

JEE MAIN CURRENT ELECTRICITY — PYQS

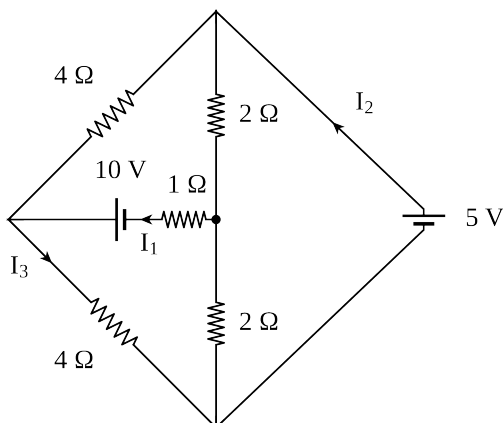
Max. Marks: 184

Questions: 46

Section A (MCQ) — 32 questions

- Q.1** Refer to the figure given below. The values of I_1 , I_2 and I_3 are ____.

[JEE Main 2026 (Online) 5th April Morning Shift]



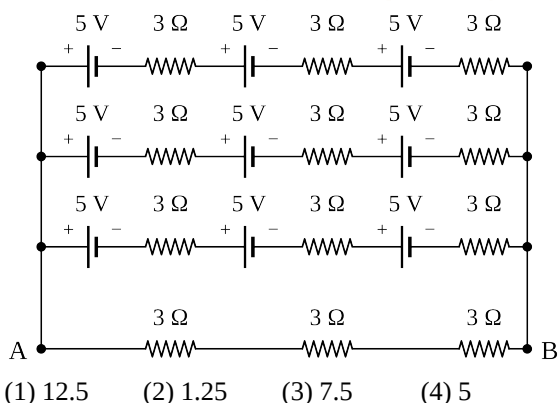
- (1) $I_1 = 2.5$ A, $I_2 = 1.875$ A, $I_3 = 1.875$ A
 (2) $I_1 = 1.875$ A, $I_2 = 2.5$ A, $I_3 = 1.875$ A
 (3) $I_1 = 1.875$ A, $I_2 = 1.875$ A, $I_3 = 2.5$ A
 (4) $I_1 = 2.5$ A, $I_2 = 2.5$ A, $I_3 = 1.875$ A

Scan or tap for the full solution



- Q.2** Refer to the figure given below, current between terminals A and B is ____ A.

[JEE Main 2026 (Online) 5th April Morning Shift]



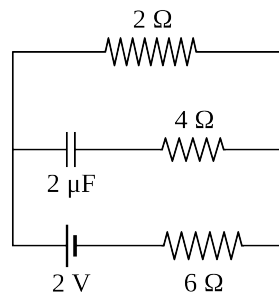
- (1) 12.5 (2) 1.25 (3) 7.5 (4) 5

Scan or tap for the full solution



- Q.3** Under steady state condition the potential difference across the capacitor in the circuit is ____ V.

[JEE Main 2026 (Online) 5th April Evening Shift]



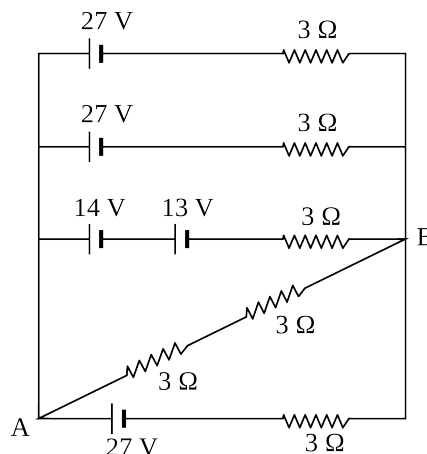
- (1) 0.5 (2) 1.5 (3) 0 (4) 2

Scan or tap for the full solution



- Q.4** The voltage and the current between A and B points shown in the circuit are ____.

[JEE Main 2026 (Online) 4th April Morning Shift]



- (1) 24 V, 12 A (2) 24 V, 4 A
 (3) 18 V, 12 A (4) 27 V, 4 A

Scan or tap for the full solution



- Q.5** Two resistors of $200\ \Omega$ and $400\ \Omega$ are connected in series with a battery of 100 V. A bulb rated at 200 V, 100 W is connected across the $400\ \Omega$ resistance. The potential drop across the bulb is ____ V.

[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) 25 (2) 50 (3) 66.6 (4) 100

Scan or tap for the full solution



- Q.6** For the two cells having same EMF E and internal resistance r , the current passing through the external resistor $6\ \Omega$ is same when both the cells are connected either in parallel or in series. The value of internal resistance r is ____ Ω .

[JEE Main 2026 (Online) 28th January Morning Shift]

- (1) 3 (2) 6 (3) 4 (4) 9

Scan or tap for the full solution



Q.7 In the potentiometer, when the cell in the secondary circuit is shunted with $4\ \Omega$ resistance, the balance is obtained at the length 120 cm of wire. Now when the same cell is shunted with $12\ \Omega$ resistance, the balance is shifted to a length of 180 cm. The internal resistance of cell is ____ Ω

[JEE Main 2026 (Online) 28th January Morning Shift]

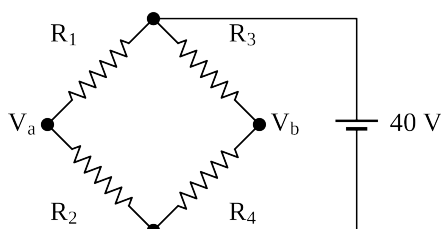
- (1) 4 (2) 12 (3) 6 (4) 3

Scan or tap for the full solution



Q.8 A Wheatstone bridge is initially at room temperature and all arms of the bridge have same value of resistances ($R_1 = R_2 = R_3 = R_4$). When R_3 resistance is heated to some temperature, its resistance value has gone up by 10%. The potential difference ($V_a - V_b$) (after R_3 is heated) is _____ V.

[JEE Main 2026 (Online) 28th January Evening Shift]



- (1) 1.05 (2) 0.95 (3) 0 (4) 2

Scan or tap for the full solution



Q.9 Two resistors of $100\ \Omega$ each are connected in series with a 9 V battery. A voltmeter of $400\ \Omega$ resistance is connected to measure the voltage drop across one of the resistors. The voltmeter reading is _____ V.

[JEE Main 2026 (Online) 24th January Morning Shift]

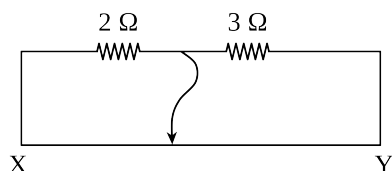
- (1) 3 (2) 2 (3) 4 (4) 4.5

Scan or tap for the full solution



Q.10 Two resistors $2\ \Omega$ and $3\ \Omega$ are connected in the gaps of bridge as shown in figure. The null point is obtained with the contact of jockey at some point on wire XY. When an unknown resistor is connected in parallel with $3\ \Omega$ resistor, the null point is shifted by 22.5 cm toward Y. The resistance of unknown resistor is _____ Ω .

[JEE Main 2026 (Online) 24th January Morning Shift]



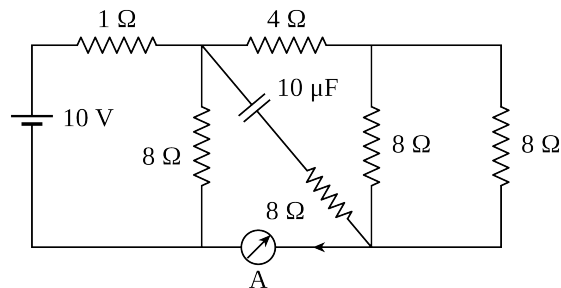
- (1) 3 (2) 1 (3) 4 (4) 2

Scan or tap for the full solution



Q.11 The reading of the ammeter (A) in steady state in the following circuit (assuming negligible internal resistance of the ammeter) is _____ A.

[JEE Main 2026 (Online) 24th January Evening Shift]



- (1) $1/2$ (2) 1 (3) 2 (4) 0

Scan or tap for the full solution



Q.12 A regular hexagon is formed by six wires each of resistance $r\ \Omega$ and the corners are joined to the centre by wires of same resistance. If the current enters at one corner and leaves at the opposite corner, the equivalent resistance of the hexagon between the two opposite corners will be

[JEE Main 2026 (Online) 24th January Evening Shift]

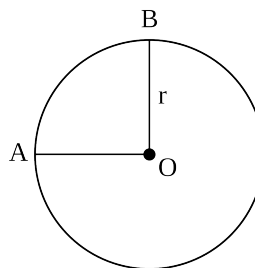
- (1) $\frac{3}{5}r$ (2) $\frac{4}{5}r$ (3) $\frac{5}{8}r$ (4) $\frac{3}{4}r$

Scan or tap for the full solution



Q.13 A wire of uniform resistance $\lambda\ \Omega/\text{m}$ is bent into a circle of radius r and another piece of wire with length $2r$ is connected between points A and B (AOB) as shown in figure. The equivalent resistance between points A and B is _____ Ω .

[JEE Main 2026 (Online) 23rd January Morning Shift]



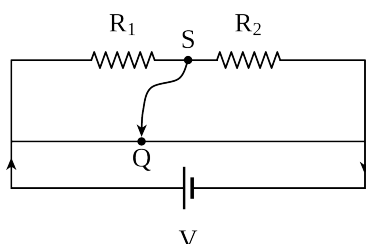
- (1) $(\pi + 1)2r\lambda$ (2) $\frac{6\pi\lambda r}{3\pi + 16}$
(3) $\frac{3\pi\lambda r}{8}$ (4) $2\pi\lambda r$

Scan or tap for the full solution



- Q.14** A meter bridge with two resistances R_1 and R_2 as shown in figure was balanced (null point) at 40 cm from the point P. The null point changed to 50 cm from the point P, when $16\ \Omega$ resistance is connected in parallel to R_2 . The values of resistances R_1 and R_2 are _____.

[JEE Main 2026 (Online) 22nd January Morning Shift]



- (1) $R_2 = 8\ \Omega$, $R_1 = \frac{16}{3}\ \Omega$
 (2) $R_2 = 12\ \Omega$, $R_1 = \frac{12}{3}\ \Omega$
 (3) $R_2 = 4\ \Omega$, $R_1 = \frac{4}{3}\ \Omega$
 (4) $R_2 = 16\ \Omega$, $R_1 = \frac{16}{3}\ \Omega$

Scan or tap for the full solution



- Q.15** An electric power line having total resistance of $2\ \Omega$, delivers $1\ \text{kW}$ of power at $250\ \text{V}$. The percentage efficiency of transmission line is _____.

[JEE Main 2026 (Online) 22nd January Evening Shift]

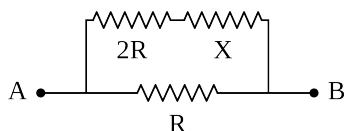
- (1) 96.9 (2) 92.5 (3) 86.5 (4) 100

Scan or tap for the full solution



- Q.16** Two known resistances of $R\ \Omega$ and $2R\ \Omega$ and one unknown resistance $X\ \Omega$ are connected in a circuit as shown in the figure. If the equivalent resistance between points A and B in the circuit is $X\ \Omega$, then the value of X is _____ Ω .

[JEE Main 2026 (Online) 21st January Evening Shift]



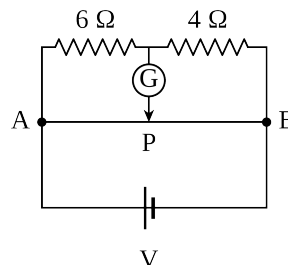
- (1) $2(\sqrt{3} - 1)R$ (2) R
 (3) $(\sqrt{3} - 1)R$ (4) $(\sqrt{3} + 1)R$

Scan or tap for the full solution



- Q.17** The total length of potentiometer wire AB is $50\ \text{cm}$ in the arrangement as shown in the figure. If P is the point where the galvanometer shows zero reading then the length AP is _____ cm.

[JEE Main 2026 (Online) 21st January Evening Shift]



- (1) 25 (2) 30 (3) 15 (4) 20

Scan or tap for the full solution



- Q.18** A battery with EMF E and internal resistance r is connected across a resistance R . The power consumption in R will be maximum when:

[JEE Main 2026 (Online) 21st January Evening Shift]

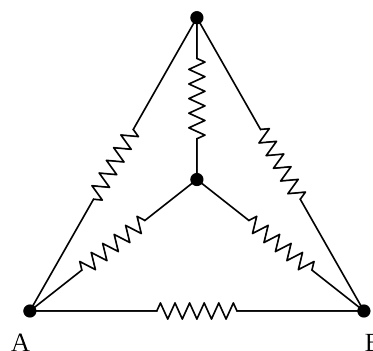
- (1) $R = \sqrt{2}r$ (2) $R = 2r$
 (3) $R = \frac{r}{2}$ (4) $R = r$

Scan or tap for the full solution



- Q.19** A wire of resistance R is bent into a triangular pyramid as shown in figure with each segment having same length. The resistance between points A and B is R/n . The value of n is :

[JEE Main 2025 (Online) 7th April Morning Shift]



- (1) 16 (2) 10 (3) 12 (4) 14

Scan or tap for the full solution



- Q.20** Current passing through a wire as function of time is given as $I(t) = 0.02t + 0.01\ \text{A}$. The charge that will flow through the wire from $t = 1\ \text{s}$ to $t = 2\ \text{s}$ is

[JEE Main 2025 (Online) 4th April Morning Shift]

- (1) $0.02\ \text{C}$ (2) $0.07\ \text{C}$ (3) $0.06\ \text{C}$ (4) $0.04\ \text{C}$

Scan or tap for the full solution



- Q.21** There are ' n ' number of identical electric bulbs, each is designed to draw a power p independently from the mains supply. They are now joined in series across the mains supply. The total power drawn by the combination is :

[JEE Main 2025 (Online) 4th April Evening Shift]

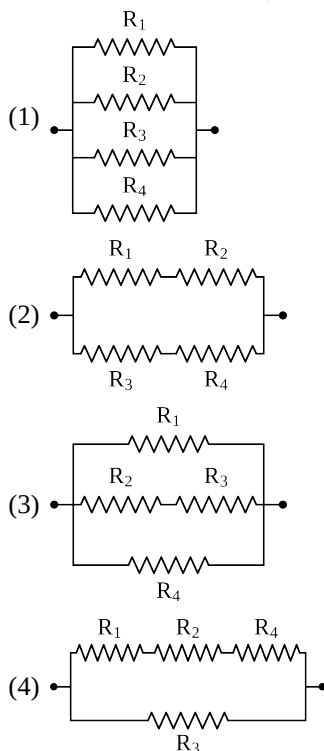
- (1) np (2) p (3) $\frac{p}{n^2}$ (4) $\frac{p}{n}$

Scan or tap for the full solution



Q.22 From the combination of resistors with resistance values $R_1 = R_2 = R_3 = 5\ \Omega$ and $R_4 = 10\ \Omega$, which of the following combination is the best circuit to get an equivalent resistance of $6\ \Omega$?

[JEE Main 2025 (Online) 4th April Evening Shift]



Scan or tap for the full solution



Q.23 A wire of length 25 m and cross-sectional area $5\ \text{mm}^2$ having resistivity of $2 \times 10^{-6}\ \Omega\ \text{m}$ is bent into a complete circle. The resistance between diametrically opposite points will be

[JEE Main 2025 (Online) 3rd April Morning Shift]

- (1) $100\ \Omega$ (2) $2.5\ \Omega$ (3) $12.5\ \Omega$ (4) $50\ \Omega$

Scan or tap for the full solution



Q.24 A motor operating on 100 V draws a current of 1 A. If the efficiency of the motor is 91.6%, then the loss of power in units of cal/s is

[JEE Main 2025 (Online) 3rd April Evening Shift]

- (1) 6.2 (2) 2 (3) 8.4 (4) 4

Scan or tap for the full solution



Q.25 The battery of a mobile phone is rated as 4.2 V, 5800 mAh. How much energy is stored in it when fully charged?

[JEE Main 2025 (Online) 2nd April Morning Shift]

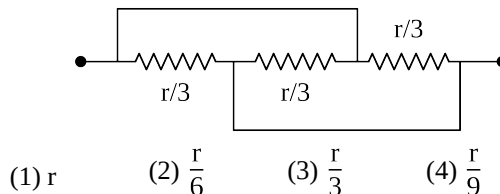
- (1) 87.7 kJ (2) 43.8 kJ (3) 48.7 kJ (4) 24.4 kJ

Scan or tap for the full solution



Q.26 Find the equivalent resistance between two ends of the following circuit

[JEE Main 2025 (Online) 28th January Morning Shift]



- (1) r (2) $\frac{r}{6}$ (3) $\frac{r}{3}$ (4) $\frac{r}{9}$

Scan or tap for the full solution



Q.27 A wire of resistance R is bent into an equilateral triangle and an identical wire is bent into a square. The ratio of resistance between the two end points of an edge of the triangle to that of the square is

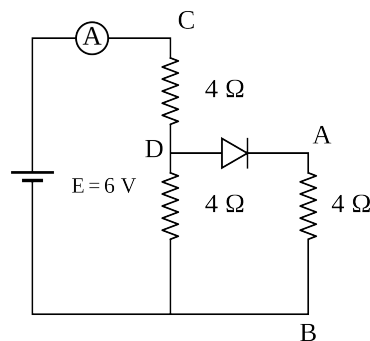
[JEE Main 2025 (Online) 28th January Morning Shift]

- (1) 8/9 (2) 9/8 (3) 32/27 (4) 27/32

Scan or tap for the full solution



Q.28 Refer to the circuit diagram given in the figure. which of the following observations are correct?



- A. Total resistance of circuit is 6 Ω
 B. Current in Ammeter is 1 A
 C. Potential across AB is 4 Volts.
 D. Potential across CD is 4 Volts
 E. Total resistance of the circuit is 8 Ω .

Choose the correct answer from the options given below:

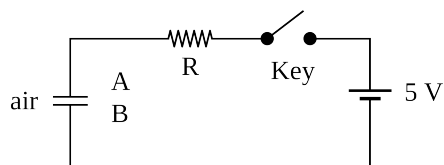
[JEE Main 2025 (Online) 23rd January Morning Shift]

- (1) B, C and E Only (2) A, C and D Only
 (3) A, B and C Only (4) A, B and D Only

Scan or tap for the full solution



Q.29 Identify the valid statements relevant to the given circuit at the instant when the key is closed.



- A. There will be no current through resistor R.
 B. There will be maximum current in the connecting wires.
 C. Potential difference between the capacitor plates A and B is minimum.
 D. Charge on the capacitor plates is minimum.
 Choose the correct answer from the options given below:

[JEE Main 2025 (Online) 23rd January Morning Shift]

- (1) A, C Only (2) C, D Only
 (3) A, B, D Only (4) B, C, D Only

Scan or tap for the full solution



Q.30 Given below are two statements :

Statement-I: The equivalent emf of two nonideal batteries connected in parallel is smaller than either of the two emfs.

Statement-II: The equivalent internal resistance of two nonideal batteries connected in parallel is smaller than the internal resistance of either of the two batteries.

In the light of the above statements, choose the correct answer from the options given below.

[JEE Main 2025 (Online) 22nd January Morning Shift]

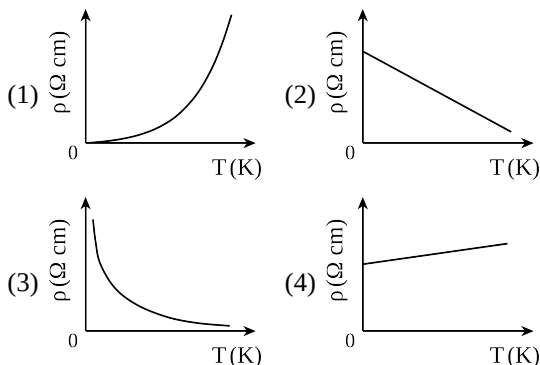
- (1) Statement-I is false but Statement-II is true
 (2) Statement-I is true but Statement-II is false
 (3) Both Statement-I and Statement-II are false
 (4) Both Statement-I and Statement-II are true

Scan or tap for the full solution



Q.31 Which of the following resistivity (ρ) v/s temperature (T) curves is most suitable to be used in wire bound standard resistors?

[JEE Main 2025 (Online) 22nd January Morning Shift]

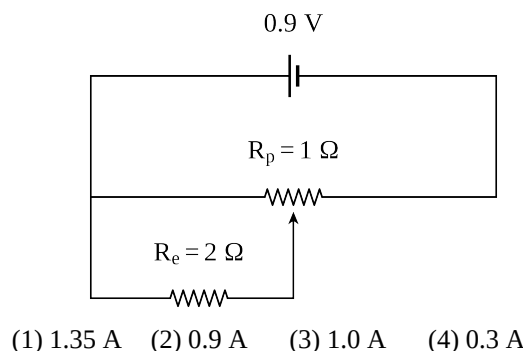


Scan or tap for the full solution



Q.32 Sliding contact of a potentiometer is in the middle of the potentiometer wire having resistance $R_p = 1\ \Omega$ as shown in the figure. An external resistance of $R_e = 2\ \Omega$ is connected via the sliding contact. The electric current in the circuit is :

[JEE Main 2025 (Online) 22nd January Morning Shift]



- (1) 1.35 A (2) 0.9 A (3) 1.0 A (4) 0.3 A

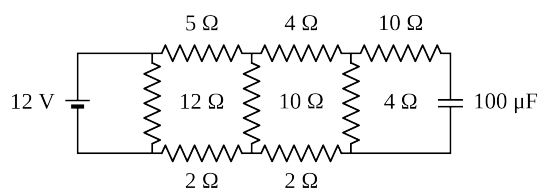
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Section B (Numerical) — 14 questions

Q.33 The stored charge in the capacitor in steady state of the following circuit is _____ μC .

[JEE Main 2026 (Online) 8th April Evening Shift]

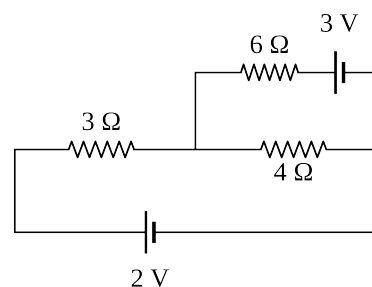


Scan or tap for the full solution



Q.34 Refer to the circuit diagram given below. The heat generated across the $6\ \Omega$ resistance in 100 second is $\frac{\alpha}{100}$ J. The value of α is _____. (Nearest integer)

[JEE Main 2026 (Online) 6th April Morning Shift]



Scan or tap for the full solution



Q.35 Two cells of emfs 1 V and 2 V and internal resistance $2\ \Omega$ and $1\ \Omega$, respectively connected in parallel, gave a current of 1 A through an external resistance. If the polarity of one cell is reversed, then value of current through the external resistance will be $\frac{\alpha}{5}$ A. The value of α is _____.

[JEE Main 2026 (Online) 6th April Evening Shift]

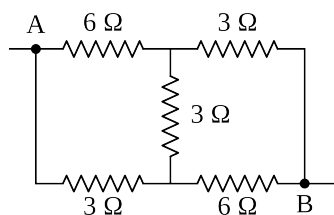
- Q.36** When an external resistance of $5\ \Omega$ is connected across terminals of a cell, a current of 0.25 A flows through it. When the $5\ \Omega$ resistor is replaced by a $2\ \Omega$ resistor, a current of 0.5 A flows through it. The internal resistance of the cell is _____ Ω .

[JEE Main 2026 (Online) 5th April Evening Shift]

Scan or tap for the full solution



- Q.37** The equivalent resistance between the points A and B in the following circuit is $\frac{x}{5}\ \Omega$. The value of x is _____. [JEE Main 2026 (Online) 28th January Morning Shift]



Scan or tap for the full solution



- Q.38** In a meter bridge experiment to determine the value of unknown resistance, first the resistances $2\ \Omega$ and $3\ \Omega$ are connected in the left and right gaps of the bridge and the null point is obtained at a distance $l\text{ cm}$ from the left. Now when an unknown resistance $x\ \Omega$ is connected in parallel to $3\ \Omega$ resistance, the null point is shifted by 10 cm to the right of wire. The value of unknown resistance x is _____ Ω .

[JEE Main 2026 (Online) 24th January Evening Shift]

Scan or tap for the full solution



- Q.39** A cylindrical conductor of length 2 m and area of cross-section 0.2 mm^2 carries an electric current of 1.6 A when its ends are connected to a 2 V battery. Mobility of electrons in the conductor is $\alpha \times 10^{-3}\text{ m}^2/\text{V s}$. The value of α is : (electron concentration = $5 \times 10^{28}/\text{m}^3$ and electron charge = $1.6 \times 10^{-19}\text{ C}$)

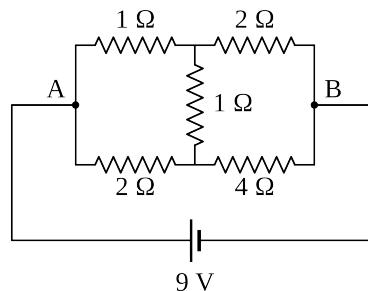
[JEE Main 2026 (Online) 22nd January Evening Shift]

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- Q.40** The heat generated in 1 minute between points A and B in the given circuit, when a battery of 9 V with internal resistance of $1\ \Omega$ is connected across these points is _____ J.

[JEE Main 2026 (Online) 21st January Morning Shift]

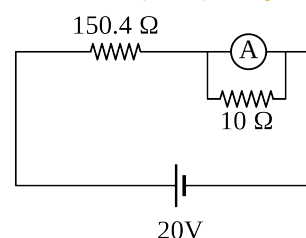


Scan or tap for the full solution



- Q.41** In the figure shown below, a resistance of $150.4\ \Omega$ is connected in series to an ammeter A of resistance $240\ \Omega$. A shunt resistance of $10\ \Omega$ is connected in parallel with the ammeter. The reading of the ammeter is _____ mA.

[JEE Main 2025 (Online) 3rd April Morning Shift]



Scan or tap for the full solution



- Q.42** Two cells of emfs 1 V and 2 V and internal resistances $2\ \Omega$ and $1\ \Omega$, respectively, are connected in series with an external resistance of $6\ \Omega$. The total current in the circuit is I_1 . Now the same two cells in parallel configuration are connected to same external resistance. In this case, the total current drawn is I_2 . The value of $\left(\frac{I_1}{I_2}\right)$ is $\frac{x}{3}$. The value of x is _____.

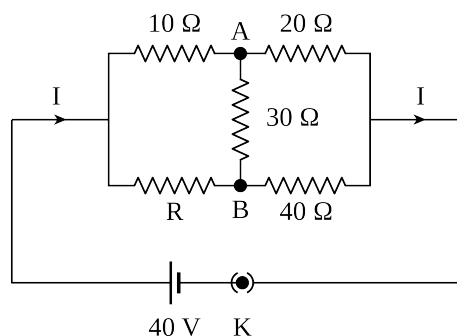
[JEE Main 2025 (Online) 3rd April Evening Shift]

Scan or tap for the full solution



- Q.43** The value of current I in the electrical circuit as given below, when potential at A is equal to the potential at B, will be _____ A.

[JEE Main 2025 (Online) 28th January Evening Shift]



Scan or tap for the full solution



- Q.44** A wire of resistance $9\ \Omega$ is bent to form an equilateral triangle. Then the equivalent resistance across any two vertices will be _____ ohm.

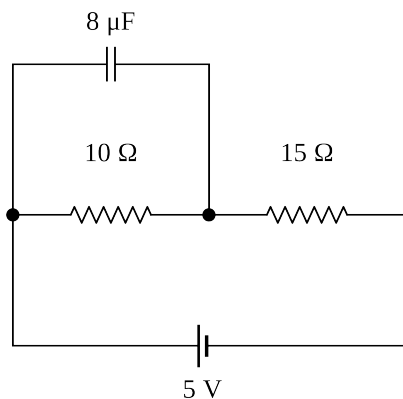
[JEE Main 2025 (Online) 24th January Morning Shift]

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- Q.45** At steady state the charge on the capacitor, as shown in the circuit below, is _____ μC .

[JEE Main 2025 (Online) 23rd January Evening Shift]

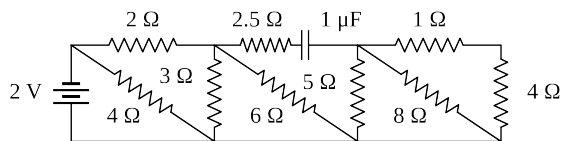


Scan or tap for the full solution



- Q.46** The net current flowing in the given circuit is _____ A.

[JEE Main 2025 (Online) 22nd January Evening Shift]



Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 32 questions

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	1	2	1	2	2	2	1	2	3	4	2
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	2	2	1	1	3	2	4	3	4	4	2
Ques.	23	24	25	26	27	28	29	30	31	32	
Ans.	2	2	1	4	3	4	4	1	4	3	

Section B (Numerical) — 14 questions

Ques.	33	34	35	36	37	38	39
Ans.	200	3477	3	1	21	6	1
Ques.	40	41	42	43	44	45	46
Ans.	1080	5	4	2	2	16	1