

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.

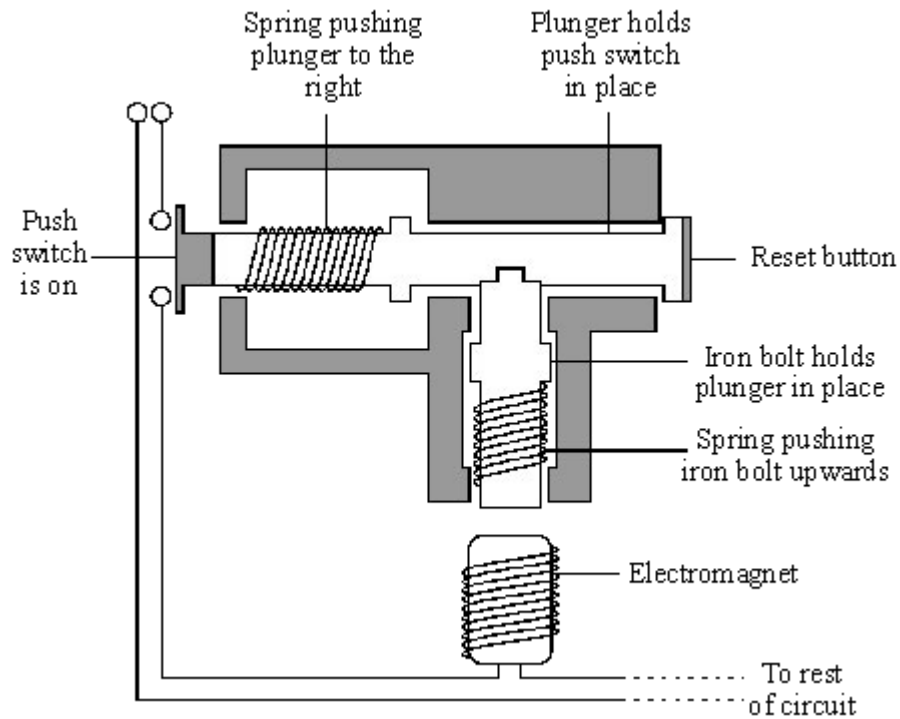
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(2)

(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 Science
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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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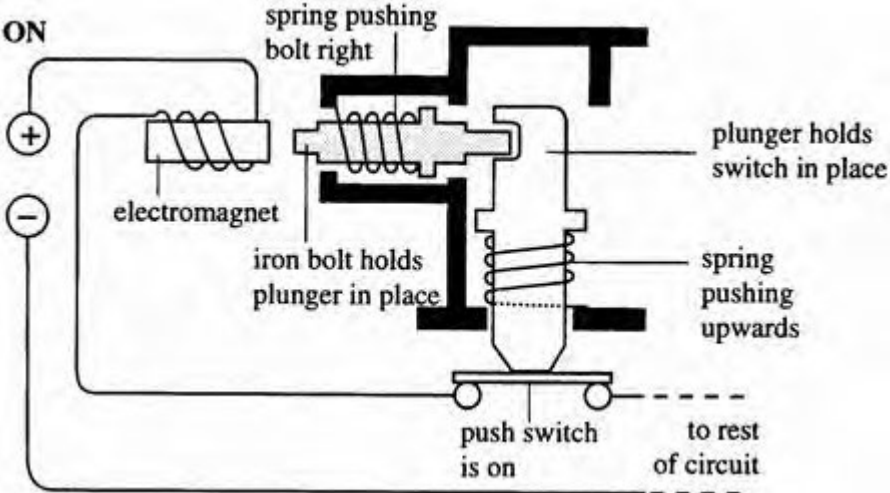
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(3)
(Total 5 marks)

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

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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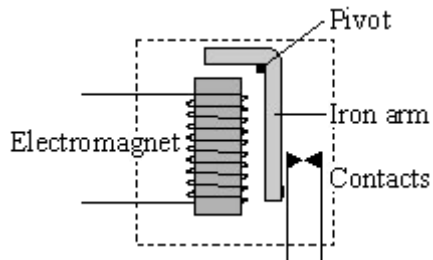
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(Total 4 marks)

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

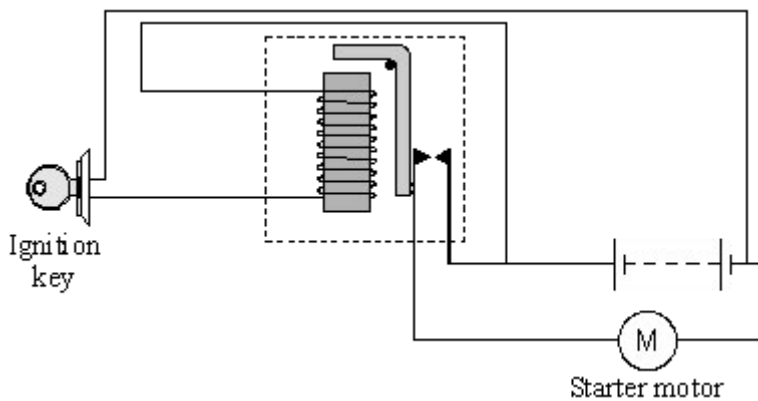


(i) What is this type of switch called?

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(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

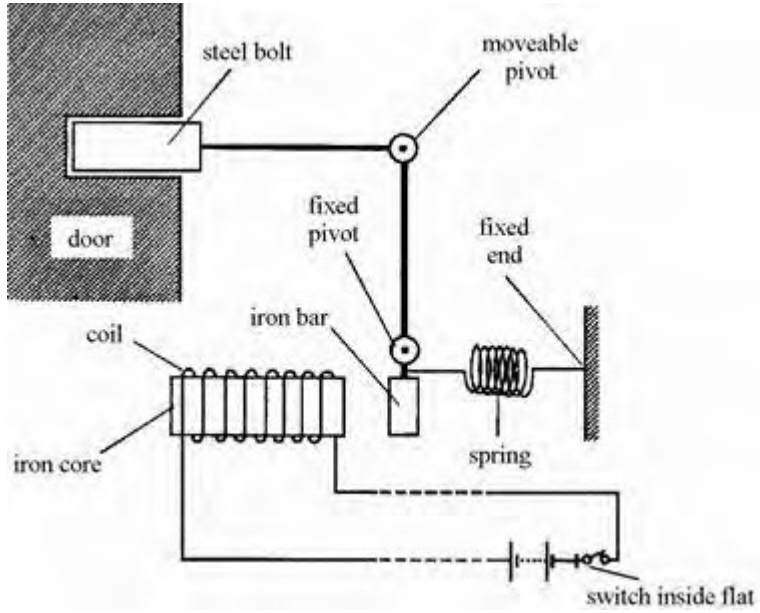
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(3)
(Total 4 marks)

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?

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(1)

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

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Explain your answer.

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(2)
(Total 9 marks)