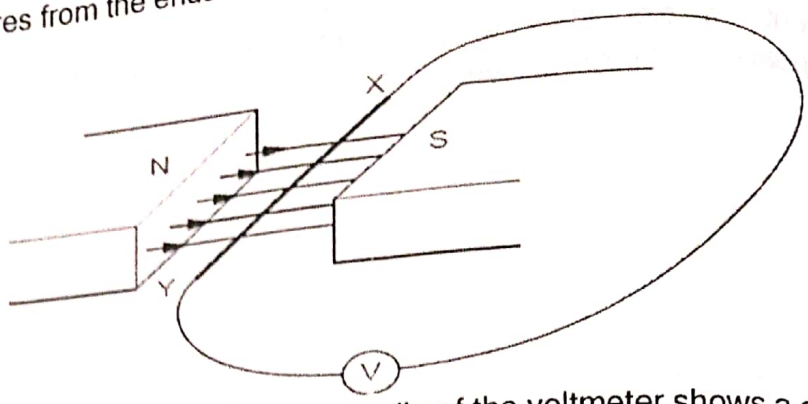
2. Fig. shows a thin, straight rod XY placed in the magnetic field between the poles of a magnet. The wires from the ends of XY are connected to a centre-zero voltmeter.



(a)Then XY is moved slowly upwards the needle of the voltmeter shows a small deflection.

(i) State how XY must be moved to produce a larger deflection in the opposite direction.

By moving rod XY faster

(ii) XY is now rotated about its central point by raising X and lowering Y. Explain why no deflection is observed.

No magnetic field lines are cut, or current/voltage induced in each half of XY are equal & in opposite direction, so they oppose each other. no current/no deflection.

3. (a) The box below contains the names of some metals.

copper	gold	iron	lead	silver	steel

Circle the metals which may be attracted to a magnet.

(b) A student has 3 metal bars which all look the same. Two of the metal bars are magnets and one is not.

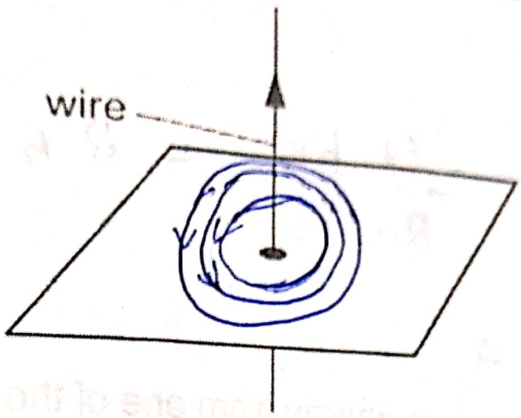
Explain how the student can identify the two magnets without using any other equipment.

By bringing both ends of bars close to each other one by one, when same poles of magnets are brought near, force of repulsion will help in identification of magnets

(c) From the metals given in (a), state the name of the metal that can be used to make a permanent magnet.

Steel

(d) Fig. shows a vertical wire passing through a horizontal piece of card.

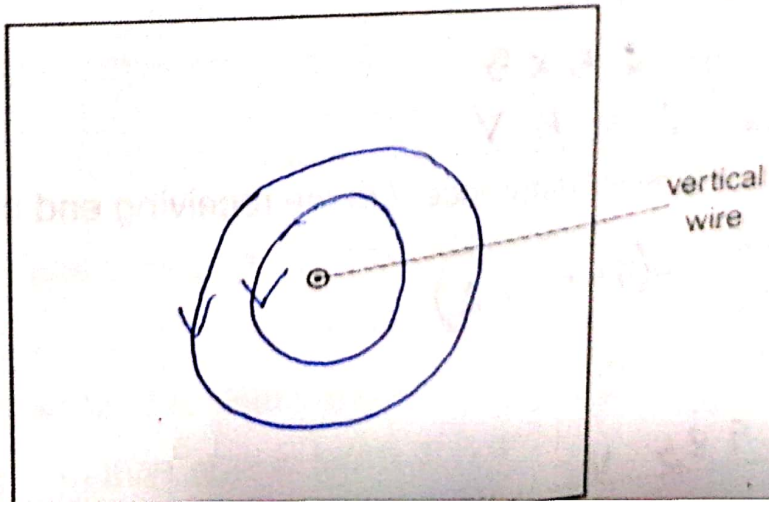


There is a direct current (d.c.) in the wire. The current produces a magnetic field around the wire.

(i) Name a piece of equipment that can be used to investigate the magnetic field produced by the current-carrying wire.

Magnetic Compass

(ii) Fig. shows the wire and the card viewed from above. On Fig., carefully draw two complete field lines produced by the current-carrying wire.



8. a) What device reverses the current? How can the turning effect of a d. c. motor be changed if the current flowing through the motor is increased?

Split rings reverse the direction of current.

Increase in speed if current is increased.

b) List two ways to reverse the force on a current carrying conductor in a magnetic field?

(i) Change in direction of current.

(ii) Change in direction of magnetic field.

c) What is the force on a current carrying conductor parallel to the magnetic field?

No force at all.

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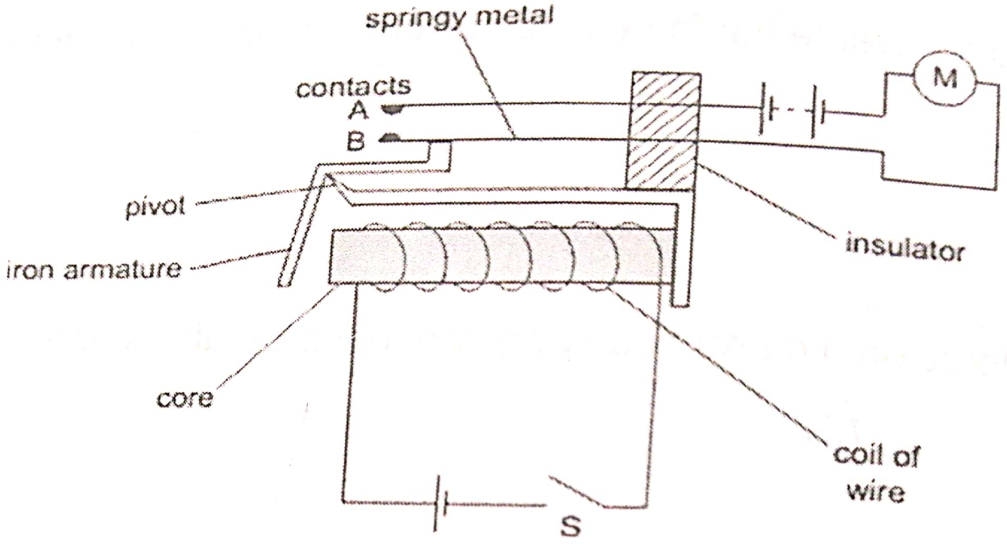
(c) Fig. shows a relay being used to switch an electric motor M on and off.



Switch S is closed. State what happens to

(i) the core,

Because of current, it will be magnetized

(ii) the iron armature,

It will be attracted towards core.

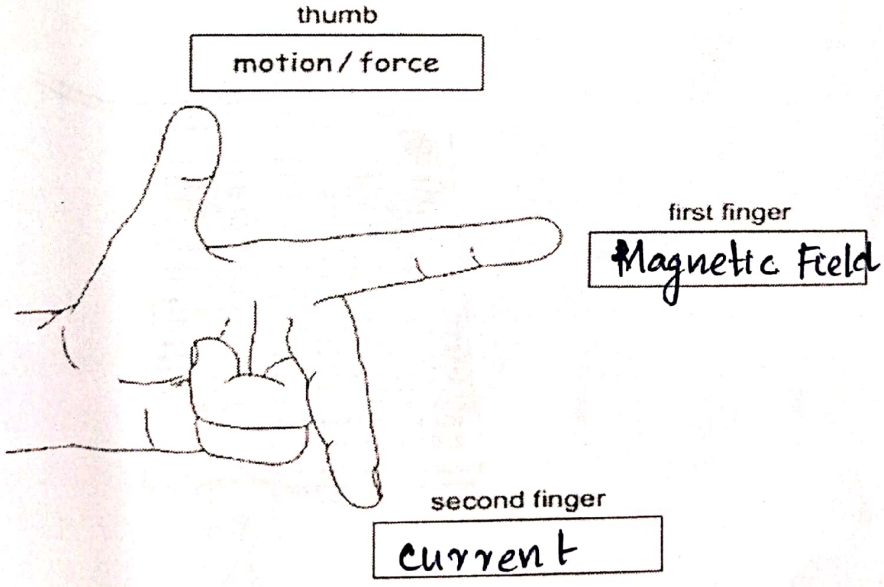
(iii) the contacts A and B.

They will be pressed against each other

(d) A suggestion is made that the relay would work better if the armature were made of steel instead of iron. Explain why this is not a good idea.

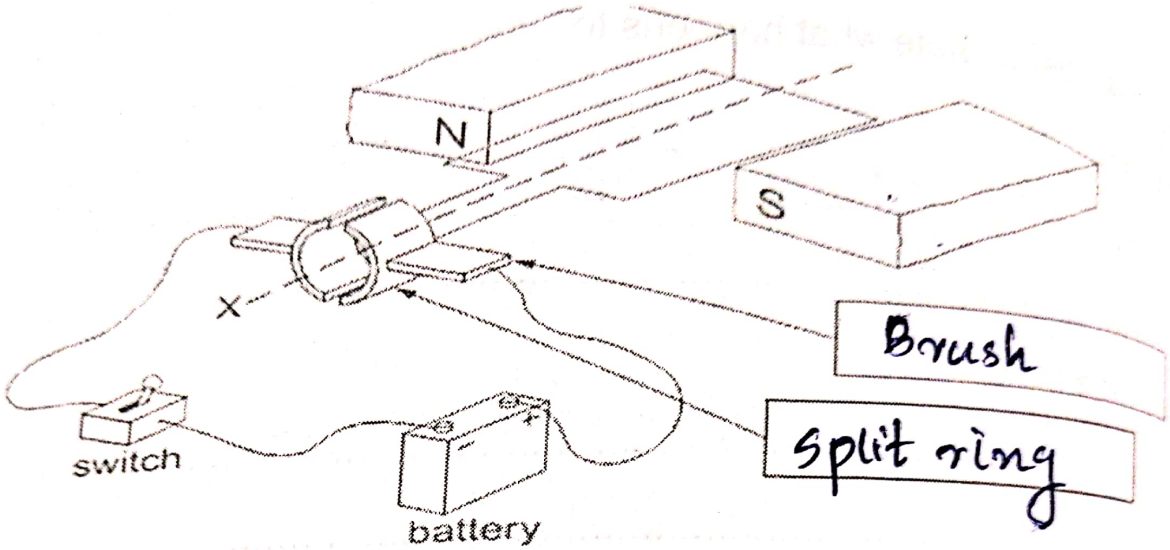
Because steel is hard magnetic material, once magnetized it will remain magnet and relay will never switch off

10. (a) Fig. illustrates the left hand rule, which helps when describing the force on a current carrying conductor in a magnetic field.



One direction has been labeled for you. In each of the other two boxes, write the name of the quantity that direction represents.

(b) Fig. shows a simple d.c. motor connected to a battery and a switch



(i) On Fig. 9.2, write in each of the boxes the name of the part of the motor to which the arrow is pointing.

(ii) State which way the coil of the motor will rotate when the switch is closed, when viewed from the position X.

clockwise

(iii) State two things which could be done to increase the speed of rotation of the coil

1. more current 3. more turns of coil

2. use stronger magnet