 9 V and internal resistance 3 Ω the cell ε_2 is of emf 7 V and internal resistance 7 Ω. The potential difference between the points A and B is



(a) 8.4 V (b) 5.6 V

(c) 7.8 V (d) 6.6 V

98. Match the statements.

A	Smaller the resistance greater the current	P	If the same voltage is applied and resistance are in series
B	Greater or smaller the resistance the current is same	Q	If the same current is passed
C	Greater the resistance smaller the power	R	When resistances are connected in series
D	Greater the resistance greater the power	S	When resistances are connected in parallel

(a) A-R, B-P, C-Q, D-S (b) A-P, B-R, C-Q, D-S (c) A-R, B-P, C-S, D-Q (d) A-S, B-R, C-P, D-Q

99. A wire connected in the left gap of a meter bridge balance a 10 Ω resistance in the right gap to a point, which divides the bridge wire in the ratio 3 : 2. If the length of the wire is 1 m. The length of one ohm wire is

(a) 0.057 m (b) 0.067 m (c) 0.37 m (d) 0.134 m

100. Three resistors 2 Ω, 4 Ω and 5Ω are combined in parallel. This combination is connected to a battery of emf 20 V and negligible internal resistance. The total current drawn from the battery is

(a) 10 A (b) 15 A (c) 19 A (d) 23 A

ANSWER KEY

1.	(c)	**2.**	(b)	**3.**	(b)	**4.**	(a)	**5.**	(b)	**6.**	(a)	**7.**	(d)	**8.**	(b)	**9.**	(b)	**10.**	(d)
11.	(d)	**12.**	(d)	**13.**	(b)	**14.**	(a)	**15.**	(a)	**16.**	(c)	**17.**	(d)	**18.**	(b)	**19.**	(a)	**20.**	(d)
21.	(b)	**22.**	(d)	**23.**	(a)	**24.**	(d)	**25.**	(a)	**26.**	(d)	**27.**	(b)	**28.**	(a)	**29.**	(d)	**30.**	(b)
31.	(a)	**32.**	(d)	**33.**	(a)	**34.**	(b)	**35.**	(a)	**36.**	(b)	**37.**	(b)	**38.**	(d)	**39.**	(a)	**40.**	(a)
41.	(c)	**42.**	(a)	**43.**	(a)	**44.**	(a)	**45.**	(b)	**46.**	(d)	**47.**	(c)	**48.**	(b)	**49.**	(c)	**50.**	(d)
51.	(a)	**52.**	(c)	**53.**	(b)	**54.**	(a)	**55.**	(b)	**56.**	(d)	**57.**	(d)	**58.**	(c)	**59.**	(b)	**60.**	(a)
61.	(c)	**62.**	(c)	**63.**	(b)	**64.**	(b)	**65.**	(a)	**66.**	(a)	**67.**	(b)	**68.**	(b)	**69.**	(d)	**70.**	(c)
71.	(b)	**72.**	(c)	**73.**	(b)	**74.**	(a)	**75.**	(c)	**76.**	(a)	**77.**	(b)	**78.**	(c)	**79.**	(c)	**80.**	(a)
81.	(b)	**82.**	(d)	**83.**	(a)	**84.**	(a)	**85.**	(b)	**86.**	(c)	**87.**	(d)	**88.**	(a)	**89.**	(a)	**90.**	(d)
91.	(d)	**92.**	(c)	**93.**	(c)	**94.**	(a)	**95.**	(c)	**96.**	(a)	**97.**	(a)	**98.**	(c)	**99.**	(b)	**100.**	(c)