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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) $\frac{R}{32}$

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Q.2 A wire of length 'l' and resistance 100 Ω 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 Ω (2) 52 Ω (3) 55 Ω (4) 60 Ω

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Q.3 A uniform metal wire of length l has 10 Ω 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 Ω (2) 5 Ω (3) 40 Ω (4) 20 Ω

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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

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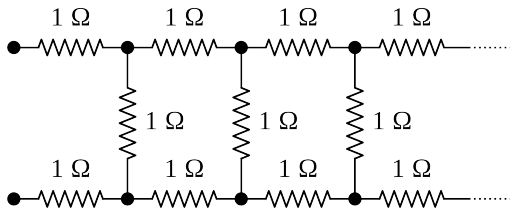
Q.5 The equivalent resistance of the infinite network given below is : [NEET (UG) 2022 (Phase 2)]



(1) $(1+\sqrt{5})\Omega$ (2) 2 Ω

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

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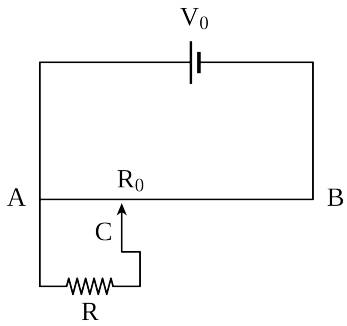
Q.6 The sliding contact C is at one fourth of the length of the potentiometer wire (AB) from A as shown in the circuit diagram. If the resistance of the wire AB is R_0, then the potential drop (V) across the resistor R is [NEET (UG) 2022 (Phase 2)]



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

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

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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 Ω. What will be the effective resistance if they are connected in series? [NEET (UG) 2021]

(1) 4 Ω (2) 0.25 Ω (3) 0.5 Ω (4) 1 Ω

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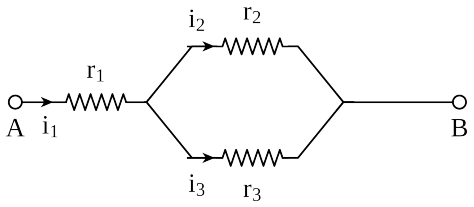
Q.8 Three resistors having resistances r_1, r_2 and r_3 are connected as shown in the given circuit. The ratio $\frac{i_3}{i_1}$ of currents in terms of resistances used in the circuit is : [NEET (UG) 2021]



(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) $\frac{r_1}{r_1+r_2}$

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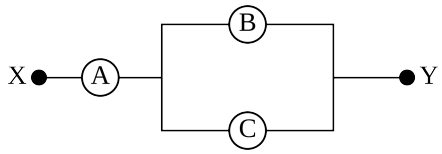
Q.9 Two metal wires of identical dimensions are connected in series. If σ_1 and σ_2 are their conductivities, the effective conductivity of the combination is [AIPMT 2015]

(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) $V_A \neq V_B = V_C$

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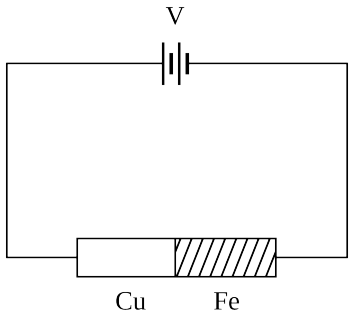
Q.11 Two rods are joined end to end, as shown. Both have a cross-sectional area of 0.01 cm^2. Each is 1 meter long. One rod is of copper with a resistivity of 1.7×10^{-6} ohm-centimeter, the other is of iron with a resistivity of 10^{-5} ohm-centimeter.



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) 1.7×10^{-6} V (4) 0.117 V

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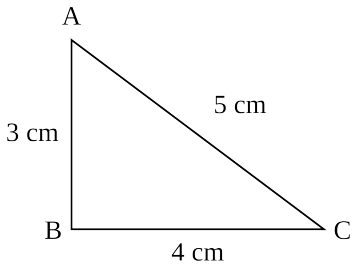
Q.12 A 12 cm wire is given a shape of a right angled triangle ABC having sides 3 cm, 4 cm and 5 cm as shown in the figure. The resistance between two ends (AB, BC, CA) of the respective sides are measured one by one. Their ratio is [NEET 2013 (Karnataka)]



(1) 9 : 16 : 25 (2) 27 : 32 : 35

(3) 21 : 24 : 25 (4) 3 : 4 : 5

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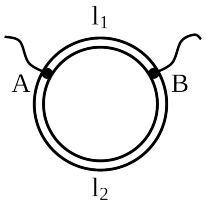
Q.13 A ring is made of a wire having a resistance $R_0 = 12\ \Omega$. Find the points A and B, as shown in the figure, at which a current carrying conductor should be connected so that the resistance R of the sub circuit between these points is equal to $\frac{8}{3}\ \Omega$. [AIPMT 2012 (Prelims)]



(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) $\frac{l_1}{l_2} = \frac{1}{2}$

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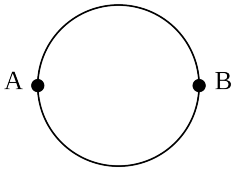
Q.14 A wire of resistance 12 ohms per metre is bent to form a complete circle of radius 10 cm. The resistance between its two diametrically opposite points, A and B as shown in the figure is [AIPMT 2009]



(1) 3 Ω (2) 6π Ω (3) 6 Ω (4) 0.6π Ω

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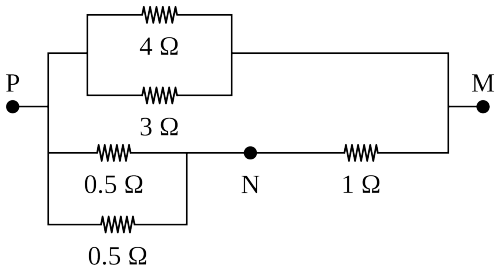
Q.15



In the circuit shown, the current through the 4 Ω 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

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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

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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**					