

# 4. ELECTRICITY

## 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.

## Key Points and Notes

- Nichrome is a conductor with highest resistivity equal to  $1.5 \times 10^{-6} \Omega \text{ m}$ . Hence, it is used in making heating elements.
- The horse power (hp) is a unit in the foot-pound-second (fps) or English system, sometimes used to express the electric power. It is equal to 746 watt.
- In India, domestic circuits are supplied with an alternating current of potential 220/230V and frequency 50 Hz. In countries like USA and UK, domestic circuits are supplied with an alternating current of potential 110/120 V and frequency 60 Hz.

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NATURE OF THE MATERIAL	MATERIAL	RESISTIVITY ( $\Omega \text{ m}$ )
Conductor	Copper	$1.62 \times 10^{-8}$
	Nickel	$6.84 \times 10^{-8}$
	Chromium	$12.9 \times 10^{-8}$
Insulator	Glass	$10^{10}$ to $10^{14}$
	Rubber	$10^{13}$ to $10^{16}$