Exercises

Stop and Reflect (Pages 13 and 14)

A. 1. (d) 2. (b) 3. (a)
4. (b) 5. (a)

B. 1. False (The leaves of a plant are the site of photosynthesis.)
2. True
3. False (In a croton plant, photosynthesis takes place only in green parts of the leaves.)
4. True
5. False (Oxygen gas is released into the atmosphere after photosynthesis.)

C. 1. (b)
2. (d) or (e)
3. (e) or (d)
4. (a)
5. (c)

D. 1. Parasitic plant
2. Symbiotic plant
3. Saprophytic plant
4. Symbiotic plant (or leguminous plant)
5. Insectivorous plant

E. 1. Mushroom
2. Mushroom
3. *Cuscuta*
4. Lichen
5. Pea plant

F. 1. Money plant, croton
2. *Cuscuta,* mistletoe
3. Sundew, venus flytrap
4. Nitrogen, phosphorous
5. Mushroom, yeast

Crisp and Accurate (Page 14)

A. 1. Nutrition is the process of taking in food by an organism and its utilisation by its body. The two modes of nutrition are autotrophic nutrition and heterotrophic nutrition.
2. Photosynthesis is the process by which the leaves of plants absorb energy from sunlight and convert it into food using raw materials like carbon dioxide from air and water from soil. Oxygen is released during this process.
3. Nitrogen fixation is the process of conversion of atmospheric nitrogen into usable forms with the help of certain bacteria present in the soil.
4. Saprophytic plants are the non-green plants that live and feed on dead and decaying organic matter.

5. The association between two different plants for shelter and nutrients is called symbiotic association or symbiosis.

B.

1. The compounds present in food that are essential for the growth of an organism are called nutrients. Carbohydrates, proteins, fats, vitamins and minerals are the nutrients we get from food.
2. Different components of photosynthesis are carbon dioxide, water, chlorophyll and sunlight.
3. Insectivorous plants are mostly found in areas where the soil is deficient in nitrogen and they trap insects to meet their nitrogen requirements.
4. *Amarbel* is a type of parasitic plant. It lives on other plants and obtain food from them.
5. The concentration of minerals like potassium, phosphorus and nitrogen decreases in the soil as plants take them up. This reduces the fertility of the soil and hence it is necessary to add them from time to time. This is the reason why farmers add fertilisers and manure to the soil.

Think and Explain (Page 14)

1. The mode of nutrition in which an organism prepares its own food from simple substances like carbon dioxide and water is called autotrophic nutrition. It is derived from two words, *auto* meaning self and *trophos* meaning nourishment. The organisms that prepare their own food are called autotrophs or producers.

   The mode of nutrition in which an organism is unable to make its own food and depends on other organisms for its food is called heterotrophic nutrition. It is derived from two words, *heteros* meaning other and *trophos* meaning nourishment. The organisms that are directly or indirectly dependent on other organisms for their food are called heterotrophs or consumers.
2. Green plants prepare their own food by the process of photosynthesis. During photosynthesis, the leaves of plants absorb energy from sunlight and convert it into food using raw materials like carbon dioxide from air and water from soil. Oxygen is released during this process.

   The equation for the process of photosynthesis is as follows.

   $$\underset{\text{Carbon dioxide (from air)}}{6CO_2} + \underset{\text{Water (from soil)}}{6H_2O} \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \underset{\text{Glucose (carbohydrate)}}{C_6H_{12}O_6} + \underset{\text{Oxygen}}{6O_2}$$

3. Heterotrophic plants are of four types.
   - **Parasitic plants:** These plants live on other plants and obtain their food from them. They are also called parasites. The parasite derives its food from the host. *Cuscuta* is a parasitic plant.
   - **Saprophytic plants:** These are the non-green plants that live and feed on dead and decaying organic matter. They are also known as saprophytes. Mushroom is a saprophyte.
   - **Insectivorous plants:** These are the plants that eat insects. Insectivorous plants are green in colour and are mostly found in areas where the soil is deficient in nitrogen. These plants obtain nitrogen by trapping insects and digesting them. Pitcher plant is an insectivorous plant.
   - **Symbiotic plants:** These are the plants that live in association with other plants, and share shelter and nutrients with them. This association between two different plants for shelter and nutrients is called symbiotic association or symbiosis. Lichen is an example of symbiotic association.
4. The leaves of a pitcher plant are modified into a pitcher-like structure with a lid-like leaf tip that can open or close the mouth of the pitcher. The inner surface of the pitcher possesses hair pointing

downwards. When an insect enters the pitcher, the lid closes and the insect gets trapped in the hair. The insect gets digested by the digestive juices secreted by the pitcher plant.

5. Symbiotic plants are the plants that live in association with other plants, and share shelter and nutrients with them. This association between two different plants for shelter and nutrients is called symbiotic association or symbiosis. An example of symbiotic association is lichen. It is composed of fungus and algae. Shelter, water and minerals are provided to the algae by the fungus. In return, food is provided to the fungus by the algae. In this manner, both the plants benefit from each other.