

## Very Short Answer Questions

**Q.1. What is the stored form of carbohydrates in plants?**

**Ans.** Starch

**Q.2. Name a plant that has both autotrophic as well as heterotrophic mode of nutrition.**

**Ans.** Pitcher plant

**Q.3. Photosynthesis requires chlorophyll, and a few other raw materials. Add the missing raw materials to the list given below:**

**Water, minerals, \_\_\_\_\_, \_\_\_\_\_.**

**Ans.** Sunlight/light energy, carbon dioxide.

**Q.4. What is so special about the leaves that they can synthesise food but other parts of the plant cannot?**

**Ans.** Leaves have the machinery for photosynthesis, i.e., chloroplasts, which contain green pigment.

**Q.5. What is the role of leaves in photosynthesis?**

**Ans.** Leaves contain chlorophyll that traps solar energy and takes in carbon dioxide from the air through stomata, for photosynthesis.

**Q.6. Why are green plants called autotrophs?**

**Ans.** Green plants prepare their own food with the help of carbondioxide, water in presence of sunlight and chlorophyll. So, they are called autotrophs.

**Q.7. Name any two non-green plants.**

**Ans.** Red japanese maple and purple leaf plum are non-green plants.

## Short Answer Questions

**Q.1. A goat eats away all the leaves of a small plant (balsam). However, in a few days, new leaves could be seen sprouting in the plant again. How did the plant survive without leaves?**

**Ans.** Plants store the food that they produced by photosynthesis in the stem and roots. So, when goat ate away all the leaves of the plant, the plant fulfilled its requirement by the food stored in stem and roots.

**Q.2. Nitrogen is an essential nutrient for plant growth. But farmers who cultivate pulse crops like green gram, bengal gram, black gram, etc. do not apply nitrogenous fertilisers during cultivation. Why?**

**Ans.** Roots of pulses (leguminous plants) have a symbiotic association with a bacterium called Rhizobium which fixes nitrogen. Hence, farmers need not use nitrogenous fertilisers.

**Q.3. Sunlight, chlorophyll, carbon dioxide, water and minerals are raw materials essential for photosynthesis. Do you know where they are available? Fill in the blanks with the appropriate raw materials.**

**(i). Available in the plant:** \_\_\_\_\_

**(ii). Available in the soil:** \_\_\_\_\_, \_\_\_\_\_

**(iii). Available in the air:** \_\_\_\_\_

**(iv). Available during day:** \_\_\_\_\_

**Ans. (i)** Chlorophyll

**(ii)** Water, minerals

**(iii)** Carbon dioxide

**(iv)** Sunlight

**Q.4. Wheat dough if left in the open, after a few days, starts to emit a foul smell and becomes unfit for use. Give reason.**

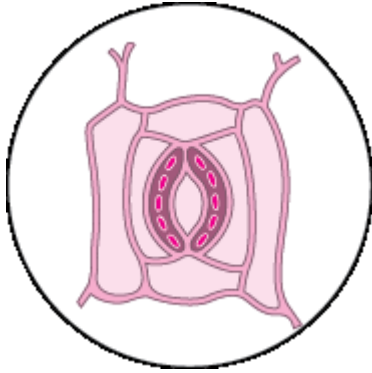
**Ans.** Carbohydrates in wheat dough encourage growth of yeast and other saprophytic fungi which break down carbohydrates, and emit a foul smell.

**Q.5. How does exchange of gases takes place in leaves?**

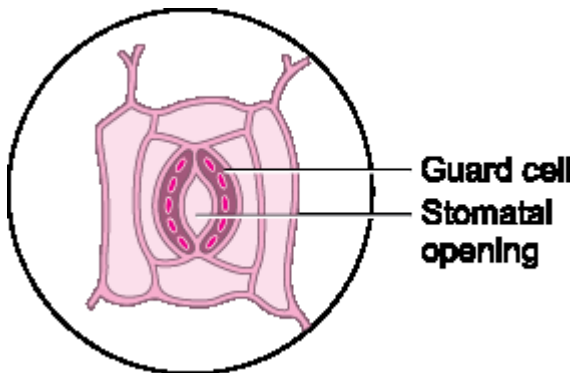
**Ans.** Carbon dioxide from the air is taken in through tiny pores present on the leaves called stomate surrounded by guard cells. Guard cells control the opening and closing of stomate. Oxygen is released from the stomate as a waste product of photosynthesis.

**Q.6. Observe the diagram given below and label the following terms given in the box.**

**Stomatal opening, guard cell**



**Ans.**



**Q.7. How do water and minerals absorbed by roots reach the leaves?**

**Ans.** Water and minerals are transported to the leaves by the vessels which run like pipes throughout the roots, stem, branches and leaves. They form a continuous path or passage for the nutrients to reach the leaf.

**Q.8. How does growing pulses in the field help the soil?**

**Ans.** Farmers add nitrogen containing manure or fertilisers to the soil to replenish the nutrients. Growing pulses in the soil replenishes nitrogen in the soil thus making the soil healthier.

**Q.9. Why is nutrition essential?**

**Ans.** Nutrition is necessary for the proper functioning of the body and for growth and development.

**Q.10. Name the various conditions that affect photosynthesis**

**Ans.** Intensity of light, temperature and concentration of carbon dioxide affect the rate of photosynthesis.

**Q.11. How do plants get nitrogen to synthesise proteins?**

**Ans.** Plants cannot take nitrogen in free state present in the atmosphere. They absorb the nitrogen fixed in the soil by roots, or by symbiotic relationship that are capable of nitrogen fixation from the air with microorganisms.

**Q.12. “Life on the earth would be impossible in the absence of photosynthesis.”  
Give reasons to support this statement.**

**Ans.** Food is the basic need of all living organisms and plants are the basic source of food for all the organisms, and prepare food by the process of photosynthesis. So, if there is no photosynthesis, life would be impossible.

## Long Answer Questions

**Q.1. Wild animals like tiger, wolf, lion and leopard do not eat plants. Does this mean that they can survive without plants? Can you provide a suitable explanation?**

**Ans.** It is true that these animals do not eat plants. They hunt and eat herbivorous animals like deer, gaur, bison, zebra, giraffe, etc. which are dependent on plants for food. If there are no plants, herbivorous animals will not survive and in that case animals like tiger, wolf, lion and leopard will have nothing to eat.

**Q.2. What is symbiosis? Explain with an example.**

**Ans.** It is the mode of nutrition where two organisms live together for mutual benefit. For example, lichens. The association of algae and fungi is called lichen. Alga survives in water. Its need for water is fulfilled by the fungus which in turn consumes the food made by alga. The fungus in turn gives to the alga, water and minerals it obtains from the substratum on which it lives. This association of algae and fungi makes them look as if they are one single organism.

**Q.3. With the help of an activity prove that light is necessary for photosynthesis.**

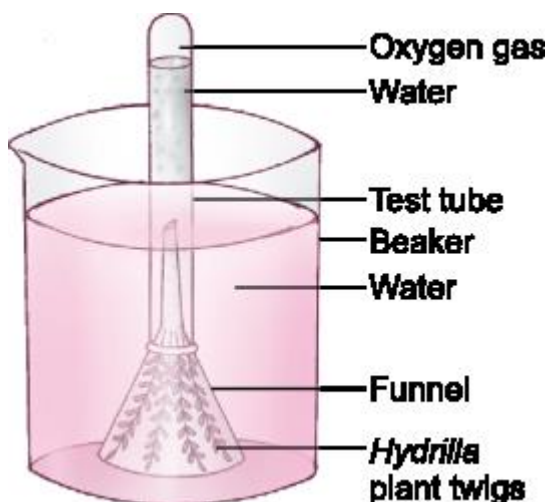
**Ans.** • Take some twigs of an aquatic plant like Hydrilla in beaker filled with water.

• Invert a funnel over the twigs. Invert a test tube filled with water on the stem of the funnel.

• Keep this set-up in sunlight for sometime.

• Air bubbles (oxygen gas) will be seen coming out from the twigs. If this set-up is kept in the dark, no air bubbles will be seen.

This proves that light is necessary for photosynthesis.



## HOTS (Higher Order Thinking Skills)

**Q.1. Some plants have deep red, violet or brown leaves. Do these leaves also carry out photosynthesis?**

**Ans.** The leaves other than green also have chlorophyll. The large amount of red, brown and other pigments mask the green colour. Photosynthesis takes place in these leaves also.

**Q.2. Why is leaf of croton plant taken to prove that chlorophyll is necessary for photosynthesis?**

**Ans.** Croton plant leaves are partly green and partly non-green and chlorophyll is present only in green portion of these leaves.

**Q.3. If the pitcher plant is green and carries out photosynthesis, then why does it feed on insects?**

**Ans.** Pitcher plant does not get the sufficient nutrients from plants. Therefore, it fulfils its requirement by eating insects.

**Q.4. Why can't our body make food from carbon dioxide, water and minerals like plants do?**

**Ans.** This is because our body cells do not contain the necessary apparatus for photosynthesis.

**Q.5. Why is the process of photosynthesis called an air purifying process?**

**Ans.** During photosynthesis green plants take in carbon dioxide from the atmosphere and release oxygen as the end product. Thus, in the process they purify air.