

### Question 1. Why do organisms take food?

**Answer** - Organisms need to take food to acquire essential nutrients and energy. Plants synthesise their own food using abiotic components such as soil, air, water, and sunlight. In contrast, animals depend on either plants or other animals for their nutrition. This intake of food is crucial for organisms to perform various life processes and maintain their overall health and growth.

### Question 2. Distinguish between a parasite and a saprotroph.

**Answer** -

Feature	Parasite	Saprotroph
Definition	A parasite is an organism that lives on or inside another living organism (host) and derives nutrients at the host's expense, often causing harm.	A saprotroph is an organism that feeds on or derives nourishment from decaying organic matter.
Dependency	Dependent on a living host for nutrition.	Independent of living hosts; relies on decaying organic matter.
Impact on Host	Generally harmful to the host, as they extract nutrients at the host's expense.	Does not directly interact with living hosts, hence no harm.
Examples	Roundworms in animals, Cuscuta in plants.	Fungi, such as mushrooms, and bacteria involved in decomposition.
Role in Nature	Parasites play a role in controlling host populations and can affect the evolution of host species.	Saprotrophs are crucial for the decomposition process, recycling nutrients in ecosystems.

**Difference Between - a parasite and a saprotroph.**

### Question 3. How would you test the presence of starch in leaves?

**Answer** - To test for the presence of starch in leaves, the iodine test is used. This involves-

- Keeping two potted plants of the same kind, one in the dark for 72 hours and the other in sunlight.
- Applying iodine solution on the leaves of both plants.
- Observing the colour change; a blue-black colour indicates the presence of starch. The leaves exposed to sunlight will turn blue-black, showing starch presence, while

those kept in the dark will not exhibit this colour change, indicating the absence of starch.

**Question 4. Give a brief description of the process of synthesis of food in green plants.**

**Answer** - Green plants synthesise their food through a process called photosynthesis. This process involves-

- Absorption of water by the roots and its transport to the leaves.
- Intake of carbon dioxide from the air through stomata on leaves.
- In the presence of sunlight, water molecules are broken down into hydrogen and oxygen.
- Hydrogen then combines with carbon dioxide to form carbohydrates, like glucose.
- Oxygen is released as a by-product.

This process is crucial for the conversion of solar energy into chemical energy in the form of food, sustaining the plant and contributing to the ecosystem's energy flow.

**Question 5. Show with the help of a sketch that plants are the ultimate source of food.**

Answer -

**Question 6. Fill in the blanks-**

(a) Green plants are called \_\_\_\_\_ since they synthesise their own food.

**Answer- Autotrophs**

**Explanation-** Green plants are known as autotrophs because they have the ability to synthesise their own food using sunlight, carbon dioxide, and water through the process of photosynthesis.

(b) The food synthesised by plants is stored as \_\_\_\_\_.

**Answer- Starch**

**Explanation-** Plants store the food they synthesise primarily in the form of starch. Starch is a complex carbohydrate that serves as a storage form of energy for plants.

(c) In photosynthesis, solar energy is absorbed by the pigment called \_\_\_\_\_.

**Answer- Chlorophyll**

**Explanation-** Chlorophyll is the green pigment found in the chloroplasts of plant cells. It plays a crucial role in photosynthesis by absorbing solar energy which is then used to convert carbon dioxide and water into glucose.

(d) During photosynthesis, plants take in \_\_\_\_\_ and release \_\_\_\_\_ gas.

**Answer- Carbon dioxide; Oxygen**

**Explanation-** In the process of photosynthesis, plants absorb carbon dioxide from the atmosphere and release oxygen as a by-product. This exchange of gases occurs through the stomata present in the leaves.

**Question 7. Name the following-**

(i) A parasitic plant with yellow, slender and branched stems.

**Answer- Cuscuta**

**Explanation-** Cuscuta, commonly known as dodder, is a parasitic plant with a distinctive yellow, slender, and branched stem. It lacks chlorophyll and relies on its host plant for nutrition.

(ii) A plant that is partially autotrophic.

**Answer- Pitcher plant**

**Explanation-** The pitcher plant is partially autotrophic. While it can photosynthesize like other plants, it also obtains nutrients by trapping and digesting insects, supplementing its nutrition in nutrient-poor environments.

(iii) The pores through which leaves exchange gases.

**Answer- Stomata**

**Explanation-** Stomata are tiny pores found on the surface of leaves. They play a critical role in gas exchange, allowing carbon dioxide to enter for photosynthesis and oxygen and water vapour to exit during transpiration.

**Question 8. Tick the correct answer-**

(a) Cuscuta is an example of-

(i) autotroph (ii) parasite (iii) saprotroph (iv) host

**Answer- (ii) Parasite**

**Explanation-** Cuscuta is a parasitic plant that derives its nutrients by attaching to and feeding on other living plants, which categorises it as a parasite.

(b) The plant which traps and feeds on insects is-

(i) Cuscuta (ii) China rose (iii) Pitcher plant (iv) Rose

**Answer- (iii) Pitcher plant**

**Explanation-** The pitcher plant is known for trapping and feeding on insects. It has specialised leaves that form a deep cavity filled with digestive fluid where insects are trapped and digested.

**Question 9. Match the items given in Column I with those in Column II-**

Column-I      Column-II

Chlorophyll    Rhizobium

Nitrogen	Heterotrophs
Cuscuta	Pitcher plant
Animals	Leaf
Insects	Parasite

**Answer -**

Column I	Column II
Chlorophyll	Leaf
Nitrogen	Rhizobium
Cuscuta	Parasite
Animals	Heterotrophs
Insects	Pitcher plant

● **Explanation-**

- Chlorophyll is found in leaves and is essential for photosynthesis.
- Nitrogen is fixed by Rhizobium, a type of bacteria.
- Cuscuta is a parasitic plant.
- Animals are heterotrophs as they cannot synthesise their own food.
- Insects are trapped and digested by pitcher plants for nutrients.

**Question 10. Mark 'T' if the statement is true and 'F' if it is false-**

**(i) Carbon dioxide is released during photosynthesis. (T/F)**

**Answer- False**

**Explanation-** During photosynthesis, carbon dioxide is absorbed, not released.

**(ii) Plants which synthesise their food are called saprotrophs. (T/F)**

**Answer- False**

**Explanation-** Plants that synthesise their food are called autotrophs, not saprotrophs. Saprotrophs feed on decaying organic matter.

**(iii) The product of photosynthesis is not a protein. (T/F)**

**Answer- True**

**Explanation-** The primary products of photosynthesis are glucose (a sugar) and oxygen, not proteins.

**(iv) Solar energy is converted into chemical energy during photosynthesis. (T/F)**

**Answer- True**

**Explanation-** Photosynthesis converts solar energy into chemical energy in the form of glucose, which plants use as food.

**Question 11. Choose the correct option from the following-**

**Which part of the plant takes in carbon dioxide from the air for photosynthesis?**

- (i) Root hair (ii) Stomata (iii) Leaf veins (iv) Petals

**Answer- (ii) Stomata**

**Explanation-** Stomata are small openings on the surfaces of leaves. They play a crucial role in gas exchange, allowing carbon dioxide to enter the leaf for photosynthesis and oxygen to exit as a by-product.

**Question 12. Choose the correct option from the following-**

**Plants take carbon dioxide from the atmosphere mainly through their-**

- (i) roots (ii) stem (iii) flowers (iv) leaves

**Answer- (iv) Leaves**

**Explanation-** Leaves are the primary site of photosynthesis in plants. They have stomata which facilitate the intake of carbon dioxide from the atmosphere.

**Question 13. Why do farmers grow many fruits and vegetable crops inside large greenhouses? What are the advantages to the farmers?**

**Answer-**

Farmers grow fruits and vegetable crops in large greenhouses to protect the crops from external climatic conditions and to provide a suitable temperature for growth.

**Advantages to Farmers-**

- Protection from diseases and adverse climatic conditions.
- Protection from wind and rodents.

Greenhouses offer a controlled environment that can be optimised for plant growth. This includes regulating temperature, humidity, and sometimes even carbon dioxide levels to enhance photosynthesis. This controlled environment reduces the risk of crop damage due to unpredictable weather, pests, and diseases, leading to potentially higher yields and better quality produce.