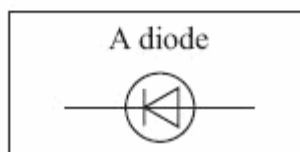
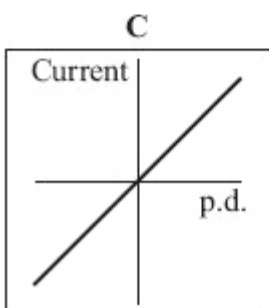
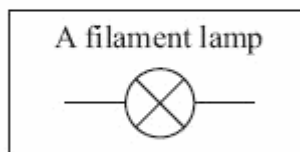
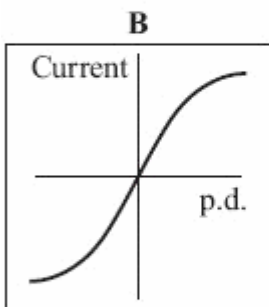
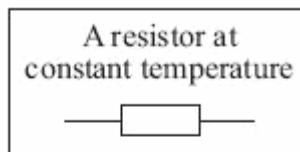
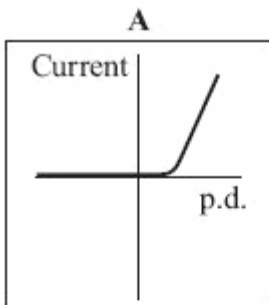


Electrical circuits

1. (a) The graphs, **A**, **B** and **C**, show how the current through a component varies with the potential difference (p.d.) across the component.

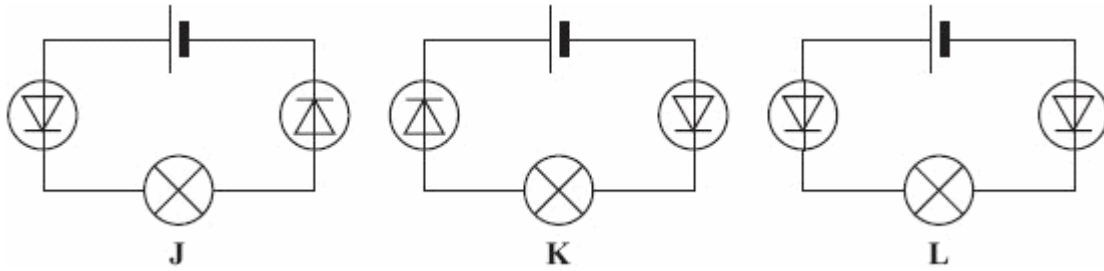
Draw a line to link each graph to the correct component. Draw only **three** lines.

Component



(2)

(b) Each of the circuits, J, K and L, include two diodes.

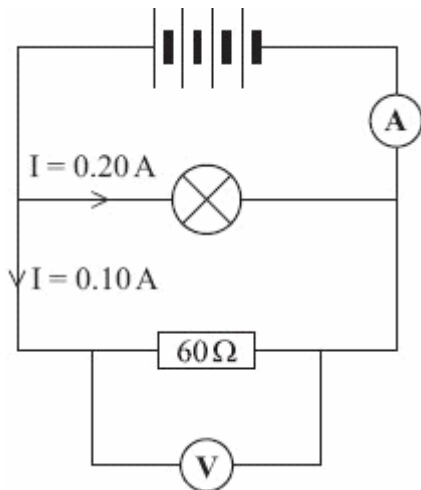


In which **one** of the circuits, J, K or L, would the filament lamp be on?

.....

(1)
(Total 3 marks)

2. A circuit was set up as shown in the diagram.



(a) Each cell provides a potential difference of 1.5 volts.

(i) What is the total potential difference provided by the four cells in the circuit?

.....

Total potential difference = volts

(1)

(ii) What will be the reading on the voltmeter?

.....

(1)

(b) The current through the lamp is 0.20 amps.
The current through the resistor is 0.10 amps.

What is the reading on the ammeter?

.....

Reading on ammeter = amps

(1)

(c) Use a phrase from the box to complete the following sentence.

greater than equal to smaller than

The resistance of the lamp is 60 Ω.

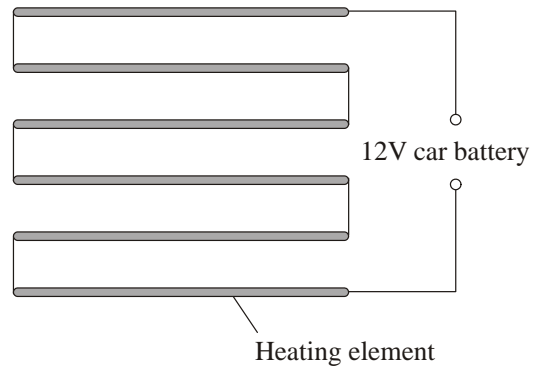
Give a reason for your answer.

.....

(2)
 (Total 5 marks)

3. The diagram shows a simple type of car rear window heater. The six heating elements are exactly the same.

Each heating element has a resistance of 5 Ω. The current passing through each element is 0.4 A.



(i) Calculate the total resistance of the six heating elements.

Show clearly how you work out your answer.

.....

Total resistance = ohms

(2)

(ii) Why is the current passing through each element the same?

.....

(1)

(iii) What is the total current passing through the whole circuit?

.....

(1)

(iv) How is the 12 volt potential difference of the car battery shared between the six heating elements?

.....

(1)

(Total 5 marks)