

Nutrition in Plants class 7 Questions

Choose the most appropriate answer.

- The life processes that provide energy are
 - nutrition.
 - respiration.
 - both nutrition and respiration.
 - response to stimuli.
- Which of these are Autotrophs?
 - all plants
 - unicellular organisms
 - all animals
 - green plants
- Which of these is not necessary for photosynthesis?
 - carbon dioxide
 - chlorophyll
 - light
 - nitrogen
- Which of these nutrients are needed in addition to carbon, hydrogen and oxygen to make proteins?
 - nitrogen
 - phosphorus
 - potassium
 - water

B. V short: Give one-word answers.

- What are the living organisms that cannot make their own food called?
- What are the structures in cells that contain chlorophyll called?
- What does 'photo' in photosynthesis refer to?
- Which bacteria in the soil can convert atmospheric nitrogen into soluble compounds?
- What type of plant is Cuscuta?
- What do you call a mutually beneficial relationship between two living organisms?
- Which organism gets its food from dead and decaying matter?
- To which colour does starch turn to when iodine is added to it?
- What is the ultimate source of all the energy needs of our body?



C. Short type : Answer in brief.

- What is nutrition?
- Differentiate between autotrophs and heterotrophs, giving two examples of each.
- Write down the chemical equation for manufacture of food in green plants.
- How will you test a leaf for starch? Mention any precautions you will take.
- How do plants get nitrogen to synthesize proteins?
- All animals—whether herbivores, carnivores or omnivores—depend on plants for their food. Discuss.
- Explain the following with the help of an example:
 - parasitic nutrition
 - symbiosis
 - saprotrophic nutrition.
- How does an insectivorous plant absorb nutrients from an insect trapped by it?
- Why are manures and fertilizers added to the soil in a farm?
- Distinguish between parasites and partial parasites in plants, giving one example of each.
- Why is nitrogenous fertilizer not added in soil in which leguminous plants are grown?

HOTS QUESTIONS

- We make our own food in the kitchen. This means that humans are also autotroph. Do you agree? Give reasons.
- Why can't animals make food from carbon dioxide, water and sunlight, like plants do?
- The pitcher plant and Venus flytrap are green plants that can photosynthesize. Why do they need to feed on insects?
- Plants do not have a digestive system like us. Why do they not need a digestive system?



Nutrition in plants class 7 Solution

A. Multiple Choices:

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|---------------------------------------|---------------------|--------------------|-----------------|
| 1. (c) both nutrition and respiration | 2. (b) green plants | 3. (d) nitrogen | 4. (a) Nitrogen |
| 5. (c) carbon dioxide | 6.(d) Parasite | 7.(a) Green plants | 8.(b) Mushroom |

B. V short type

- | | | | | |
|----------------|---------------------|--------------|------------|-------------|
| 1.Heterotrophs | 2.Chloroplast | 3.light | 4.Rizobium | 5.Parasitic |
| 6. symbiotic | 7.Mushroom or fungi | 8.Blue black | 9.Sun | |
10. False, Saprophytes are non green plant
11. True. Some green plants are heterotrophic in nature. For example, plants like pitcher plant feeds on insects
12. Guard cells

Short types

1. Nutrition is defined as the process of obtaining food and utilising it by any organism to get energy.
2. Stomata are the tiny pores on the leaves through which plants absorb atmospheric carbon dioxide. They are normally found on the underside of the leaves.
3. $6\text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{Light}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
4. Factors essential for photosynthesis are sunlight, water, carbon dioxide and chlorophyll.
5. Insectivorous plants secrete digestive juices to digest the insect trapped by them. These plants then absorb the nutrients released from the digested insect
6. Nitrogenous fertilisers are not added to the soil in which leguminous plants are grown because these plants can fix atmospheric nitrogen in the soil with the help of the bacteria Rhizobium present in their root nodules. These bacteria can fix the atmospheric nitrogen in soluble compounds which can be absorbed by the plants
7. A saprophyte secretes digestive juices on the dead and decaying matter to convert the solid substances into liquid. The saprophyte then absorbs the nutrients from this liquid.

Long type.

1. Autotrophs : Organisms which can make their own food from simple substances are called autotroph. They are producers. For example, all green plants, cyanobacteria, etc

Heterotrophs : Organisms which can not make their own food and obtain it directly or indirectly from green plants are called heterotrophs. They are consumers.. For example, all animals like cow, lion and humans.

2. Test for starch: Pluck one of the green leaves that have been exposed to sunlight.

- a. Boil that leaf in water for 5 minutes to soften it. Then put the leaf in a test tube containing alcohol.
- b. Now, gently place this test tube in a beaker of warm water till the alcohol starts boiling.
- c. The chlorophyll will slowly get dissolved in the alcohol and the leaf will start losing its green colour.
- d. Now, remove the alcohol by washing the leaf with warm water.
- e. Then spread the leaf over a white tile and add some iodine solution to it.
- f. Wash the leaf with water to remove the iodine solution and then hold it in light.
- g. The parts of leaf which have starch will turn blue black. Precautions
- h. Do not allow the water in the beaker to boil.



3. Nitrogen is present in the atmosphere in large amounts, but plants cannot absorb it directly. There are two ways by which plants can absorb nitrogen. They are as follows:

The soil bacterium Rhizobium is able to fix the atmospheric nitrogen in water soluble compounds. Plants absorb these compounds along with water in order to get nitrogen.

Plants can also get nitrogen from the nitrogen rich fertilizers used by farmers to treat the soil.

4. Plants are capable of making their own food. All animals whether herbivores, carnivores or omnivores cannot make their own food; hence, they depend on the plants for their food. Herbivores feed on plants to obtain nutrition. Again, the carnivores eat herbivores to obtain nutrition. Thus, carnivores indirectly depend on plants for their food. Omnivores, on the other hand, can directly obtain food from plants or indirectly consume animals which feed on plants. Thus, all animals ultimately depend on plants for their food.

5. (a) Parasitic nutrition: Parasites feed on other living organisms to obtain nutrition. This mode of nutrition is referred to as parasitic nutrition. For example, non green plants like dodder which can not synthesise their own food, grows over other plants and sucks nutrition from them using their root like structure.

(b) Symbiosis: The mutually beneficial relationship between two organisms is termed as symbiosis. For example, lichens are association between alga and fungi. Alga supplies food to its fungal partner, while fungi provides shelter to its algal partner.

(c) Saprotrophic nutrition: Organisms which feed on dead and decaying matter are called saprotrophs, and this mode of obtaining nutrition is called saprotrophic nutrition. For example, mushrooms, fungi and bacteria

6. Manures and fertilisers are added to the soil in order to enrich its organic composition and replenish the nutrients in it. The plants absorb most of the nutrients from the soil, leaving the soil deficient of these nutrients. Manures and fertilisers are rich in organic matter and nutrients like nitrogen, potassium and phosphorous. Thus, according to the need of the plants, farmers add manures and fertilisers in the soil.

7. Parasites Partial Parasites Parasites are non green plants which feed on other plants. For example, dodder sucks food from other plants via its hair like structure

Partial parasites are green plants which can synthesis their own food but absorb water and minerals from other plants.. For example, mistletoe plant which grows on a mango tree.

Hots:

1. Humans can not synthesize their own food; therefore, they are heterotrophs. We make our own food in the kitchen but the raw materials that we use to cook the food are either obtained from plants or from animals. Thus, humans, directly or indirectly, depend upon plants for their food. For example, we cook vegetables obtained from plants and meat obtained from animals.

2. Unlike plants, animals lack chloroplast in their body. So, animals can not prepare their food from carbon dioxide, water and sunlight. Chloroplast is an organelle which is specifically present in green plants. It has a green coloured pigment called chlorophyll. This chlorophyll traps the sunlight and enables plants to make food, which animals can not

3. Even though Venus flytrap and pitcher plant are green plants, they can not perform photosynthesis because they grow in a soil which is poor in nutrients. Therefore, to obtain nutrition they feed on insects. This nutrition supplements the food prepared by them via photosynthesis.

4. Plants make their food through the process of photosynthesis. Because the synthesis of food occurs within them, they do not need to digest it. Therefore, they do not have a digestive system like humans.

