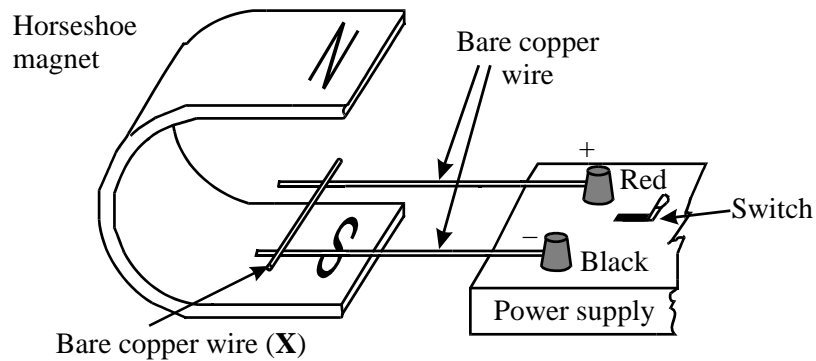


1. The diagram shows apparatus used to demonstrate the motor effect. **X** is a short length of bare copper wire resting on two other wires.



- (a) (i) Describe what happens to wire **X** when the current is switched on.

.....

.....

.....

- (ii) What difference do you notice if the following changes are made?

A The magnetic field is reversed.

.....

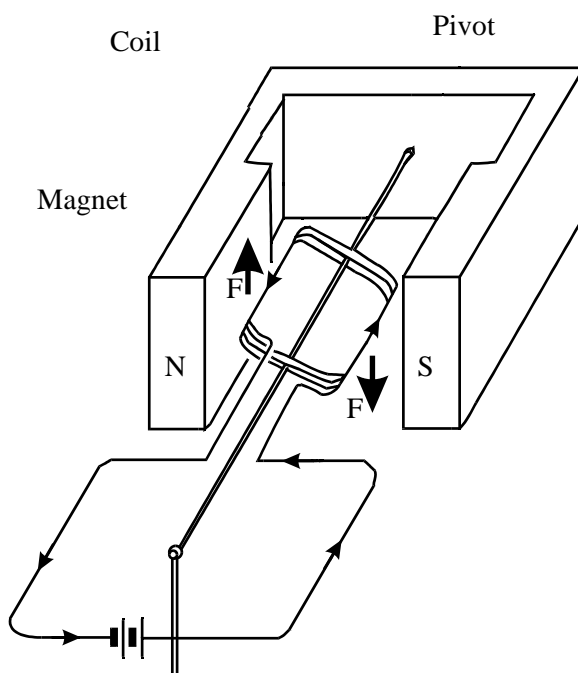
.....

B The current is increased.

.....

.....

- (b) The diagram shows a coil placed between the poles of a magnet. The arrows on the sides of the coil itself show the direction of the conventional current.



The arrows labelled **F** show the direction of the forces acting on the sides of the coil. Describe the motion of the coil until it comes to rest.

.....

.....

.....

.....

.....

(c) Most electric motors use electromagnets instead of permanent magnets. State three of the features of an electromagnet which control the strength of the magnetic field obtained.

1

2

3

(3)
(Total 9 marks)

2. Many electrical appliances use the circular motion produced by their electric motor.

(a) Put ticks (✓) in the boxes next to **all** the appliances in the list which have an electric motor.

electric drill

electric fan

electric food mixer

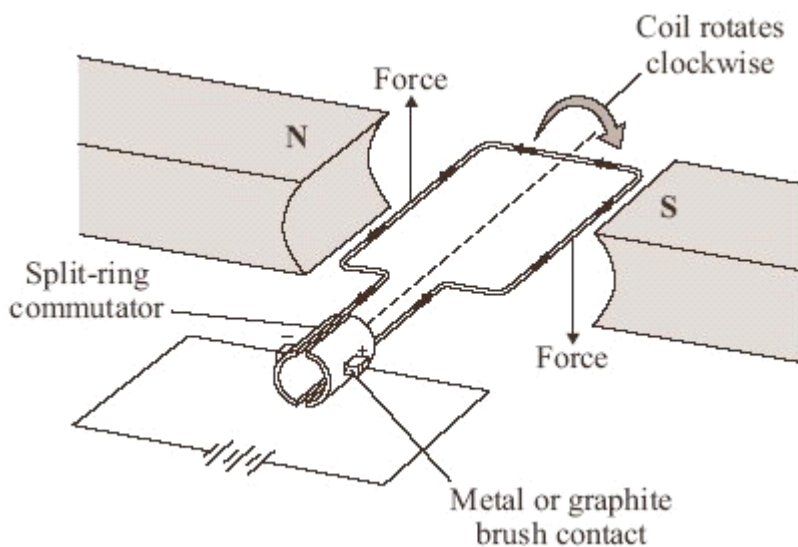
electric iron

electric kettle

electric screwdriver

(2)

- (b) One simple design of an electric motor is shown in the diagram. It has a coil which spins between the ends of a magnet.



- (i) Give **two** ways of reversing the direction of the forces on the coil in the electric motor.

1

.....

2

.....

(2)

- (ii) Give **two** ways of increasing the forces on the coil in the electric motor.

1

.....

2

.....

(2)

(Total 6 marks)