

Current Electricity

NEET previous year questions · Physics

10 questions from the official papers: NEET 2026 (4), Re-NEET 2026 (1), NEET 2020 (5). Each is followed by its answer and a worked solution written by BrainIt. Generated on 23 October 2026.



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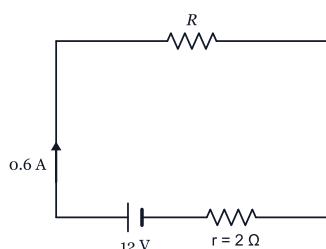
1. NEET 2026 · Q6

A resistor is connected to a battery of 12 V emf and internal resistance $2\ \Omega$. If the current in the circuit is 0.6 A, the terminal voltage of the battery is:

- (1) 10 V (2) 1.2 V (3) 12 V (4) 10.8 V

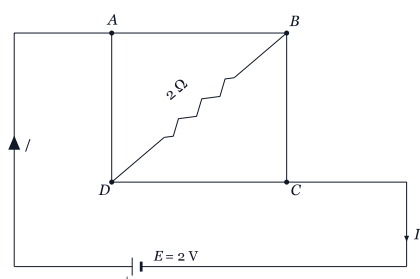
Answer (4)

Sol. The terminal voltage is the electromotive force (emf) minus the drop across the internal resistance: $V = E - Ir = 12 - 0.6 \times 2 = 10.8\text{ V}$, option (4). The 1.2 V drop across the internal resistance is what is subtracted, and 12 V would only be the terminal voltage if no current flowed.



2. NEET 2026 · Q27

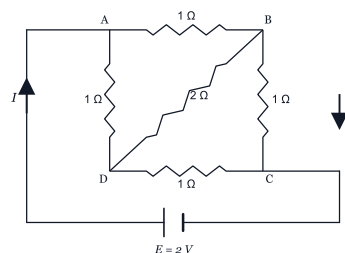
A uniform metallic wire having resistance $4\ \Omega$ is bent to form a square loop (ABCD) (see figure). A resistance of $2\ \Omega$ is connected between points B and D and a battery of 2 V is connected across points A and C as shown in the figure. Now the value of current (I) is:



- (1) 2 A (2) 8 A (3) 4.5 A (4) 4 A

Answer (1)

Sol. The $4\ \Omega$ wire splits equally, so each side of the square is $1\ \Omega$. With the $2\ \Omega$ across diagonal BD and the 2 V battery across A and C, the four $1\ \Omega$ arms form a balanced Wheatstone bridge, so no current flows through the $2\ \Omega$ branch. The effective resistance across AC is $1\ \Omega$, giving $I = E/R = 2/1 = 2\text{ A}$.



Why the other options are wrong:

- (2) Assumes far too low a resistance.
- (3) Arbitrary value from mis-combining resistances.
- (4) Would need $0.5\ \Omega$, as if each path from A to C had one $1\ \Omega$ side instead of two.

3. NEET 2026 · Q28

A room heater is rated 400 W, 220 V. If the supply voltage drops to 200 V, what will be the power consumed (approximately)?

- (1) 200 W (2) 400 W (3) 331 W (4) 121 W

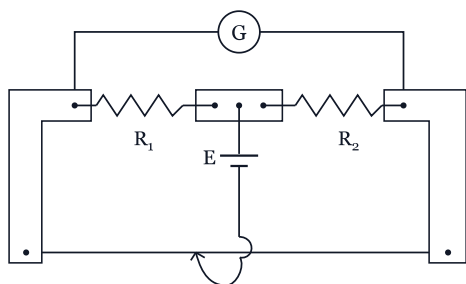
Answer (3)

Sol. The heater resistance is fixed, so $P = V^2/R$ gives

$P_c = \left(\frac{V}{V_0}\right)^2 P_0 = \left(\frac{200}{220}\right)^2 \times 400 \approx 331\text{ W}$. Power scales as the square of voltage, not linearly, so option (2) (unchanged) and option (1) (linear scaling) are wrong, and option (4) over-reduces.

4. NEET 2026 · Q37

In a metre bridge experiment (see figure), the positions of the cell, E , and galvanometer, G , are interchanged. We shall observe in the galvanometer:



- (1) Only the left-sided deflection
- (2) There will be no deflection irrespective of the position of the jockey
- (3) Only the right-sided deflection
- (4) Both right-sided and left-sided deflection and at balance point, no deflection

Answer (4)

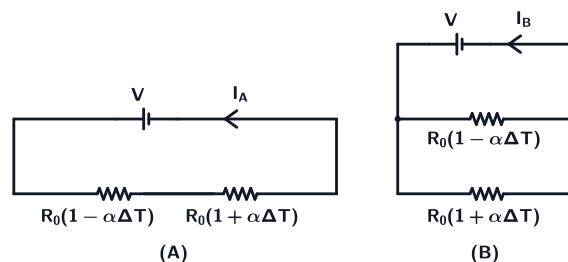
Sol. A metre bridge is a Wheatstone network, whose balance (null) condition is symmetric with respect to interchanging the cell and the galvanometer, so the balance point does not move. Away from that point the bridge is unbalanced and the galvanometer deflects; the direction of deflection depends on which side of balance the jockey lies, and it reads zero exactly at the balance point.

Why the other options are wrong:

- (1) Deflection is not restricted to one side; it flips about the null point.
- (2) No deflection occurs only at balance, not everywhere.
- (3) Same error as (1) but for the opposite side.

5. Re-NEET 2026 · Q36

Consider two circuits, (A) and (B), each having two resistors. One of them has a positive temperature coefficient of resistance, $+\alpha$, while the other one has a negative temperature coefficient, $-\alpha$, as shown in the figure. The current through these circuits are denoted by I_A and I_B . At initial temperature, the resistance of the two resistors is R_0 . As the temperature is increased, the correct option that describes the variation of current in these circuits is:



- (1) I_A remains constant while I_B increases
- (2) I_A decreases while I_B increases
- (3) I_A increases while I_B decreases
- (4) Both I_A and I_B remain constant

Answer (1)

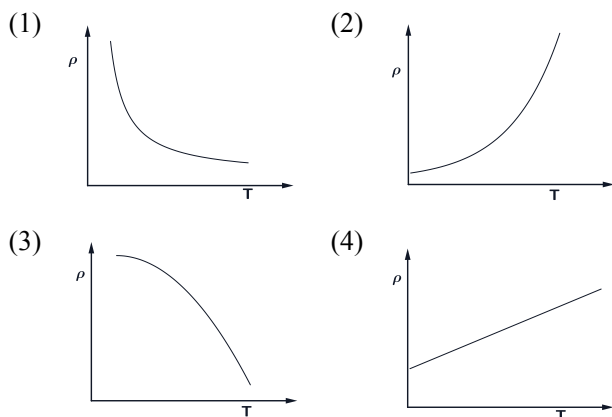
Sol. In circuit (A) the resistors are in SERIES, so $R_A = R_0(1 - \alpha\Delta T) + R_0(1 + \alpha\Delta T) = 2R_0$ - the two temperature terms cancel exactly and I_A is unchanged. In circuit (B) they are in PARALLEL, giving $R_B = \frac{R_0(1 - \alpha^2\Delta T^2)}{2}$, which decreases as ΔT grows because of the $-\alpha^2\Delta T^2$ term, so I_B increases. NCERT Class 12, Current Electricity (temperature dependence of resistivity).

Why the other options are wrong:

- (2) assumes the series combination must heat up and resist more, missing the exact cancellation between $+\alpha$ and $-\alpha$
- (3) swaps the two circuits, applying the parallel result to (A) and the series result to (B)
- (4) spots the cancellation in series and wrongly assumes the same cancellation holds for reciprocals in parallel

6. NEET 2020 · Q145

Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper?



Answer (2)

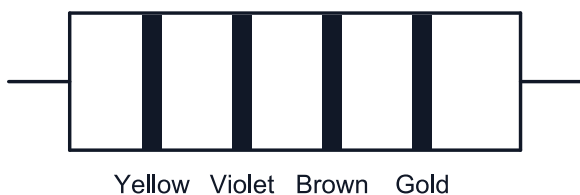
Sol. For copper, resistivity rises with temperature and is nearly linear over a limited ordinary-temperature range, but bends appreciably at very low temperatures. The source curve with that behaviour is option (2). Chapter: Current Electricity.

Why the other options are wrong:

- (1) Resistivity falling steeply and then levelling off as temperature rises is how a semiconductor behaves, not a metal like copper.
- (3) This curve shows resistivity decreasing with temperature, but the resistivity of copper increases with temperature.
- (4) A straight line treats copper as linear at every temperature, but the linear relation holds only over a limited range and the real curve bends at low temperatures.

7. NEET 2020 · Q162

The color code of a resistance is given below



The values of resistance and tolerance, respectively, are

- (1) $47 \text{ k}\Omega$, 10% (2) $4.7 \text{ k}\Omega$, 5%
 (3) 470Ω , 5% (4) $470 \text{ k}\Omega$, 5%

Answer (3)

Sol. Yellow and violet give digits 4 and 7, brown is the $\times 10$ multiplier, and gold means $\pm 5\%$. Therefore $R = 47 \times 10 = 470 \Omega$ with 5% tolerance. Chapter: Current Electricity.

Why the other options are wrong:

- (1) $47 \text{ k}\Omega$ would need an orange ($\times 10^3$) multiplier band, and 10% tolerance is a silver band, not gold.
- (2) $4.7 \text{ k}\Omega$ is $47 \times 10^2 \Omega$, which needs a red multiplier band; brown only multiplies by 10.
- (4) $470 \text{ k}\Omega$ is $47 \times 10^4 \Omega$, which needs a yellow multiplier band; brown only multiplies by 10.

8. NEET 2020 · Q166

A resistance wire connected in the left gap of a metre bridge balances a 10Ω resistance in the right gap at a point which divides the bridge wire in the ratio 3 : 2. If the length of the resistance wire is 1.5 m, then the length of 1Ω of the resistance wire is :

- (1) $1.0 \times 10^{-1} \text{ m}$ (2) $1.5 \times 10^{-1} \text{ m}$
 (3) $1.5 \times 10^{-2} \text{ m}$ (4) $1.0 \times 10^{-2} \text{ m}$

Answer (1)

Sol. At balance, $R/10 = 3/2$, so the 1.5 m resistance wire has $R = 15 \Omega$. Its length per ohm is $1.5/15 = 0.10 \text{ m}$. Chapter: Current Electricity.

9. NEET 2020 · Q169

A charged particle having drift velocity of $7.5 \times 10^{-4} \text{ m s}^{-1}$ in an electric field of $3 \times 10^{10} \text{ V m}^{-1}$ has a mobility in $\text{m}^2 \text{ V}^{-1} \text{ s}^{-1}$ of

- (1) 2.5×10^6 (2) 2.5×10^{-6}
 (3) 2.25×10^{-15} (4) 2.25×10^{15}

Answer (1)

Sol. Mobility μ is given by $\mu = \frac{v_d}{E}$, where v_d is the drift velocity and E is the electric field. Substituting the values, $\mu = \frac{7.5 \times 10^{-4}}{3 \times 10^{10}} = 2.5 \times 10^6 \text{ m}^2 \text{ V}^{-1} \text{ s}^{-1}$. Chapter: Current Electricity.

10. NEET 2020 · Q179

The solids which have the negative temperature coefficient of resistance are:

- (1) insulators only
 (2) semiconductors only
 (3) insulators and semiconductors
 (4) metals

Answer (3)

Sol. Metals have a positive temperature coefficient of resistance, while insulators and semiconductors have a negative temperature coefficient of resistance. This is due to the increase in carrier concentration in insulators and semiconductors with temperature. Chapter: Current Electricity.

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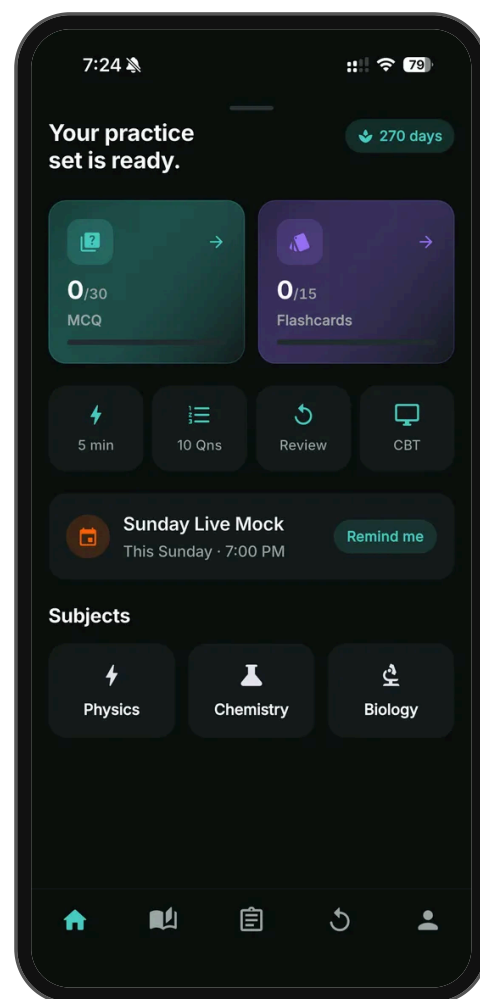
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