



Class - VII Science Classwork Notes

1. Nutrition in Plants

I. Technical Words:

1. Nutrition - The process by which food is taken in and used by an Organism.
2. Autotrophic Nutrition - The mode of nutrition in which living things make their own food using simple substances.
3. Heterotrophic Nutrition - The mode of nutrition in which an organism obtains food from other organisms.
4. Photosynthesis - The process by which green plants manufacture their own food from water and carbon dioxide with the help of chlorophyll and sunlight.
5. Symbiosis - Relationship between two organisms that benefits both of them.

II. Very Short answer questions:

1. The glucose produced during photosynthesis is stored in the form of _____.
Ans: starch
2. Water is transported from the roots to the leaves of the plant through a structure called _____.
Ans: xylem
3. The root nodules of leguminous plants contain the bacteria _____.
Ans: *Rhizobium*.

III. Short answer Questions:

1. What are the conditions required for photosynthesis?
Ans: In order to make food, a green plant needs water and carbon dioxide as raw materials, the presence of a green pigment called chlorophyll and sunlight or artificial light as a source of energy.
2. How does a green plant obtain carbon dioxide and water for photosynthesis?
Ans: Plants obtain carbon dioxide from air through the tiny pores, called stomata that are present mostly on the undersides of leaves. It obtains water from the soil through its roots. The xylem tissue, that forms a continuous column of tubes, transports water from the roots to the leaves.
3. Name two parasitic plants. How do these plants get their nutrition from host plants?
Ans: Mistletoe is a partial parasitic plant that obtains water and minerals from its host plant. Cuscuta is a total parasite that wraps its stem around the host and obtains all nutrients from the host plant.
4. A farmer grew pea plants in the field after harvesting rice. What is the likely reason for this?
Ans: Farmers grow pea plants after rice crops in order to replenish the soil with nitrogen. Rice crops consume nitrogen from the soil and deplete

its level. Pea plants have *Rhizobium* bacteria in their root nodules that can fix the atmospheric nitrogen into nitrogenous compounds in the soil.

IV. Long Answer Questions:

1. Explain the process of photosynthesis with the help of a diagram.

Leaves contain a green pigment called chlorophyll that helps to trap energy from sunlight. This energy is used to make glucose by putting together carbon dioxide that is taken in from the air, and water that is absorbed from the soil. Photosynthesis is the process by which green plants make their own food in the presence of sunlight and chlorophyll using carbon dioxide and water as raw materials. The first product of photosynthesis is glucose, a carbohydrate which is converted into starch and stored in the leaves, stems and roots. The by-product is oxygen, which is released into the atmosphere. (Diagram: Refer to the textbook.)

2. Differentiate between the following.

a. autotrophs and heterotrophs

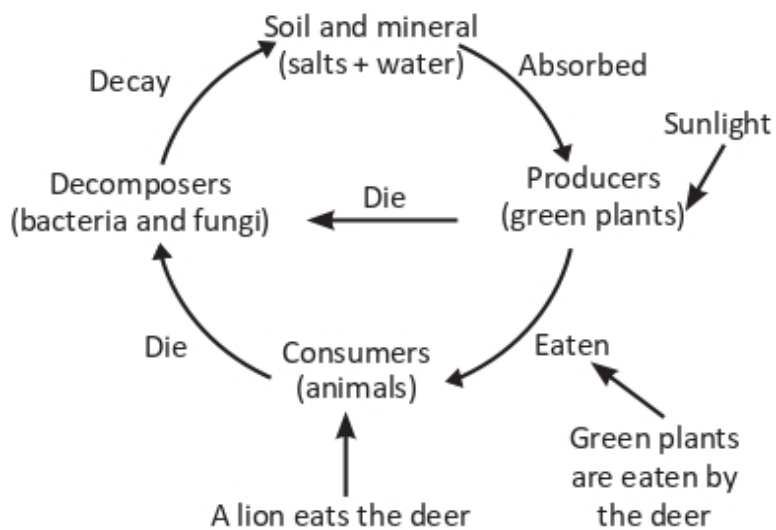
a.	Autotrophs	Heterotrophs
	Living things that can synthesise their own food using simple inorganic materials like carbon dioxide and water in the presence of sunlight and chlorophyll by the process of photosynthesis.	Living things that cannot synthesise their own food and depend on green plants directly or indirectly for their nutrition.
	For example, green plants, algae and some bacteria.	For example, fungi, dodder, animals.

b.	Parasitic plants	Saprotrophs
	Non-green plants that obtain their nutrition by living on or inside another living plant.	Living things that obtain their nutrition from dead and decaying organic matter.
	They send special feeding tubes into the phloem of the host plant and suck the ready-made food from the host plant.	They release digestive juices on the decaying matter, break it down to form liquid and then absorb the nutrients.
	For example, dodder, mistletoe.	For example, mushroom, bread mould. The Indian pipe plant is an example of saprophytes.

3. How is nitrogen replenished in soil?

Most plants need nitrogen in large amounts to make protein. Plants cannot use the nitrogen present in the atmosphere directly. Nitrogen content in the soil can be naturally replenished by growing leguminous crops in the fields. Leguminous plants harbour the *Rhizobium* bacteria in their roots and provide them with food. In turn, these bacteria fix atmospheric nitrogen into a form that can be readily used by the plants. Farmers use manures and fertilisers to replenish the nutrients in the soil.

4. Draw a diagram to show the flow of nutrients between soil, a green plant, a lion and a deer, include decomposers in an appropriate place in the diagram.



V. Images - based question.

- a. Sundew
- b. Venus fly trap
- c. Mistletoe

2. Nutrition in animals

I. Technical Words:

1. Ingestion - The process of taking in food into the mouth.
2. Digestion - The process by which the body breaks down the ingested food into soluble nutrients that can be used easily.
3. Absorption - The process by which digested food is taken up by the body
4. Assimilation - The process by which absorbed food is utilised in the body.
5. Egestion - The process by which undigested food is thrown out of the body.
6. Pseudopodia - The false feet - like extension of the Amoeba
7. Ruminant - An animal that bring swallowed food back into mouth for chewing again.

II. Short answer questions:

1. Which organs make up the human alimentary canal?

The human alimentary canal is made up of the mouth, oesophagus, stomach, small intestine, large intestine and anus.

2. Why is mucus an important part of the stomach's secretions?

Mucus protects the inner wall of the stomach from being digested by the acid present in the stomach.

3. Differentiate between absorption and assimilation.

Absorption is the process by which digested food is taken up by the body. The digested nutrients move through the intestinal wall (villi) into the small blood vessels. The absorbed nutrients are then carried to every cell by the bloodstream. The process by which absorbed nutrients are used by the body (cells) to produce energy, to grow and to repair old tissues is called assimilation.

4. How is the small intestine designed to increase the surface area for absorption?

The inner wall of the small intestine has a large number of finger-like projections called villi which increase the surface area for the absorption of nutrients.

5. Name the different chambers in the stomach of a cow.

The different chambers in the stomach of a cow are rumen, reticulum, omasum and abomasum.

II. Long answer questions:

1. Draw a labelled diagram of the digestive system in humans.

Diagram: Refer to the textbook.

2. How do the following juices help in digestion?

- a. Saliva helps to moisten the food and make it softer. It breaks down complex carbohydrates (starch) into simple sugars in the mouth.
- b. Bile is secreted by the liver and is stored in the gall bladder. It breaks down large fat globules into smaller fat droplets. Thus, making it easy for the pancreatic and intestinal juices to further break down the fat droplets.

3. Describe the roles of the small intestine and the large intestine in the process of digestion in humans.

Small intestine: The small intestine is the site of complete digestion and absorption of food. It receives the partially digested food from the stomach. Bile juice secreted from the liver breaks down large fat globules into small droplets, thereby, helping to speed up the digestion of fats. Pancreatic juices (from pancreas) convert complex carbohydrates into simple sugars, fats into fatty acids and glycerols and proteins into amino acids. The inner walls of the small intestine have glands that produce a number of juices to help complete the digestion of food. The final products of digestion are absorbed through villi (present in the walls of small intestine) into the bloodstream to be delivered to the cells of the body.

Large intestine: It is the last part of the alimentary canal. The undigested food and water passes from the small intestine to the large intestine. It absorbs water and some vitamins from the undigested food. The undigested food is stored as faeces in the rectum which is then thrown out from the body through the anus.

4. Draw a labelled diagram of the stages of nutrition in Amoeba.

Diagram: Refer to the textbook.

5. Draw a labelled diagram to show the stages of nutrition in a ruminant.

In ruminants, food is ingested through the mouth, mixed with saliva and passed through the oesophagus into the stomach. The stomach is made up of four chambers - rumen, reticulum, omasum and abomasum.

Rumen is the first and largest chamber in the stomach. It contains cellulose-digesting bacteria and other microorganisms that help to digest cellulose (present in grass). The food now moves to the second chamber, the **reticulum** from where it goes back to the mouth for further chewing. After it is chewed thoroughly, the food moves back to the reticulum and enters the third chamber, the **omasum**. Water and minerals are absorbed in this chamber from where the food finally enters the **abomasum**, the last chamber of the stomach. In this chamber, digestive juices act upon the food. The partially digested food moves from the abomasum to the small intestine where it is completely digested and absorbed into the bloodstream.

(Diagram: Refer to the textbook.)

III. Images - based questions:

1. Identify the organs shown in the image.

- A. 1. A- liver B- stomach
C- large intestine D- gall bladder E- small intestine F- pancreas

2. Match the following.

a. Large amount of water is absorbed here	A
b. Acid is secreted here	B
c. Bile is made here	C
d. Bile is made here	D
e. Bile is stored here	E

- a. C. large intestine b. B. stomach
a. A. liver d. E. small intestine
e. D. gall bladder