Q1. (a) Name a material that could be used to make the outside case of the plug.

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Give a reason for your choice.

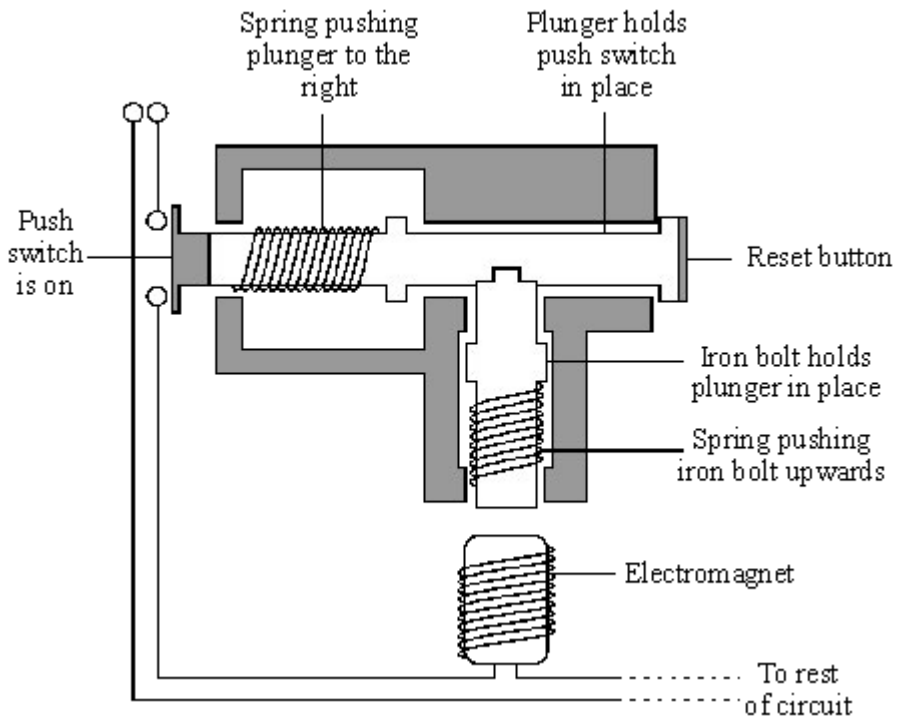
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(2)

(b) *To gain full marks in this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.*

Some electrical circuits are protected by a circuit breaker. These switch the circuit off if a fault causes a larger than normal current to flow. The diagram shows one type of circuit breaker. A normal current (15 A) is flowing.



Source: adapted from V. PRUDEN and K. HIRST, *AQA GCSE Sceince*
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Explain what happens when a current larger than 15A flows. The answer has been started for you.

When the current goes above 15 A, the electromagnet becomes stronger and

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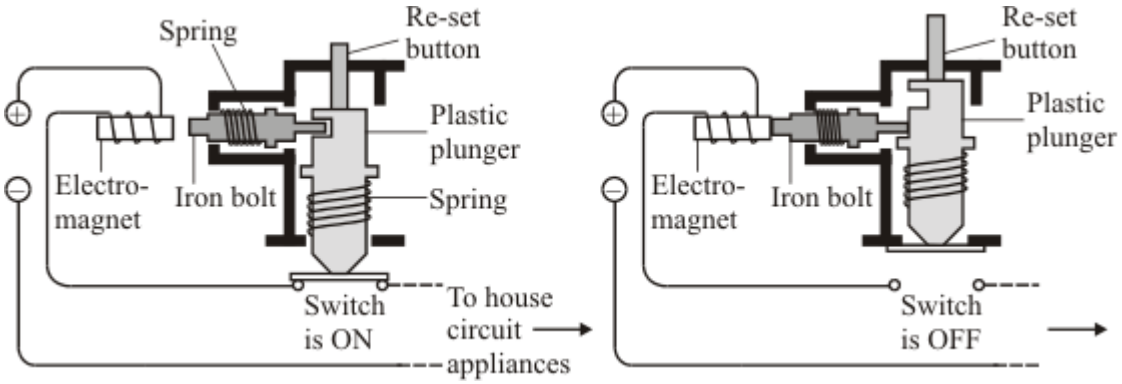
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(3)
(Total 5 marks)

Q2. Circuit breakers help to make the electricity supply in homes safer.

A circuit breaker is an automatic safety switch. It cuts off the current if it gets too big.



Describe, in as much detail as you can, how this circuit breaker works.

To gain full marks in this question you should write your ideas in good English. Put them into
a sensible order and use the correct scientific words.

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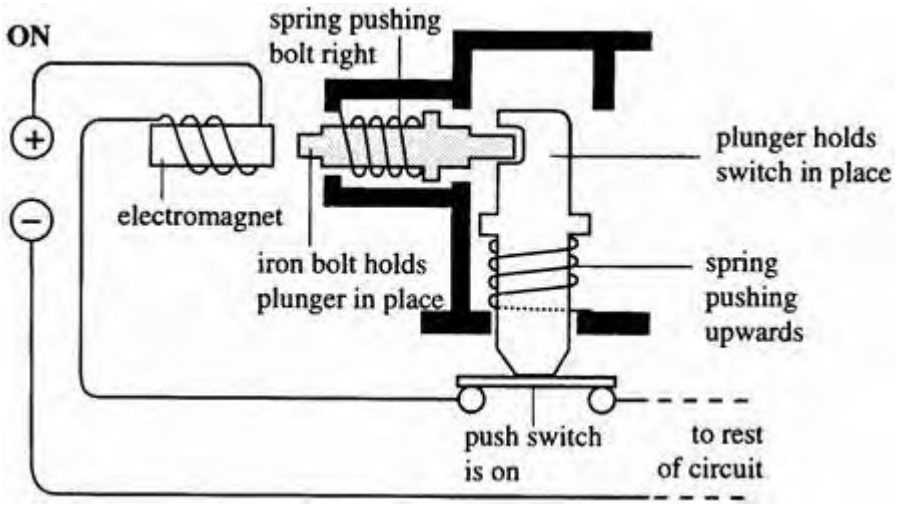
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(Total 6 marks)

Q3. A fault in an electrical circuit can cause too great a current to flow.
Some circuits are switched off by a circuit breaker.



One type of circuit breaker is shown above. A normal current is flowing.
Explain, in full detail, what happens when a current which is bigger than normal flows.

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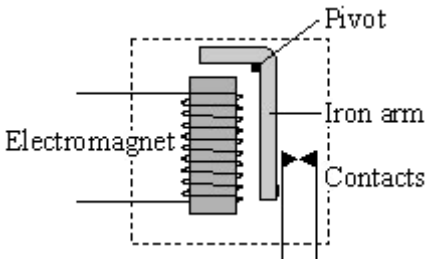
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(Total 4 marks)

Q4. The diagram shows a switch that is operated by an electromagnet.

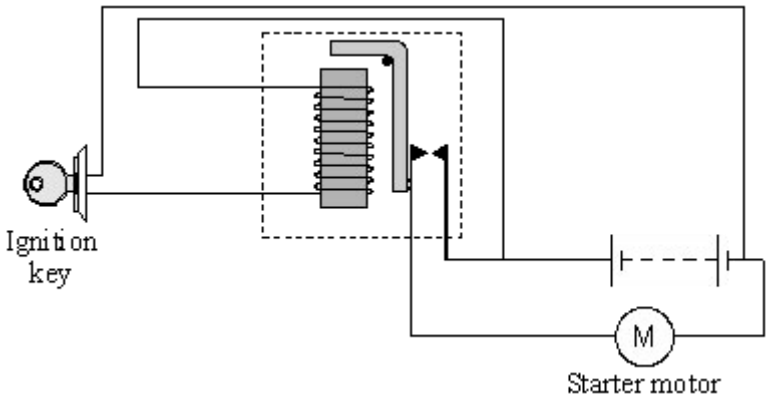


(i) What is this type of switch called?

.....

(1)

(ii) The switch is used in a car starter motor circuit.



Explain how turning the ignition key makes a current flow in the starter motor. The explanation has been started for you.

When the ignition key is turned .....

.....

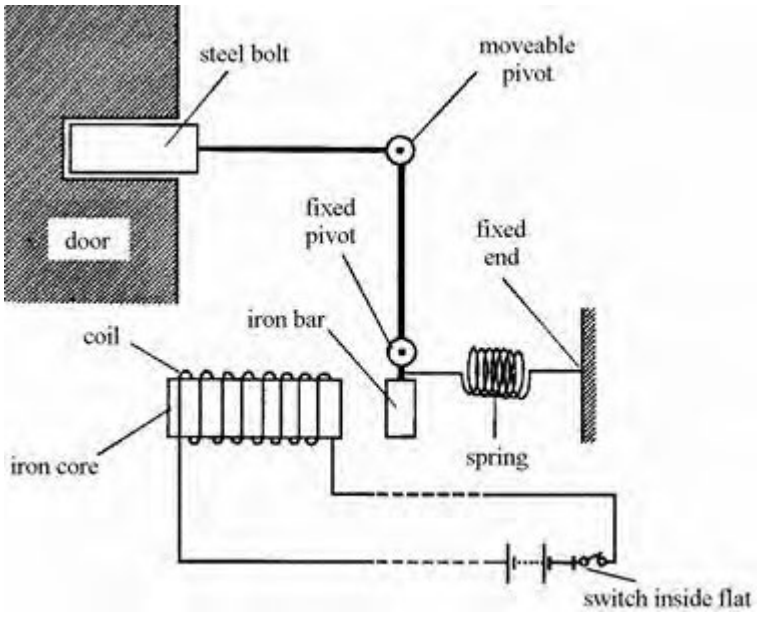
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(3)
(Total 4 marks)

Q5. The diagram below shows a door lock which can be opened from a flat inside a building.



(a) Explain how the door is unlocked when the switch is closed.

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.....

(4)

(b) State **two** changes which would increase the strength of the electromagnet.

1 .....

2 .....

(2)

(c) Why is the spring needed in the lock?

.....

.....

(1)

(d) The connections to the coil were accidentally reversed. Would the lock still work?

.....

Explain your answer.

.....

.....

(2)
(Total 9 marks)