National Institute of Open Schooling
Secondary Course : Science And Technology
Lesson 16 – Electrical Energy
Worksheet-16

1. Bring a plastic comb near a piece of paper and write down your observations. After that comb your dry hair with comb and bring the comb close to small pieces of paper, write down your observations. You will notice that the small pieces of paper are attracted towards the comb in second case. Do you know why this happens? Explain the phenomenon.

2. Perform simple activities to demonstrate the existence of charges and forces between them. On the basis of your observations infer the basic properties of electric charges. Also explain what will happen to the normal flow of tap water when a charged rod is brought near it?

3. If a charge, q_1 is placed at a distance r from a similar charge q_2 as shown in figure below, calculate the magnitude of the force of attraction or repulsion between two point charges.

Also state how will the force between two small electrified objects vary if the charge on each of the two particles is doubled and separation is halved?

4. What do you understand by the term Electrostatic Potential and Potential Difference?

5. All of us are familiar with electrical appliances/gadgets like a bulb, tube, fan or a heater's coil which are based on the movement of charges flowing through a metallic wire carrying electric current. Define electric current. Mention the instrument to measure electric current and SI unit of electric current.

6. Continue to Q5,how charges flows between the two ends of a wire in a circuit i.e. from one body to another body. What is the conventional direction of flow of electric current? Do the charge carriers in the conductor flow in the same direction?

7. The external source of energy is called a cell and the combination of cells is called a battery Observe your surroundings and list appliances/gadgets in which cell/ battery is used. Also explain the phenomenon, how a cell converts chemical energy into electrical energy.

8. Define Conductors, Insulators and Resistors. Observe your surroundings and list conductors and insulators.

9. Explain the phenomenon why household appliances in household circuits are connected in parallel whereas the chain of small bulbs that we use for decoration on Deepawali has the bulbs connected in series. Also have three resistors of 1 Ω, 2 Ω and 3 Ω. Show by diagrams, how will you connect these resistors to get (a) 6/11 Ω (b) 6 Ω (c) 1.5 Ω?

10. All of us are familiar that on passing current through an electric heater, the coil of the heater gets heated and glows brightly. Do you know why this happens? Explain the phenomenon.