

NEET CURRENT ELECTRICITY — COMBINATION OF RESISTORS: SERIES AND PARALLEL — PYQS

Max. Marks: 68

Questions: 17

Section A (MCQ) — 17 questions

- Q.1** A wire of resistance R is cut into 8 equal pieces. From these pieces two equivalent resistances are made by adding four of these together in parallel. Then these two sets are added in series. The net effective resistance of the combination is:

[NEET (UG) 2025]

- (1) $\frac{R}{16}$ (2) $\frac{R}{8}$ (3) $\frac{R}{64}$ (4) $\frac{R}{32}$

Scan or tap for the full solution



- Q.2** A wire of length 'l' and resistance $100\ \Omega$ is divided into 10 equal parts. The first 5 parts are connected in series while the next 5 parts are connected in parallel. The two combinations are again connected in series. The resistance of this final combination is:

[NEET (UG) 2024]

- (1) $26\ \Omega$ (2) $52\ \Omega$ (3) $55\ \Omega$ (4) $60\ \Omega$

Scan or tap for the full solution



- Q.3** A uniform metal wire of length l has $10\ \Omega$ resistance. Now this wire is stretched to a length $2l$ and then bent to form a perfect circle. The equivalent resistance across any arbitrary diameter of that circle is

[RE-NEET (UG) 2024]

- (1) $10\ \Omega$ (2) $5\ \Omega$ (3) $40\ \Omega$ (4) $20\ \Omega$

Scan or tap for the full solution



- Q.4** 10 resistors, each of resistance R are connected in series to a battery of emf E and negligible internal resistance. Then those are connected in parallel to the same battery, the current is increased n times. The value of n is :

[NEET (UG) 2023]

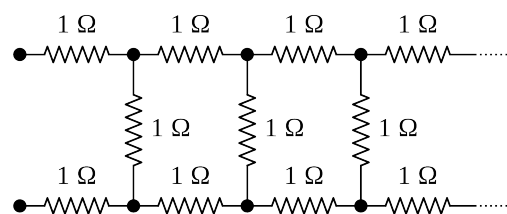
- (1) 100 (2) 1 (3) 1000 (4) 10

Scan or tap for the full solution



- Q.5** The equivalent resistance of the infinite network given below is :

[NEET (UG) 2022 (Phase 2)]



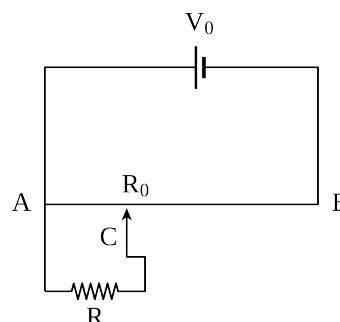
- (1) $(1 + \sqrt{5})\ \Omega$ (2) $2\ \Omega$
(3) $(1 + \sqrt{2})\ \Omega$ (4) $(1 + \sqrt{3})\ \Omega$

Scan or tap for the full solution



- Q.6** The sliding contact C is at one fourth of the length of the potentiometer wire (AB) from A as shown in the circuit diagram. If the resistance of the wire AB is R_0 , then the potential drop (V) across the resistor R is

[NEET (UG) 2022 (Phase 2)]



- (1) $\frac{2V_0R}{2R_0 + 3R}$ (2) $\frac{4V_0R}{3R_0 + 16R}$
(3) $\frac{4V_0R}{3R_0 + R}$ (4) $\frac{2V_0R}{4R_0 + R}$

Scan or tap for the full solution



- Q.7** The effective resistance of a parallel connection that consists of four wires of equal length, equal area of cross-section and same material is $0.25\ \Omega$. What will be the effective resistance if they are connected in series?

[NEET (UG) 2021]

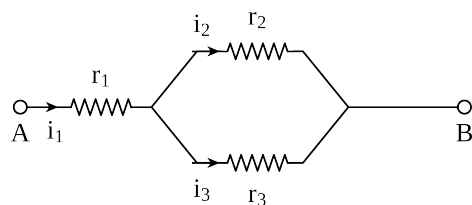
- (1) $4\ \Omega$ (2) $0.25\ \Omega$ (3) $0.5\ \Omega$ (4) $1\ \Omega$

Scan or tap for the full solution



- Q.8** Three resistors having resistances r_1 , r_2 and r_3 are connected as shown in the given circuit. The ratio $\frac{i_3}{i_1}$ of currents in terms of resistances used in the circuit is :

[NEET (UG) 2021]



- (1) $\frac{r_2}{r_1 + r_3}$ (2) $\frac{r_1}{r_2 + r_3}$ (3) $\frac{r_2}{r_2 + r_3}$ (4) $\frac{r_1}{r_1 + r_2}$

Scan or tap for the full solution



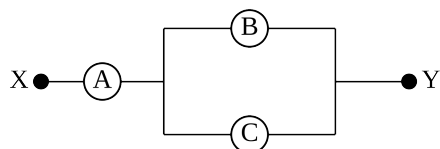
Q.9 Two metal wires of identical dimensions are connected in series. If σ_1 and σ_2 are their conductivities, the effective conductivity of the combination is [AIPMT 2015]

- (1) $\frac{\sigma_1 + \sigma_2}{\sigma_1 \sigma_2}$ (2) $\frac{\sigma_1 \sigma_2}{\sigma_1 + \sigma_2}$ (3) $\frac{2\sigma_1 \sigma_2}{\sigma_1 + \sigma_2}$ (4) $\frac{\sigma_1 + \sigma_2}{2\sigma_1 \sigma_2}$

Scan or tap for the full solution



Q.10 A, B and C are voltmeters of resistance R, 1.5R and 3R respectively as shown in the figure. When some potential difference is applied between X and Y, the voltmeter readings are V_A , V_B and V_C respectively. Then [AIPMT 2015 (Cancelled)]

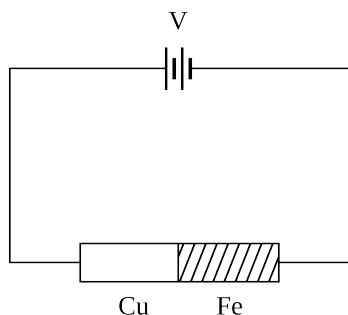


- (1) $V_A = V_B \neq V_C$ (2) $V_A \neq V_B \neq V_C$
(3) $V_A = V_B = V_C$ (4) $V_A \neq V_B = V_C$

Scan or tap for the full solution



Q.11 Two rods are joined end to end, as shown. Both have a cross-sectional area of 0.01 cm^2 . Each is 1 meter long. One rod is of copper with a resistivity of $1.7 \times 10^{-6} \text{ ohm-centimeter}$, the other is of iron with a resistivity of $10^{-5} \text{ ohm-centimeter}$.



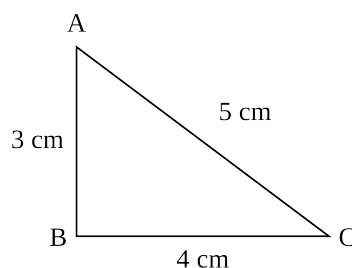
How much voltage is required to produce a current of 1 ampere in the rods? [NEET 2013 (Karnataka)]

- (1) 0.00145 V (2) 0.0145 V
(3) $1.7 \times 10^{-6} \text{ V}$ (4) 0.117 V

Scan or tap for the full solution



Q.12 A 12 cm wire is given a shape of a right angled triangle ABC having sides 3 cm, 4 cm and 5 cm as shown in the figure. The resistance between two ends (AB, BC, CA) of the respective sides are measured one by one. Their ratio is [NEET 2013 (Karnataka)]

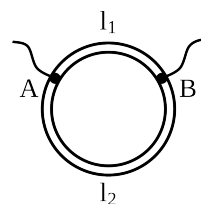


- (1) 9 : 16 : 25 (2) 27 : 32 : 35
(3) 21 : 24 : 25 (4) 3 : 4 : 5

Scan or tap for the full solution



Q.13 A ring is made of a wire having a resistance $R_0 = 12 \Omega$. Find the points A and B, as shown in the figure, at which a current carrying conductor should be connected so that the resistance R of the sub circuit between these points is equal to $\frac{8}{3} \Omega$. [AIPMT 2012 (Prelims)]

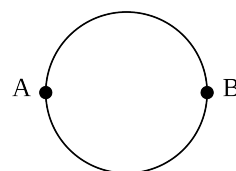


- (1) $\frac{l_1}{l_2} = \frac{5}{8}$ (2) $\frac{l_1}{l_2} = \frac{1}{3}$ (3) $\frac{l_1}{l_2} = \frac{3}{8}$ (4) $\frac{l_1}{l_2} = \frac{1}{2}$

Scan or tap for the full solution



Q.14 A wire of resistance 12 ohms per metre 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 [AIPMT 2009]

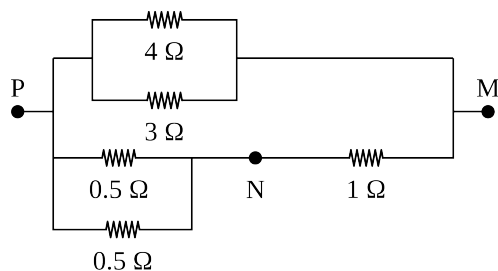


- (1) 3 Ω (2) $6\pi \Omega$ (3) 6 Ω (4) $0.6\pi \Omega$

Scan or tap for the full solution



Q.15



In the circuit shown, the current through the $4\ \Omega$ resistor is 1 amp when the points P and M are connected to a d.c. voltage source. The potential difference between the points M and N is

[AIPMT 2008]

- (1) 0.5 volt (2) 3.2 volt (3) 1.5 volt (4) 1.0 volt

Scan or tap for the
full solution



Q.16 When a wire of uniform cross-section a , length l and resistance R is bent into a complete circle, the resistance between any two diametrically opposite points will be

[AIPMT 2005]

- (1) $R/4$ (2) $4R$ (3) $R/8$ (4) $R/2$

Scan or tap for the
full solution



Q.17 Resistances n , each of r ohm, when connected in parallel give an equivalent resistance of R ohm. If these resistances were connected in series, the combination would have a resistance in ohms, equal to

[AIPMT 2004]

- (1) n^2R (2) R/n^2 (3) R/n (4) nR

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	1	2	1	1	4	2	1	3	3	3	4
Ques.	12	13	14	15	16	17					
Ans.	2	4	4	2	1	1					