Activity 1

Materials: battery cell, an iron nail (5cm long) a steel nail, a switch, steel pins connecting wires and insulated copper wire.

·         Draw a circuit diagram on the board.

·          wind an insulated copper wire very closely over the iron nail. this makes a coil.

·          attach the connecting wires to the two ends of the coil and connect them to battery cell through a switch.

·          keep the switch off and bring some steel pins near one end of the nail.

Question: Does the nail attract them?

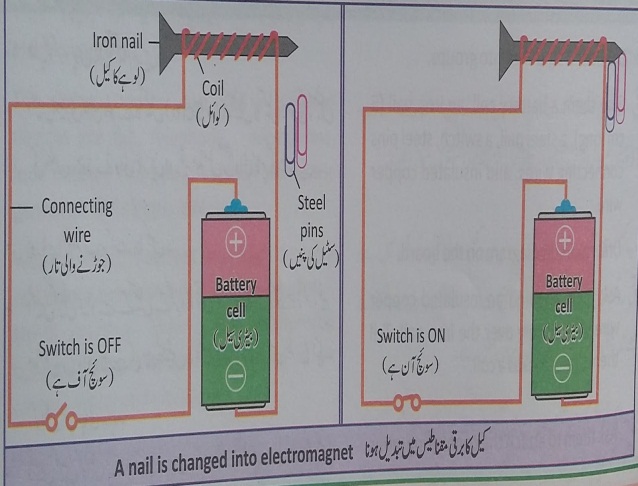
·         turn the switch on and see if the nail attracts the pins now.

Question: predict what will happen if the current is switched OFF.

·         Now turn the switch OFF to verify your prediction.

·         Now repeat the same procedure with a steel nail and find out the difference.

· Question What do you conclude from this activity?

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After their response tell them that nails can be made electromagnets by passing current through a coil. Iron nail is magnetized temporarily but steel nail is magnetized permanently when placed in a current carrying coil.

**Activity 2**

Materials: battery cell, a disc shaped magnet, two safety pins and pieces of wire.

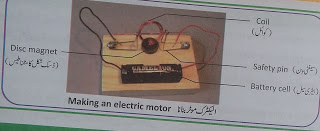
Do:

• Wind the insulated wire to form a coil.

• Take safety pins and bend them with the help of pliers.

Mount the bent safety pins on a wood block and place the coil between safety pins as shown in figure

• Attach the wires from battery holder to the bent safety pins and place battery cell into the holder.

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Place a magnet on top of the wood block just underneath the coil.

Give a spin to the coil gently to get the motor started. By this, it will start rotating.

When a current carrying coil is place in magnetic field, a force acts on it which moves it in and out and the coil rotates. Electric generators and motor work on this relationship between current and magnet force.

**Activity 3**

·          Identify the devices which use electromagnets.

·          Present their findings in class discussion.

·          Electromagnetic devices on the board and discuss about it.

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| ***Assessment*** | ***Score*** | | | | | ***Feedback*** |
| ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
| When an ordinary iron nail is placed inside a current carrying coil, will it become a temporary magnet or a permanent magnet? |  |  |  |  |  |  |
| 2.       Which material can be magnetized permanently with the help of electric current?  3  4. |  |  |  |  |  |  |
| .       Can we say that magnet compass is an electromagnetic device? |  |  |  |  |  |  |
| How can an iron nail be made a magnet by electric current?  5. |  |  |  |  |  |  |
| Where are electromagnets used? |  |  |  |  |  |  |
| Homework task | ***List at least seven devices present at their homes in which electromagnets are used.*** | | | | | |