

# DELHI PUBLIC SCHOOL, JAMMU

SESSION (2021-22)

## FOUNDATION WORKSHEET

CLASS: VII

SUBJECT: SCIENCE

### TOPIC: NUTRITION IN PLANTS

#### INTRODUCTION

Food is the most important and basic thing for life. Carbohydrates, proteins, fats, vitamins and minerals are the components of food. These components are necessary for all living beings. All plants and animals require food for their growth and getting energy. The process of utilization of food by an animal to obtain energy for growth and development is known as nutrition. Plants make their food themselves but animals cannot. Hence, animals depend directly or indirectly on the plant.

#### MODES OF NUTRITION

##### **Autotrophic Nutrition**

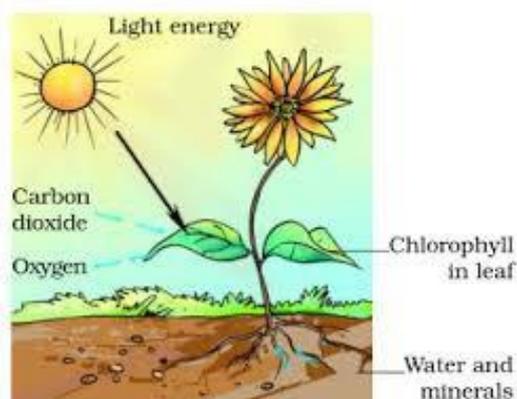
Auto means self and trophos means nourishment. Plants are called autotrophs because they make their food themselves. The making of food for themselves is called the Autotrophic nutrition.

Autotrophic nutrition is found in green plants, and in some bacteria.

##### **Heterotrophic Nutrition**

The word Heterotrophic is the combination of two words i.e. Hetero + Trophos. Hetero means 'others' and 'trophos' means nourishment. If organisms depend on others for their food, such a mode of nutrition is called Heterotrophic Nutrition. Animals cannot make their food themselves. They depend for food upon plants. Therefore, nutrition in animals is called Heterotrophic Nutrition. Animals are known as Heterotrophs.

#### PHOTOSYNTHESIS



The process of making of food by green plants in the presence of sunlight and chlorophyll is known as photosynthesis. Photosynthesis is the combination of two words- Photo + Synthesis. 'Photo' means light and 'Synthesis' means to make. The term photosynthesis was coined by Charles Reid Barnes.

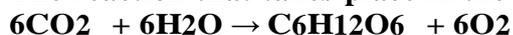
##### **Process of food making in green plants:**

Green plants make their food themselves. Green leaves make food from Carbon dioxide and water in the presence of sunlight and chlorophyll.

Leaves have several tiny pore-like structures on the lower surface. Such a pore is called stomata

through which leaves absorb carbon dioxide from air. Water is transported to the leaves through hair like pipelines from the roots. These pipelines are present throughout the plant, i.e. from roots to branches and leaves. These pipe-lines are known as Xylem. Xylem is a type of tissue. Chlorophyll, a green pigment, is found in green leaves. Chlorophyll absorbs sunlight and gives energy. Chloroplast is the site of photosynthesis. Carbohydrate is used as food and oxygen is emitted out to atmosphere. This whole process of making food by plants is called photosynthesis.

**The reaction that takes place in the process of photosynthesis can be written as:**



Carbohydrate which is produced in the process of photosynthesis is ultimately converted into starch and stored in leaves. From leaves it is transported to different parts of a plant. Starch is a type of carbohydrate. The oxygen so produced is released into atmosphere through the stomata. Leaves are known as the kitchen or food factories of the plants because photosynthesis takes place in leaves. Leaves look green because of the presence of chlorophyll. Besides leaves, photosynthesis also takes place in other green parts of the plant also, such as in green stems. Chlorophyll is necessary for photosynthesis; hence photosynthesis takes place only in green plants. The leaves of plants that grow in desert areas are modified in spine like structure or scales to reduce the loss of water in the course of transpiration. In such plants photosynthesis takes place in green stems. Stem is modified into thick spongy leaf-like structures in such plants. Photosynthesis helps to maintain a balance between oxygen and carbon dioxide in the atmosphere as it absorbs carbon dioxide and release oxygen. Sunlight is necessary for photosynthesis. Thus sun is the ultimate source of energy for all living organism. Our earth is the unique planet, where photosynthesis takes place. In the absence of photosynthesis life would not be possible on earth.

**Following are necessary for photosynthesis to be taken place:**

- 1) **Presence of sunlight**
- 2) **Presence of Chlorophyll**
- 3) **Presence of Water**
- 4) **Presence of carbon-dioxide**

### **SOLVED EXERCISES**

Question 1: What do you mean by autotrophs?

**Answer:** Organisms that make their food themselves are called autotrophs.

Question 2: What do you mean by heterotrophs?

**Answer:** Animals and non-green plants are the examples of heterotrophs.

Question 3: What do you mean by Saprotrophs?

**Answer:** Organisms which get their nutrition from dead or decaying plants in liquid form are called saprotrophs.

Question 4: What are the components of food?

**Answer:** Carbohydrates, proteins, fats, vitamins and minerals are the components of food.

Question 5: What is nutrition?

**Answer:** The process of utilization of food by a living organism to obtain energy is called Nutrition.

Question 6: Why is need of nutrition?

**Answer:** Animals do not make their food themselves which plants do. Animals eat plants or plant eating animals. Hence, animals are directly or indirectly depend on plants.

Question 7: What is autotrophic mode of nutrition?

**Answer:** The mode of nutrition in which the organism makes its own food is called autotrophic mode of nutrition.

Question 8: Give some example of autotrophs.

**Answer:** All green plants, such as grass, mango, bougainvillea, etc. are the examples of autotrophs. Some bacteria also show autotrophic nutrition.

Question 9: What is heterotrophic mode of nutrition?

**Answer:** The mode of nutrition in which an organism takes food from another organism is called heterotrophic mode of nutrition. The nutrition in animals and non-green plants is the example of heterotrophic mode of nutrition.

Questions 10: What is photosynthesis?

**Answer:** The process of making food in green plants in the presence of sunlight is known as photosynthesis.

Questions 11: What are the essential factors for the photosynthesis?

**Answer:** Carbon dioxide, water, chlorophyll and sunlight are essential factors for photosynthesis to take place.

Question 12: What is chlorophyll?

**Answer:** Chlorophyll is the green pigment present in green leaves.

Question 13: Why do leaves look green?

**Answer:** Leaves look green because of the presence of chlorophyll, which is a green pigment.

Questions 14: What is the function of chlorophyll?

**Answer:** Chlorophyll absorbs the sunlight for photosynthesis.

Question 15: What are the final products made after photosynthesis?

**Answer:** Glucose and oxygen are the final products after photosynthesis.

Questions 16: What are stomata?

**Answer:** The small pores present on the lower surface of leaf, are called stomata.

Questions 17: What is function of stomata?

**Answer:** Stomata absorb carbon dioxide from air for photosynthesis. Stomata facilitate exchange of gases and transpiration.

Question 18: What is the ultimate source of energy?

**Answer:** Sun is the ultimate source of energy.

Question 19: How water is transported to the leaves?

**Answer:** Water is transported to the leaves through pipe-like structures from the roots of plant. These pipe-like structures are present from root to leaves through branches throughout.

Question 20: Identify the picture and write the role of guard cells



The picture depicts stomata. The guard cells control the opening and closing of stomata. The carbon-dioxide gas enters the leaves of the plant through the stomata.

### **PRACTICE QUESTIONS**

#### **Multiple choice questions, choose any one**

- The process of digestion, absorption and utilization of food by the body is called
  - digestion
  - absorption
  - assimilation
  - nutrition
- Green plants are called
  - heterotrophs
  - autotrophs
  - hydrotrophs
  - saprophytes
- The leaves of a plant are green because they contain
  - ribosomes
  - nucleus
  - chlorophyll
  - mitochondria

4. Which of the following gases are released during photosynthesis?

- a) nitrogen
- b) oxygen
- c) carbon dioxide
- d) hydrogen

5. Define the following : a) Nutrition b) Photosynthesis

**Answer these short questions:**

- 6. Write the chemical reaction for photosynthesis.
- 7. Name the materials required by plants for photosynthesis.
- 8. Why are leaves green in colour?
- 9. What is heterotrophic mode of nutrition?
- 10. What is autotrophic mode of nutrition?
- 11. Name the scientist who coined the term photosynthesis.
- 12. Identify the picture given below and determine how the leaf helps in the preparation of food?

