



## Learning Objectives



At the end of this lesson, students will be able to:

- ◆ Make an electric circuit.
- ◆ Differentiate between electric potential and potential difference.
- ◆ Infer what electrical resistivity and conductivity mean.
- ◆ Know the effective resistance of a system of resistors connected in series and parallel.
- ◆ Understand the heating effect of the electric current.
- ◆ Define electric power and electric energy and explain domestic electric circuits.
- ◆ Know the modern appliances such as LED bulb and LED television.

## INTRODUCTION

You have already learnt about electricity in your lower classes, haven't you? Well, electricity deals with the flow of electric charges through a conductor. As a common term it refers to a form of energy. The usage of electric current in our day to day life is very important and indispensable. You are already aware of the fact that it is used in houses, educational institutions, hospitals, industries, etc. Therefore, its generation and transmission becomes a very crucial aspect of our life. In this lesson you will learn various terms used in understanding the concept of electricity. Eventually, you will realise the importance of the applications of electricity in day to day situations.

### 4.1 ELECTRIC CURRENT

The motion of electric charges (electrons) through a conductor (e.g., copper wire) will constitute an electric current. This is similar to

the flow of water through a channel or flow of air from a region of high pressure to a region of low pressure.

In a similar manner, the electric current passes from the positive terminal (higher electric potential) of a battery to the negative terminal (lower electric potential) through a wire as shown in the Figure 4.1.

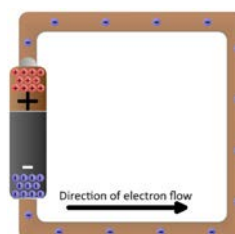


**Figure 4.1**  
Electron flow

#### 4.1.1 Definition of electric current

Electric current is often termed as 'current' and it is represented by the symbol 'I'. It is defined as **the rate of flow of charges in a conductor**. This means that the electric current represents the amount of charges flowing in any cross section of a conductor (say a metal wire) in unit time. If a net charge 'Q' passes through any cross section of a conductor in