

UNIT 12

PLANT ANATOMY AND PLANT PHYSIOLOGY



Learning Objectives



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

- ◆ Understand vascular tissue system- their types and functions.
- ◆ Know the structure of dicot root, stem, leaf and monocot root, stem, leaf.
- ◆ Differentiate the internal structure of dicot root, stem, leaf with that of monocot root, stem, leaf.
- ◆ Name the different pigments found in chloroplast.
- ◆ Elaborate on the structure and functions of plastids.
- ◆ Enumerate the steps involved in photosynthesis.
- ◆ Understand the structure of mitochondria
- ◆ List the basic events of aerobic and anerobic respiration.

Introduction

Plants exhibit varying degrees of organization. Atoms are organized into molecules, molecules into organelles, organelles into cells, cells into tissues and tissues into organs. The first account of internal structure of plants was published by English Physician **Nehemiah Grew**. He is known as **Father of Plant Anatomy**. Plant anatomy (Gk *Ana* = as under; *Temnein* = to cut) is the study of internal structure of plants. You have already studied the different kinds of tissues in standard IX. In this lesson, you will study about the internal structure of plant tissues, process of photosynthesis and respiration.

12.1 Tissues

Tissues are the group of cells that are similar or dissimilar in structure and origin, but perform similar function. Plant tissues

can be broadly classified into two, based on their ability to divide. They are

- i) Meristamatic tissue
- ii) Permanent tissue.

12.2 Tissue system

Sachs (1875) classified tissue system in plants into three types

- i) Dermal or Epidermal tissue system
- ii) Ground tissue system
- iii) Vascular tissue system

The functions of these tissues are given in Table 12.1.

12.2.1 Dermal or Epidermal Tissue System

It consists of epidermis, stomata and epidermal outgrowths. Epidermis is the outer most layer. It has many minute pores called stomata.