

# St. Andrews Scots Sr. Sec. School

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Session: 2025 – 2026

(Answer Key)

**Class: VII**

**Subject: Science**

**Chapter: Nutrition in plants**

## **A. Tick the correct answers. (Page no. 16)**

1. (a)    2. (b)    3. (d)    4. (b)    5. (b)    6. (a)    7. (c)    8. (a)

## **B. Assertion-Reason type questions.**

- 1.(a)    2. (c)    3. (b)    4. (d)

## **C. Fill in the blanks.**

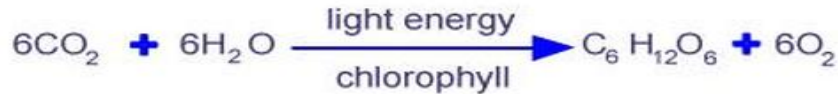
1. green; chloroplast
2. sun
3. starch
4. insectivorous (pitcher plant)
5. algae; fungi
6. symbiotic

## **D. Very short answer type questions.**

1. Green plants are called autotrophs because they can make their own food from simple inorganic substances.
2. Light.
3. Chlorophyll is essential for photosynthesis because it traps energy of the sun and changes it into chemical energy which is stored in glucose.
4. Fungi are non-green plants which derive their nutrients by digesting complex substances from dead and decaying plants and animals, and then absorbing them.
5. Chlorophyll converts solar energy into chemical energy. In plants, glucose is stored in the form of starch.
6. Raw materials for photosynthesis are water, carbon-dioxide, chlorophyll and energy from the sun.

## E. Short answer type questions.

1.

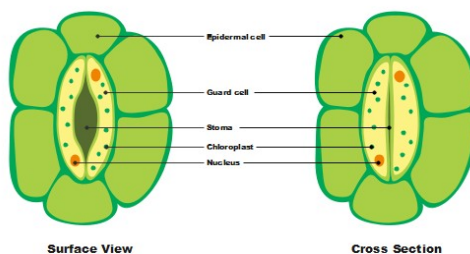


2. In lichens, as alga is green it makes food by photosynthesis and provides it to fungus, Whereas fungus provide shelter, water and minerals to the alga. Such an association is called symbiosis or symbiotic association.
2. We all eat food. Taking food and its utilisation by the organism is called nutrition. The components that provide nutrition are called nutrients of food. These are carbohydrate, proteins, fats, vitamins and minerals.
4. Rhizobium lives in the root nodules of leguminous plants and converts atmospheric nitrogen into soluble nitrates for them. This helps plants grow well and farmers need not to apply fertilisers.



5. Stomata help in photosynthesis by taking carbon-dioxide and expelling oxygen and in respiration by taking oxygen and expelling carbon-dioxide.

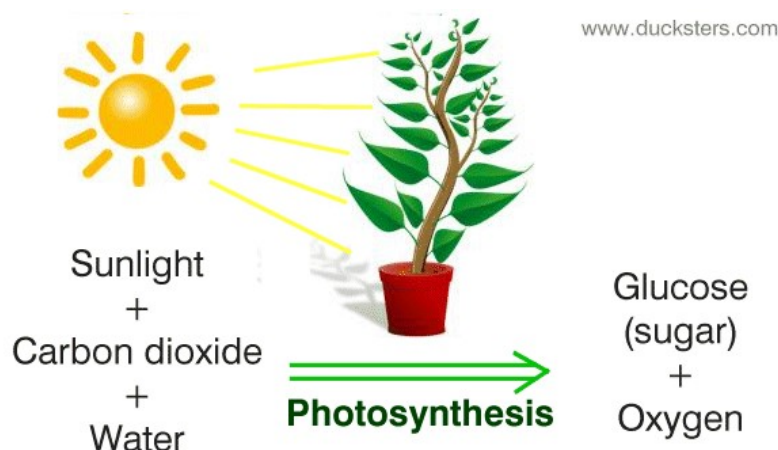
**Stomata Diagram**



## F. Long answer type questions.

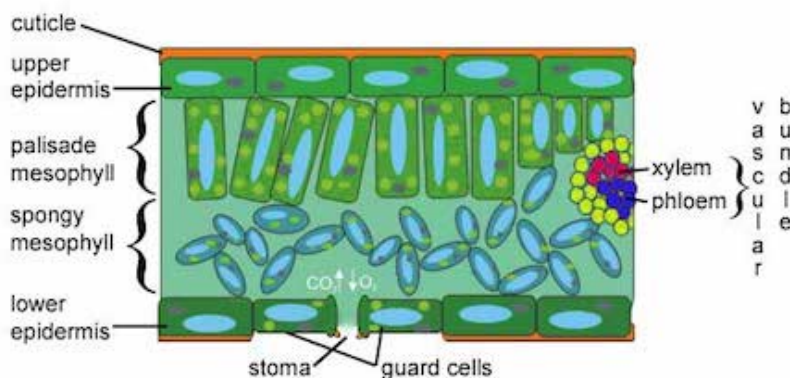
1. Availability of chlorophyll, sunlight, carbon-dioxide and water are the necessary conditions for photosynthesis. Green plants use these raw materials and make food in the form of glucose.

- **Chlorophyll** is a green pigment found in chloroplasts. It traps solar energy.
- **Carbon-dioxide** is obtained from air through stomata.
- **Water** is absorbed by roots and transported up to the leaves.
- **Energy of sunlight** is trapped by chlorophyll which makes carbon-dioxide and water to combine.



2. Following features make the leaf a suitable place for photosynthesis to occur :

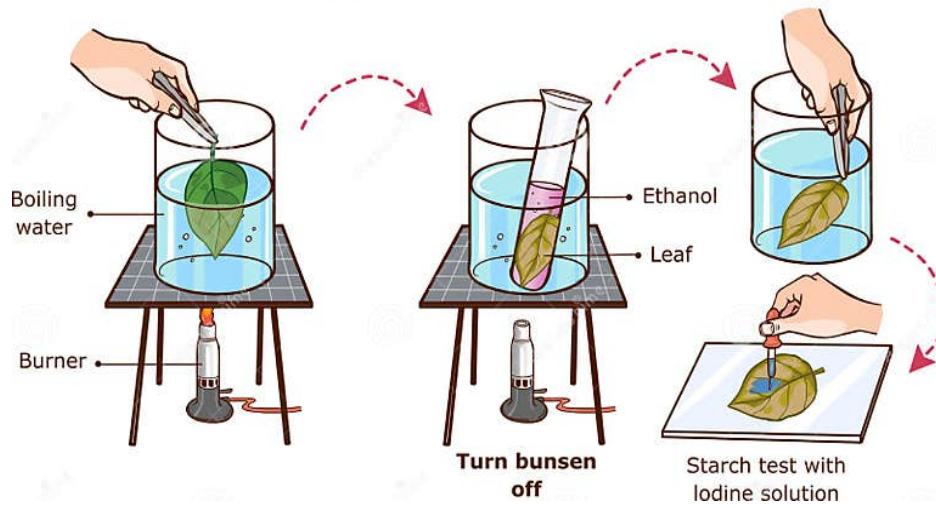
- Leaves have flattened structure for obtaining maximum sunlight.
- They are thin to allow sunlight to reach all their cells.
- They have stomata for obtaining carbon-dioxide and releasing oxygen.
- They have a network of xylem vessels for supply of water to all the cells.
- They have green pigment called chlorophyll found in chloroplast of leaves traps energy of the sun.



3. To test the presence of starch in the leaves, pluck a green leaf from a healthy plant. Now boil this leaf in water and then in alcohol on a water bath. After boiling, take the leaf out of alcohol and keep it in a watch glass. Wash it with warm water. Then place this leaf on

a glass plate or in another dry watch glass. Pour few drops of iodine solution on this leaf. The leaf turns blue-black in colour. This blue-black colour shows that the leaf contains starch in it.

### Testing a leaf for starch



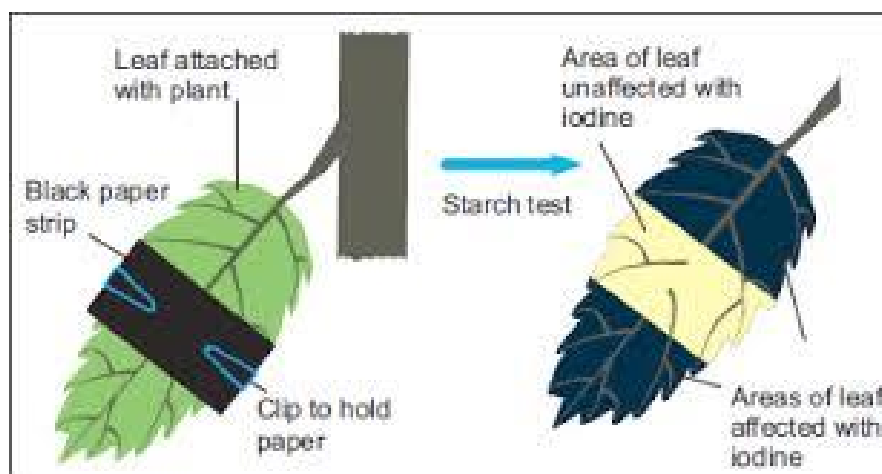
4. Cuscuta develops special root-like structures called haustoria which enter or pierces into the tissues of the stem of host plant and obtain prepared food.
5. Plants obtain nitrogen from the soil in the form of nitrates. They absorb nitrates in the form of their solution in water through roots. They need nitrogen to prepare proteins which are needed for their growth, i.e., formation of new cells, tissues, etc.
6. The necessity of sunlight for photosynthesis can be shown by the following activity;

**Aim : Sunlight is necessary for photosynthesis.**

**Procedure :** Keep a green potted plant in dark for about 48 hours to destarch its leaves. Pluck one leaf and test it for iodine to confirm that the plant is destarched. Cover a part of a healthy leaf on both the sides with a strip of black paper. Place this plant in sunlight for at least 4 hours or more. Pluck the leaf and remove black paper-strip. Boil the leaf first in water and then in alcohol. This destroys the chlorophyll and the leaf becomes colourless. Wash the leaf with warm water and put it in a petri dish. Pour few drops of iodine solution on the leaf to test for starch.

**Observation :** The uncovered part of the leaf that was exposed to sunlight turns blue - black, while the part covered with black strip does not turn blue-black.

**Conclusion :** This shows that starch is formed only in those parts which are exposed to sunlight. No starch is formed in the covered part which could not get sunlight. Hence, sunlight is necessary for photosynthesis.



7. (a)

<b>Parasitic mode of nutrition</b>	<b>Saprophytic mode of nutrition</b>
In parasitic nutrition, organisms obtain their food from other organisms which are called host. <b>Example:</b> Cuscuta and Apodanthes	In saprophytic nutrition, organisms obtain their food from dead and decaying matter. <b>Example:</b> Fungi and some bacteria

(b)

<b>Symbiotic mode of nutrition</b>	<b>Parasitic mode of nutrition</b>
In symbiotic nutrition, two organisms mutually benefit each other by giving and taking nutrients or raw materials. <b>Example:</b> Lichens and Rhizobium bacteria living in root nodules of leguminous plants.	In parasitic nutrition, organisms obtain their food from other organisms which are called host. <b>Example:</b> Cuscuta and Apodanthes

## G. HOTS Questions;

1. The leaves of a plant kept in dark become yellow because in the absence of sunlight chloroplasts start changing its form giving yellow colour to the leaf.
2. This is because insectivorous plants grow in nitrogen-deficient soil. To meet their nitrogen requirement, they feed on insects.
3. Bacterium Rhizobium lives in the nodules of the roots of leguminous plants. It converts atmospheric nitrogen into soluble nitrates which make the soil rich in nitrates and hence makes the soil more fertile.

- 4. (a) Saprophyte
- (b) Parasite
- (c) Autotroph
- (d) Xylem vessels

**Passage/Case-based questions:**

- 1. (a) 1- Energy from the sun  
2- Water  
3- Carbon dioxide  
4- Oxygen
  - (b) Photosynthesis
  - (c) Water (shown by arrow 2) is taken from soil through roots and transported to the leaf by xylem vessels.  
Carbon dioxide (shown by arrow 3) is taken from air through the stomata on the surface of leaf.
  - (d) Chloroplast
- 2. (a) To show that sunlight is necessary for photosynthesis.
  - (b) To prevent the sunlight from falling on a part of the leaf.
  - (c) Because in the white part of the leaf in picture B, photosynthesis did not occur and no starch was formed.

**I. Value-based questions:**

- (a) A plant grows in sunlight because sunlight is necessary to make food by the process of photosynthesis.
- (b) Plants do not grow in dark because they do not get food as they are not able to prepare their food in the absence of sunlight.
- (c) Sonu has scientific temper and is caring person.