**SAINIK SCHOOL GOPALGANJ**
**CLASS-XII**
**Chapter Current Electricity**
**Assignment**

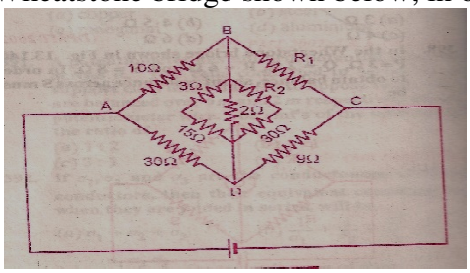
Q.1 n cells each of emf E and internal resistance r send the same current through an external resistance R whether the cells are connected in series or in parallel. Then

(a) R = nr (b) R = r (c) r = n R (d) $R = \sqrt{nr}$ (e) $r = \sqrt{nR}$

Q.2 In a Meter-bridge with a standard resistance of 5 Ω in the left gap, the ratio of balancing lengths on the Meter bridge wire is 2 : 3. The unknown resistance is

(a) 1 Ω (b) 15 Ω (c) 10 Ω (c) 3.3 Ω (d) 7.5 Ω

Q.3 In the Wheatstone bridge shown below, in order to balance the bridge, we must have




(a) $R_1 = 3\ \Omega$ ; $R_2 = 3\ \Omega$ (b) $R_1 = 6\,\Omega$ ; $R_2 = 15\ \Omega$

(c) $R_1 = 1.5\,\Omega$ ; $R_2$ = any finite value (d) $R_1 = 3\,\Omega$ ; $R_2$ = any finite value

(e) $R_2 = 1.5\,\Omega$ ; $R_1$ = any finite value

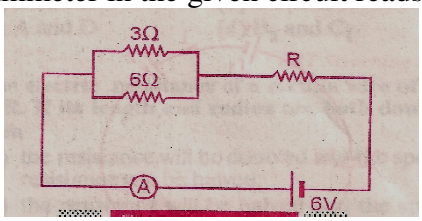
Q.4 In a Wheatstone bridge all the four arms have equal resistance R. If the resistance of the galvanometer arm is also R, the equivalent resistance of the combination as seen by the battery is

(a) $\frac{R}{4}$ (b) $\frac{R}{2}$ (c) R (d) 2R

Q.5 The current in a conductor varies with time t as $I = 2t + 3t^2$ where I is in ampere and t in seconds. Electric charge flowing through a section of the conductor during t = 2 sec to t = 3 sec is

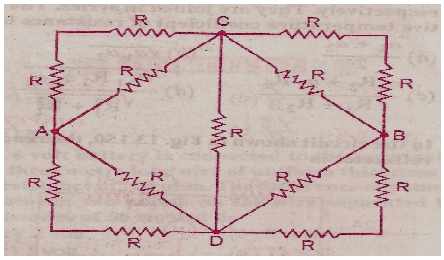
(a) 10 C (b) 24 C (c) 33 C (d) 44 C

Q.6 If the ammeter in the given circuit reads 2A, the resistance R is



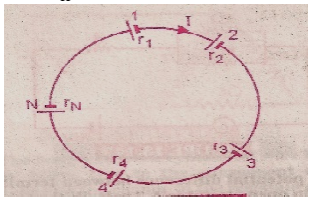

(a) 1 Ω (b) 2 Ω (c) 3 Ω (d) 4 Ω

Q.7 Thirteen resistance each of resistance R Ω are connected in the circuit as shown in the Fig . The effective resistance between A and B is




(a) 2 R Ω (b) 4 R / 3 Ω (c) 2 R / 3 Ω (d) R Ω

Q.8 A group of N cells where e.m.f. varies directly with the internal resistance as per the equation $E_N = 1.5\ r_n$ are connected as shown in the Fig. The current I in the circuit is

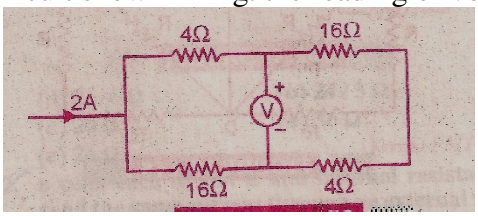



(a) 0.51 A (b) 5.1 A (c) 0.15 A (d) 1.5 A

Q.9 Two wires of resistances $R_1$ and $R_2$ have temperature coefficient of resistance $a_1$ and $a_2$ respectively. They are joined in series. The effective temperature coefficient of resistance is

(a) $\frac{\alpha_1 + \alpha_2}{2}$ (b) $\sqrt{\alpha_1 \alpha_2}$ (c) $\frac{\alpha_1 R_1 + \alpha_2 R_2}{R_1 + R_2}$ (d) $\frac{\sqrt{R_1 R_2 + \alpha_1 \alpha_2}}{\sqrt{R^2_1 + R^2_2}}$

Q.10 In the circuit shown in Fig. the reading of voltmeter is




(a) 12 V (b) 8 V (c) 20 V (d) 16 V

Q.11 A cell of Internal resistance 2 Ω and e.m.f. 10 volt is connected to a uniform wire of length 500 cm and resistance 3 Ω . The potential gradient in the wire is.

(a) 30 mV/cm (b) 12 mV/cm (c) 20 m V/cm (d) 4 mV/cm

Q.12 Which of the following has negative temperature coefficient of resistance ?

(a) copper (b) aluminium (c) iron (d) germanium

Q.13 The resistance of the series combination of two resistance is S. When they are joined in parallel the total resistance is P. If S = n P, then the minimum possible value of n is

(a) 4 (b) 3 (c) 2 (d) 1

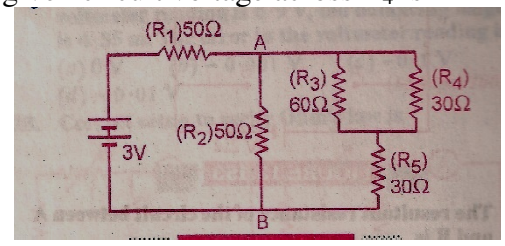
Q.14 An electric current is passed through a circuit containing two wires of the same material, connected in parallel. If lengths and radil of the wires are in the ratio of 4/3 and 2/3, then the ratio of the currents passing through the wires will be

(a) 3 (b) 1/3 (c) 8/9 (d) 2

Q.15 In a metre bridge experiment null point is obtained at 20 cm from one end of the wire when resistance X is balanced against another resistance Y. If X < Y, then where will be new position of the null point from the same end, if one decides to balance a resistance of 4 X against Y

(a) 50 cm (b) 80 cm (c) 40 cm (d) 70 cm

Q.16 In the given circuit voltage across $R_4$ is




(a) 0.4 V (b) 0.6 V (c) 0.8 V (d) 1.0 V
(e) 1.2 V

Q.17 When a body is earth connected, electrons from the earth flow into the body. This means the body is

(a) charged negatively (b) an insulator (c) unchanged
(d) charged positively

Q.18 A cube is constructed from 12 identical wires. Current enters one corners of the cube and it leaves the opposite corner. If the resistance of each wire is r, then equivalent resistance will be

(a) 6r / 5 (b) 5 r / 6 (c) 5 r / 12 (d) 12 r / 5

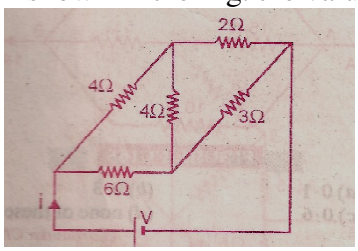
Q.19 A source of e.m.f. E = 15 V and having negligible internal resistance is connected to a variable resistance, so that the current in the circuit increases with time as I = 1.2 t + 3. Then the total charge that will flow in first five second will be

(a) 10 C (b) 20 C (c) 30 C (d) 40 C

Q.20 When a wire of uniform cross-section a, length l and resistance R is bent into a complete circle, resistance between any two of diametrically opposite points will be :

(a) $\frac{R}{2}$ (b) $\frac{R}{4}$ (c) $\frac{R}{8}$ (d) 4R

Q.21 For the network shown in the Fig. the value of the current I is :




(a) $\frac{18\,V}{5}$ (b) $\frac{5\,V}{9}$ (c) $\frac{9\,V}{35}$ (d) $\frac{5\,V}{18}$

Q.22 Two sources of equal emf are connected to an external resistance R. The internal resistances of the two sources are $R_1$ and $R_2$ ($R_2 > R_1$). If the potential difference across the source having internal resistance $R_2$ is zero, then.

(a) $R = R_1 R_2/(R_2 - R_1)$ (b) $R = R_1R_2/(R_1+R_2)$
(c) $R = R_2 - R_1$ (d) $R = R_2 \times (R_1 + R_2) / (R_2 - R_1)$

Q.23 In a potentiometer experiment, the balancing with a cell is at length 240 cm. On shunting the cell with a resistance of 2 Ω, the balancing length becomes 120 cm. The internal resistance of the cell is

(a) 2 Ω (b) 4 Ω (c) 0.5 Ω (d) 1 Ω

Q.24 To draw the maximum current from a combination of cells, how should the cells be grouped ?

(a) series (b) parallel (c) mixed
(d) depends upon the relative values of external and internal resistance

Q.25 A wire is cut into 4 pieces, which are put together by sides to obtain one conductor. If the original resistance of wire was R, the resistance of the bundle will be

(a) R/4 (b) R/8 (c) R/16 (d) R/32