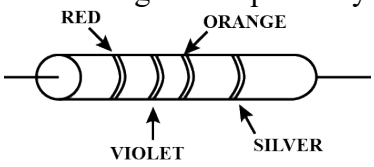
21. A resistance is shown in the figure. Its value and tolerance are given respectively by

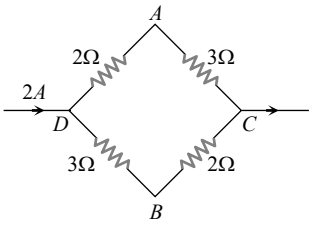


(1) 270 Ω, 5%
(2) 27 kΩ, 20%
(3) 27 kΩ, 10%
(4) 270 kΩ,10%

22. Which of the following statements is false?
(1) In a balanced Wheatstone bridge, if the cell and the galvanometer are exchanged, the null point is disturbed
(2) Mobility independent on electric field
(3) Kirchhoff's second law represents energy conservation
(4) Wheatstone bridge is the most sensitive when all the four resistances are of the same order of magnitude

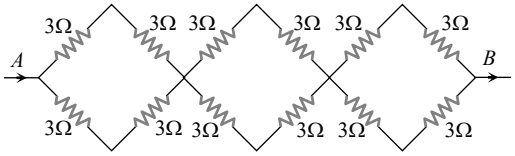
23. Dimension of electrical resistance is
(1) $[ML^2T^{-3}A^{-1}]$ (2) $[ML^2T^{-3}A^{-2}]$
(3) $[ML^3T^{-3}A^{-2}]$ (4) $[ML^2T^{-3}A^{-1}]$

24. A current of 2 A flows in a system of conductors as shown. The potential difference $(V_A - V_B)$ will be



(1) +2 V (2) +1 V
(3) −1 V (4) −2 V

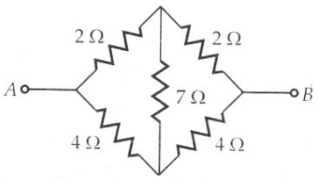
25. In the network of resistors shown in the adjoining figure, the equivalent resistance between A and B is



(1) 54 ohm
(2) 18 ohm
(3) 36 ohm
(4) 9 ohm

26. Kirchhoff's first law i.e. $\Sigma i = 0$ at a junction is based on the law of conservation of
(1) Charge
(2) Energy
(3) Momentum
(4) Angular momentum

27. The equivalent resistance between A and B of the circuit is



(1) $\frac{13}{12}\Omega$ (2) $\frac{8}{3}\Omega$
(3) 8 Ω (4) $\frac{4}{3}\Omega$

28. Resistance in the two gaps of a meter bridge are 10 ohm and 30 ohm respectively. If the resistances are interchanged the balance point shifts by
(1) 33.3 cm (2) 66.67cm
(3) 25 cm (4) 50 cm

29. A potentiometer wire is supplied a constant voltage is 3 V. A cell of emf 1.08 V is balanced by the voltage drop across 216 cm of the wire. Find the total length of the potentiometer wire
(1) 300 cm (2) 400 cm
(3) 600 cm (4) 500 cm

30. When current flows through a conductor, then the order of drift velocity of electrons will be
(1) 10^{10} m / sec
(2) 10^{-2} cm / sec
(3) 10^{4} cm / sec
(4) 10^{-1} cm / sec