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IGCSE PHYSICS 0625 · TOPICAL PAST PAPERS

Electric Circuits

Paper 1 — Multiple-Choice Questions (topical compilation)

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D.C CIRCUITS

PAPER 1 QUESTIONS

Cell combinations

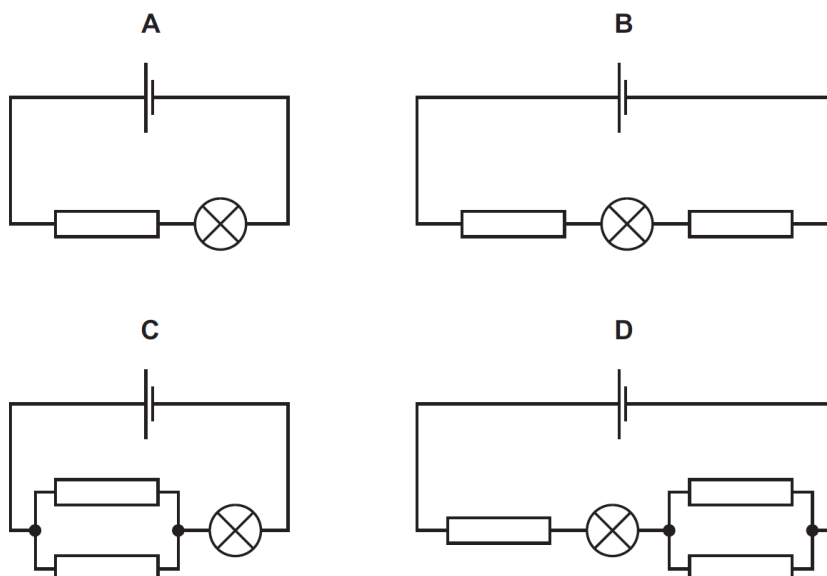
Resistor combinations

Current, potential difference, and resistance in series and parallel circuits

QUESTION # 1: M/J 16 P11

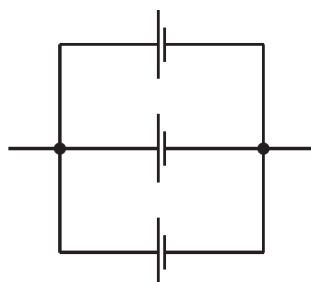
31 The cells, lamps and resistors in the circuits are identical.

In which circuit is the lamp the brightest?



QUESTION # 2: M/J 16 P12

27 The diagram shows a battery of three 1.5 V cells.



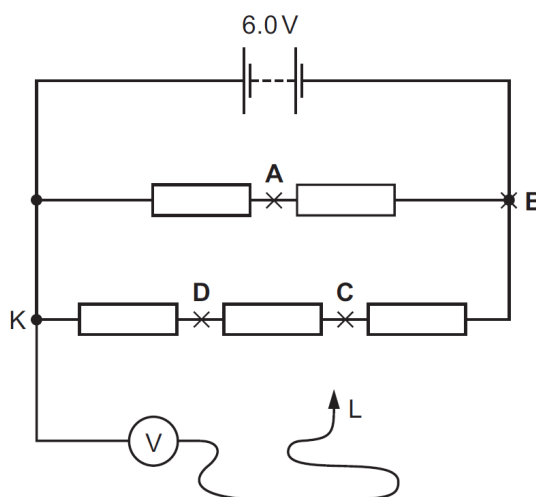
What is an advantage of this arrangement of cells?

- A The battery can supply a current for a longer time than a single 1.5 V cell.
- B The battery can supply any e.m.f. between 0 V and 4.5 V.
- C The battery supplies more energy to each coulomb of charge than a single 1.5 V cell.
- D The e.m.f. of the battery is 4.5 V.

QUESTION # 3: M/J 16 P12

29 A 6.0 V battery is connected to a network containing five identical resistors. A voltmeter has one lead connected to point K as shown.

At which point should lead L be connected so that the voltmeter reads 3.0 V?

**QUESTION # 4: M/J 17 P11**

37 Why are batteries sometimes made from several identical cells arranged in parallel?

- A The battery has a greater e.m.f. than a single cell on its own.
- B The battery has a lower e.m.f. than a single cell on its own.
- C The battery lasts longer than a single cell on its own.
- D The battery supplies a smaller current than a single cell on its own.

QUESTION # 5: M/J 19 P11

38 A teacher uses the circuit shown.



The identical lamps X and Y are connected to a low voltage a.c. power supply by high resistance transmission wires. Both lamps are switched on.

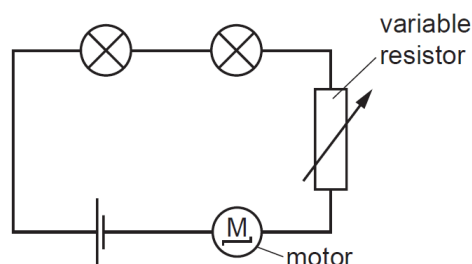
Lamp X is then switched off. Lamp Y stays switched on.

What happens to the voltage and the power supplied to lamp Y?

	the voltage supplied to lamp Y	the power supplied to lamp Y
A	decreases	decreases
B	decreases	stays the same
C	increases	increases
D	increases	stays the same

QUESTION # 6: M/J 19 P12

33 The diagram shows a simple circuit.

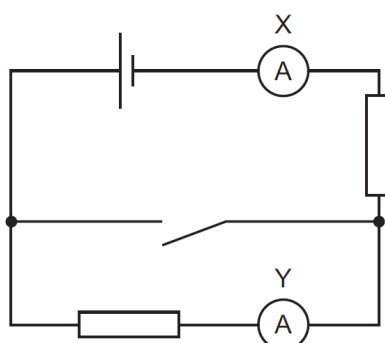


What happens when the resistance of the variable resistor is increased?

- A** The lamps are dimmer and the motor rotates more quickly.
- B** The lamps are dimmer and the motor rotates more slowly.
- C** The lamps have the same brightness and the motor rotates more quickly.
- D** The lamps have the same brightness and the motor rotates more slowly.

QUESTION # 7: M/J 20 P12

38 The diagram shows a circuit.



What effect does closing the switch have on the readings of ammeters X and Y?

	reading on ammeter X	reading on ammeter Y
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

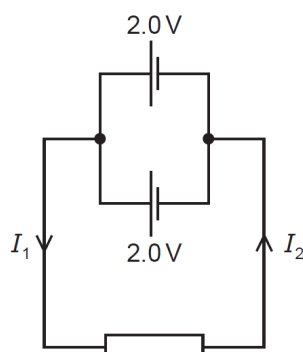
QUESTION # 8: O/N 16 P12

34 Resistors of different resistances are connected to a power supply in either a parallel circuit or a series circuit. Which statement is correct?

- A** The current is the same in all resistors connected in parallel.
- B** The current is the same in all resistors connected in series.
- C** The voltage across each resistor is different for all resistors connected in parallel.
- D** The voltage across each resistor is the same for all resistors connected in series.

QUESTION # 9: O/N 17 P11

31 The battery in a circuit contains two identical cells connected in parallel.

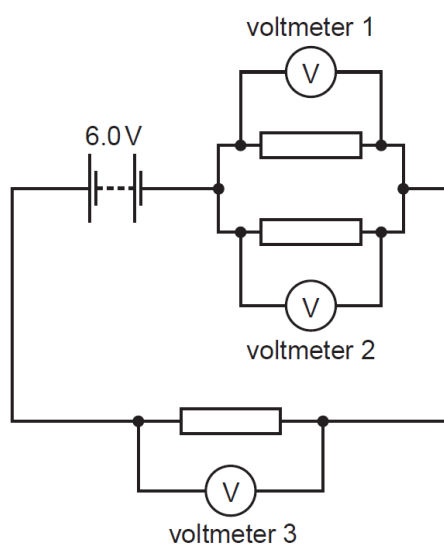


Which row shows the relationship between currents I_1 and I_2 and gives the electromotive force (e.m.f.) of the battery?

	relationship	e.m.f./V
A	$I_1 > I_2$	2.0
B	$I_1 > I_2$	4.0
C	$I_1 = I_2$	2.0
D	$I_1 = I_2$	4.0

QUESTION # 10: O/N 17 P12

29 A 6.0 V battery, three resistors and three voltmeters are connected in the circuit shown.



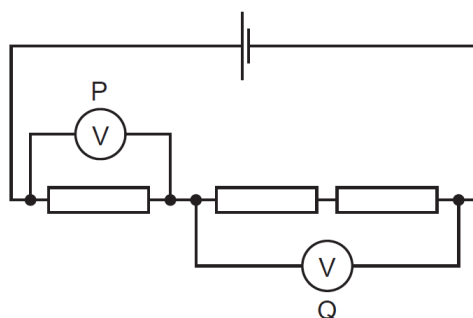
The reading on voltmeter 1 is 2.0 V.

What is the reading on voltmeter 2 and what is the reading on voltmeter 3?

	reading on voltmeter 2 /V	reading on voltmeter 3 /V
A	2.0	4.0
B	2.0	8.0
C	4.0	4.0
D	4.0	8.0

QUESTION # 11: O/N 18 P11

30 Three identical resistors are joined in series to a cell.



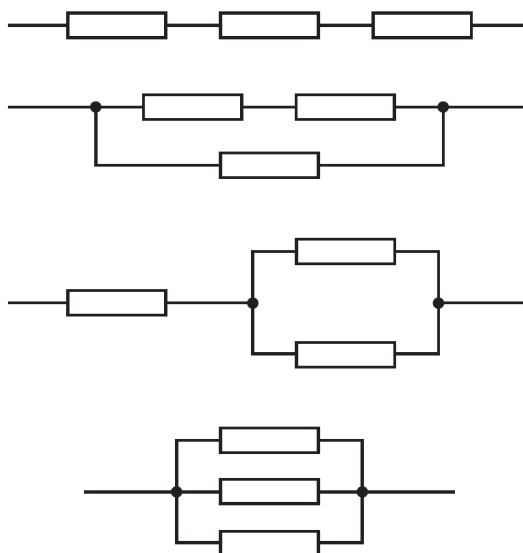
Voltmeter Q reads 8.0 V.

What is the reading on voltmeter P and what is the e.m.f. of the cell?

	reading on P/V	e.m.f. of cell/V
A	4.0	8.0
B	4.0	12
C	8.0	8.0
D	8.0	12

QUESTION # 12: O/N 18 P12

30 The diagram shows three $6.0\ \Omega$ resistors connected to give various total resistances.



What is the difference between the smallest total resistance and the largest total resistance?

- A $7.0\ \Omega$ B $9.0\ \Omega$ C $12\ \Omega$ D $16\ \Omega$

QUESTION # 13: O/N 19 P11

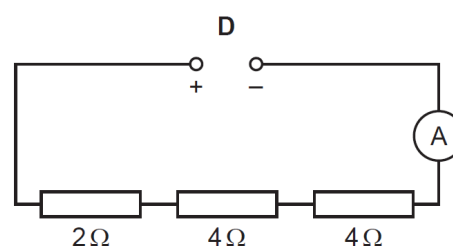
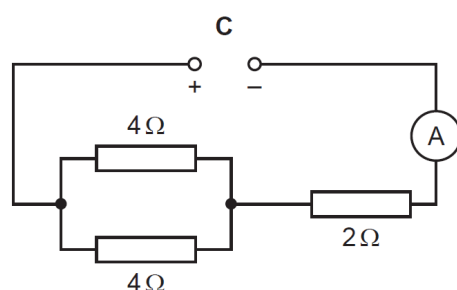
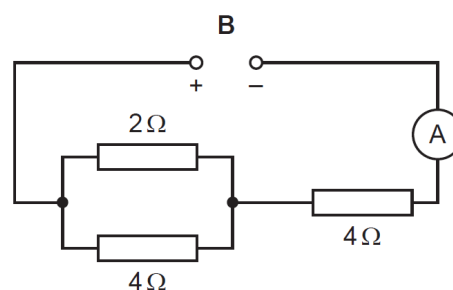
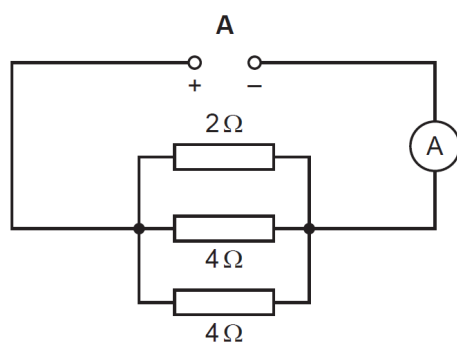
34 Resistors of different resistances are connected to a power supply in either a parallel circuit or a series circuit. Which statement is correct?

- A** The current is the same in all resistors connected in parallel.
- B** The current is the same in all resistors connected in series.
- C** The voltage across each resistor is different for all resistors connected in parallel.
- D** The voltage across each resistor is the same for all resistors connected in series.

QUESTION # 14: O/N 19 P11

35 An ammeter is connected to three resistors and a power supply.

Which arrangement of resistors gives the greatest ammeter reading?



QUESTION # 15: O/N 19 P12

35 A hotplate on an electric cooker contains two identical resistors.

The switch has three positions.

position 1 The two resistors are connected in series to the mains supply.

position 2 The two resistors are connected in parallel to the mains supply.

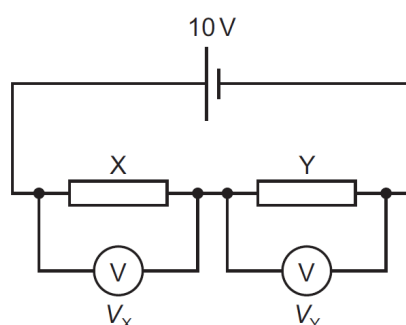
position 3 Just one resistor is connected to the mains supply.

Which positions correspond to the low, the medium and the high power settings?

	low power	medium power	high power
A	1	2	3
B	1	3	2
C	3	1	2
D	3	2	1

QUESTION # 16: O/N 20 11

35 In the circuit shown, the resistance of resistor Y is four times greater than the resistance of resistor X.



What is the difference $V_Y - V_X$ of the voltages shown on the voltmeters?

- A** 2.0V **B** 5.0V **C** 6.0V **D** 8.0V

QUESTION # 17: O/N 20 P11

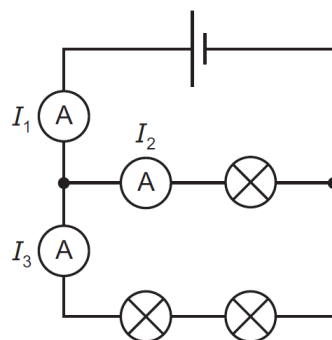
36 Two identical resistors connected in parallel have a total resistance of 4.0Ω .

What is the total resistance when the same two resistors are connected in series?

- A** 1.0Ω **B** 4.0Ω **C** 8.0Ω **D** 16Ω

QUESTION # 18: O/N 20 P11

37 Three identical lamps and three ammeters are connected as shown.



The readings on the ammeters are I_1 , I_2 and I_3 .

How are the readings related?

- A** $I_1 = I_2 = I_3$
- B** $I_1 > I_2$ and $I_2 = I_3$
- C** $I_1 > I_3 > I_2$
- D** $I_1 > I_2 > I_3$