O Level Combined Physics MCQs

Current and DC Circuits Test 2.0

Q1

A wire of resistance R has length L and cross-sectional area A. The wire is then stretched to twice its length and half its cross-sectional area. What is the resistance of the wire after it is being stretched?
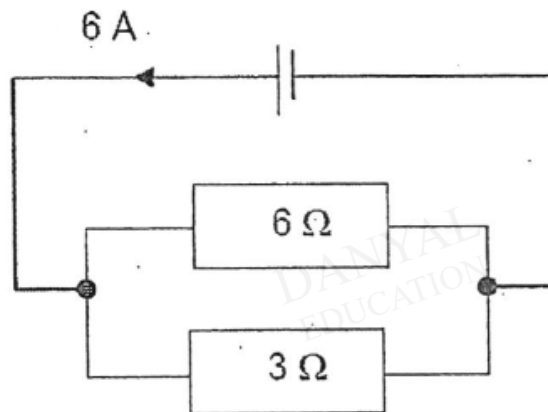
A ¼ R **B** R **C** 2R   **D** 4R

Q2

What is the current flowing through the 3 Ω resistor as shown in the figure below?

A 1 A   **B** 2 A   **C** 3 A   **D** 4 A

Q3

What is the total charge that has passed through a bulb when an electric current of 5 A is flowing for 2 minutes?

A 2.5 C   **B** 10 C   **C** 24 C   **D** 600 C

Q4

A wire has a resistance of 16 Ω. A second wire, made of the same material, has half the length and half the cross-sectional area.
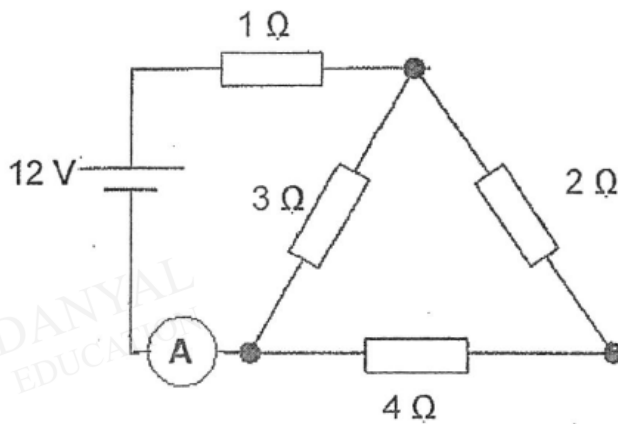
What is the resistance of the second wire?

A 2 Ω   **B** 4 Ω

C 16 Ω   **D** 64 Ω

Q5

The circuit diagram shows four resistors connected to a battery of 12 V, with negligible internal resistance.

What is the reading on the ammeter?

A   1.2 A   **B**   3.0 A   **C**   4.0 A   **D**   6.0 A

Q6

Current flows in two resistors connected in series as shown in the diagram below. A_1 and A_2 are the readings on the ammeters. V_1 and V_2 are the readings on the voltmeters.
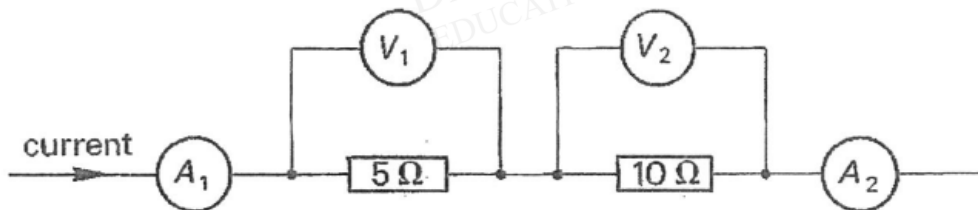
Which of the following correctly describes the ammeter and voltmeter readings?

	ammeter readings	voltmeter readings
A	A_1 is equal to A_2	V_1 is equal to V_2
B	A_1 is equal to A_2	V_1 is less than V_2
C	A_1 is greater than A_2	V_1 is equal to V_2
D	A_1 is less than A_2	V_1 is less than V_2

Q7

A piece of wire has a cross-sectional area of 1.0 cm² and is of length 1.0 m. If another piece of wire of the same material is to have a resistance half of that of the first wire, what should its length and cross-sectional area be?

	length / m	cross-sectional area / cm²
A	1.0	1.0
B	0.50	1.0
C	2.0	0.50
D	2.0	8.0

Q8

The potential difference between the ends of a conductor is 6.0 V. How much electrical energy is converted to other forms of energy in the conductor when 80 C of charge flows through it?

A   13 J

B   80 J

C   480 J

D   2880 J

Q9

A battery is connected to a length of resistance wire. Which of the following changes will increase the current in the battery?

A   Increasing the cross-sectional area of the wiree.

B   Increasing the length of the wire.

C   Lowering the e.m.f. of the battery.

D   Replacing the wire to one with a higher resistivity.

Q10

A wire of length 1.0 m and a cross-sectional area of 1.0×10^{-6} m² has a resistance of 2.0 Ω. Another wire of the same material has a length of 2.0 m and a cross-sectional area of 1.5×10^{-6} m².
What is the resistance of the longer wire?

A. 1.50 Ω
B. 2.00 Ω
C. 2.67 Ω
D. 3.00 Ω

Answers

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Q1 D

Q2 C

Q3 D

Q4 C

Q5 D

Q6 B

Q7 B

Q8 C

Q9 A

Q10 C