

GCSE Physics A (Gateway)

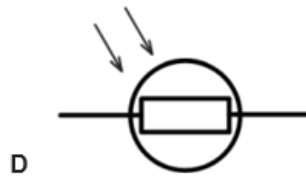
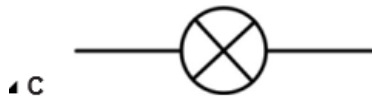
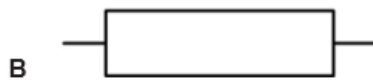
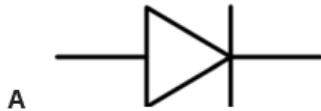
J249/01 Physics A P1-P4 and P9 (Foundation Tier)

Question Set 27

Multiple Choice Questions

P3: Electricity

1 Which symbol is used to show an LDR?

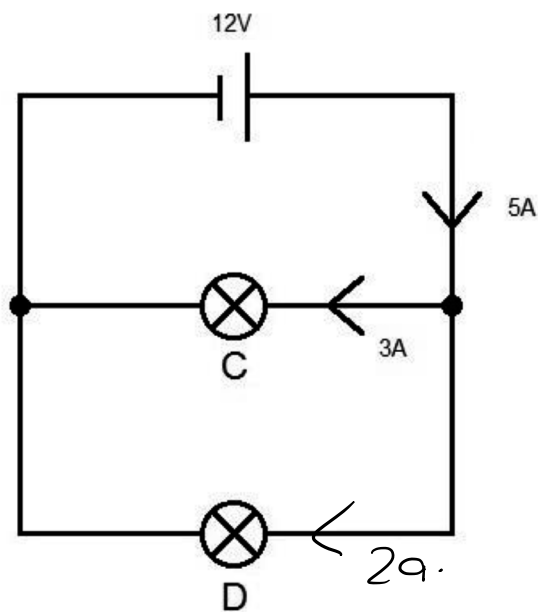


Your answer

D

[1]

2 Look at the circuit diagram.



resistance = potential difference \div current

Calculate the resistance of bulb D.

A 2 Ω

$$R = 12 \div 2 = 6$$

B 4 Ω

C 6 Ω

D 8 Ω

Your answer

C

[1]

3 Which voltage is the maximum voltage made when **four** 1.5V cells are connected in **series**?

- A 0V
- B 1.5V
- C 3.0V
- D 6.0V

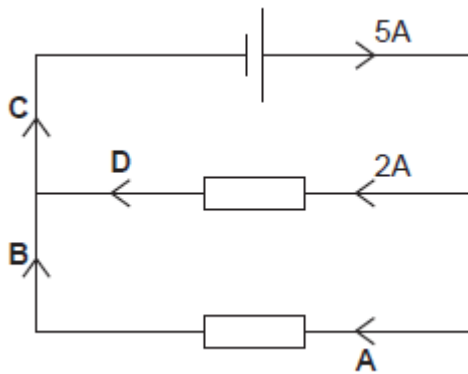
$$4 \times 1.5 = 6$$

Your answer

D

[1]

4 This is a circuit.



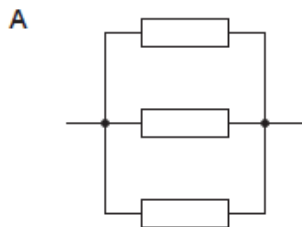
Which letter **A**, **B**, **C** or **D** shows the part of the circuit that carries a current of 2A?

Your answer

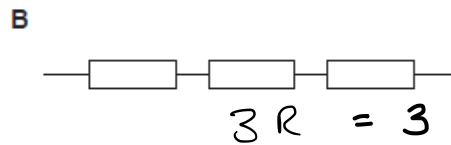
D

[1]

5 A student has 3 identical resistors. She arranges them in four different ways.

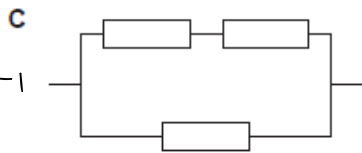


$$\left(\frac{1}{R} + \frac{1}{R} + \frac{1}{R}\right)^{-1} = \frac{1}{3}$$

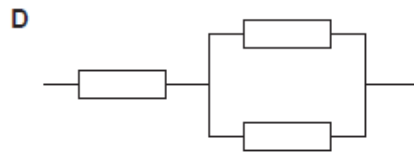


e.g. $R=1$

$$3R = 3$$



$$\left(\frac{1}{2R} + \frac{1}{R}\right)^{-1} = \frac{2}{3}$$



$$R + \left(\frac{1}{R} + \frac{1}{R}\right)^{-1} = \frac{5}{2}$$

Which arrangement has the **most** resistance?

Your answer

B

[1]

6 Static electricity can be produced when two materials are rubbed together.

Which two types of material could cause static electricity to be produced?

- A Two insulators
- B Two conductors
- C One insulator and one conductor
- D A metal and a non-metal

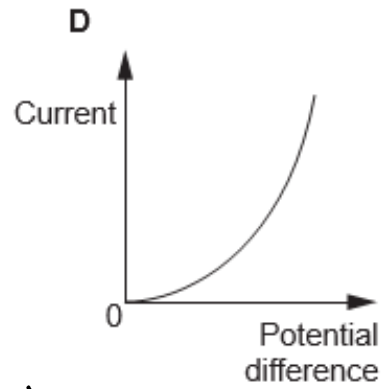
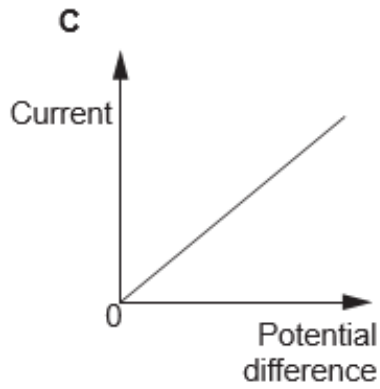
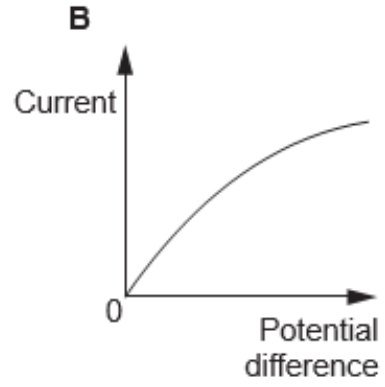
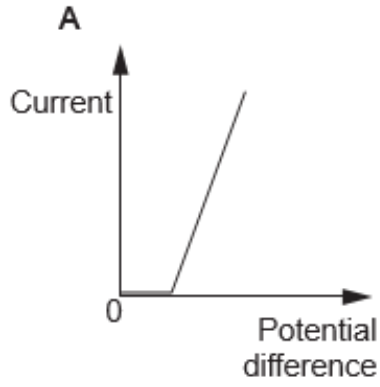
Your answer

A

[1]

7 A student investigates how current and potential difference vary in different components.

Look at the graphs of her results.



Which graph shows a filament lamp? *non-ohmic so not C*

Your answer

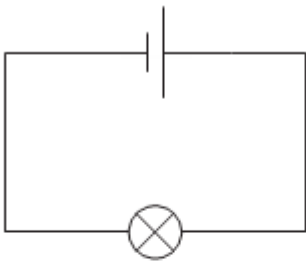
B

[1]

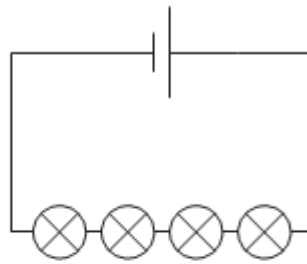
8 A student sets up four different circuits. He uses identical lamps and the same cell.

Look at the diagrams of his circuits.

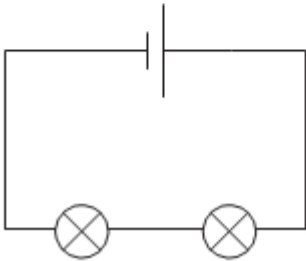
A



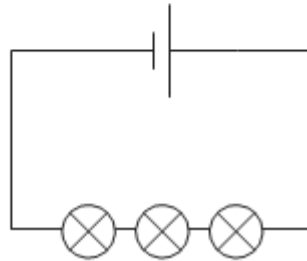
B



C



D



Which circuit has the brightest lamp(s)?

✓↑ brightness ↑

Your answer

A

[1]

9 What conditions are needed for charge to flow?

- A A source of potential difference and two lamps.
- B A complete circuit and two lamps.
- C A complete circuit and a source of potential difference.
- D A complete circuit and a source of resistance.

Your answer

C

[1]

Total Marks for Question Set 27: 9

Equations in physics

$$(\text{final velocity})^2 - (\text{initial velocity})^2 = 2 \times \text{acceleration} \times \text{distance}$$

$$\text{change in thermal energy} = \text{mass} \times \text{specific heat capacity} \times \text{change in temperature}$$

$$\text{thermal energy for a change in state} = \text{mass} \times \text{specific latent heat}$$

$$\text{energy transferred in stretching} = 0.5 \times \text{spring constant} \times (\text{extension})^2$$

$$\text{potential difference across primary coil} \times \text{current in primary coil} = \text{potential difference across secondary coil} \times \text{current in secondary coil}$$

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