Chapter 4: Nutrition in Living Organism

Question. 1. Fill in the blanks:
(1) Nutrients can be classified into two types, namely, **macronutrients** and **micronutrients**
(2) Plants make their food in their leaves. This process is called **photosynthesis**
(3) The leaves have microscopic openings called **stomata**
(4) The transport system of plants consists of the **xylem** and the **phloem**
(5) **Rhizobium** absorb atmospheric nitrogen and convert it into its compound.

Question. 2. One word in the following statements is wrong. Correct the statements by changing this wrong word:
(1) All the animals are autotrophic.
Answer. All the animals are heterotropic.
(2) Carbon dioxide is released into the atmosphere in the process of photosynthesis.
Answer. Oxygen is released into the atmosphere in the process of photosynthesis.
(3) During atmospheric fixation of nitrogen, nitric acid is produced.
Answer. During atmospheric fixation of nitrogen, nitrogen dioxide is produced.

Question. 3. Match the pairs:

[1] 'A' Group	**Answers**	**'B' Group**
(1) Parasitic plant	Cuscuta	**(a) Mushroom**
(2) Insectivorous plant	Drosera	**(b) Lichen**
(3) Saprophytic plant	Mushroom	**(c) Drosera**
(4) Symbiotic plant	Lichen	**(d) Cuscuta**

[2] 'A' Group	**'B' Group**
(1) Ingestion	**(a) Removal of unwanted matter.**
(2) Digestion	**(b) Utilization of absorbed food.**
(3) Absorption	**(c) Transfer of soluble food to the blood.**
(4) Assimilation	**(e) Intake of food.**
(5) Egestion	**(d) Conversion from complex to simple soluble form.**

Answer:
(1) Ingestion - Intake of food.
(2) Digestion - Conversion from complex to simple soluble form.
(3) Absorption - Transfer of soluble food to the blood.
(4) Assimilation - Utilization of absorbed food.
(5) Egestion - Removal of unwanted matter.

[3] 'A' Group	'B' Group
(1) Nitrogen	(a) Metabolism
(2) Phosphorus	(b) Production of chlorophyll
(3) Magnesium and iron	(c) Production of important hormones
(4) Manganese and zinc	(d) Conversion of solar energy into chemical energy
(5) Potassium	(e) Important component of proteins and chlorophyll.

Answer.
(1) Nitrogen - Important component of proteins and chlorophyll.
(2) Phosphorus - Conversion of solar energy into chemical energy.
(3) Magnesium and iron - Production of chlorophyll.
(4) Manganese and zinc - Production of important hormones.
(5) Potassium - Metabolism.

Question. 4. Classify according to food-type :
Tiger, cow, vulture, bacteria, deer, goat, human, fungus, lion, sparrow, buffalo, frog, cockroach, tick.
Answer.

Herbivores	Omnivores	Scavengers
Cow, Deer, Goat, Buffalo	Tiger, Lion, Frog	Vulture

Decomposers	Parasitic	Carnivores
Bacteria, Fungus	Tick	Sparrow, Human, Cockroach

Question. 5. Answer the following questions in your own words:
(1) Why do living organisms need nutrition?
Answer. Living organisms need nutrition to grow, repair their bodies, and get energy for their daily activities. Nutrition provides the essential nutrients that help in building cells and tissues, fighting diseases, and supporting the overall functioning of the body.
(2) Explain the process of production of food in plants.
Answer. Plants make their food through photosynthesis. They use sunlight, carbon dioxide from the air, and water from the soil to make sugar (glucose), which is their food. Chlorophyll, the green part of the leaves, helps in capturing sunlight for this process and also releases oxygen.
(3) What is meant by parasitic plants? Name their different types with examples of each.
Answer. Parasitic plants are plants that depend on other plants for their nutrients. They attach to the host plant and take water and food from it. There are two types:
Total parasites: These plants fully depend on the host, like Cuscuta (Dodder).
Partial parasites: These plants take water and minerals from the host but make their own food, like Mistletoe.
(4) What is the peculiarity of Lichen?

Answer. Lichen is a unique organism formed by a partnership between algae and fungi. The algae make food through photosynthesis, while the fungi provide protection and absorb water and nutrients. Together, they can survive in harsh environments.

(5) Write a short note on Drosera.

Answer. Drosera, also known as the sundew plant, is a carnivorous plant that traps and digests insects. It has sticky, hair-like structures on its leaves that secrete a sweet, glue-like substance to attract insects. When an insect gets stuck, the plant slowly wraps around it and releases digestive juices to absorb nutrients.

(6) Explain the various steps of nutrition in animals.

Answer. The 5 steps of nutrition in animals are:

(a) Ingestion: Taking in food.

(b) Digestion: Breaking down food into simpler forms.

(c) Absorption: Nutrients from the food are absorbed into the bloodstream.

(d) Assimilation: Nutrients are used by cells for energy, growth, and repair.

(e) Egestion: Removing undigested waste from the body.

(7) Name some unicellular organisms in which all life-processes take place within their unicellular body

Answer. Some unicellular organisms where all life processes occur within a single cell include Amoeba, Paramecium, Euglena, and Bacteria.

(8) How does ingestion occur in unicellular animals like Amoeba? (Can you tell? Textbook page 31)

Answer. In Amoeba, ingestion occurs when it uses its finger-like projections called pseudopodia to surround and capture food particles. The food is enclosed in a food vacuole, where it is digested and absorbed for nutrition.

(9) Which are the different substances excreted by the plants? Why? (Let's recall: Textbook page 27)

Answer. Plants excrete oxygen, water vapor, resins, and gums. Oxygen and water vapor are released during photosynthesis and respiration, while resins and gums help protect the plant by sealing wounds or defending against pests.

Question. 6. Give scientific reasons:

(1) Insectivorous plants are attractively coloured.

Answer. Insectivorous plants are attractively colored to lure insects towards them. These bright colors help in attracting insects, which the plant traps and digests to obtain essential nutrients like nitrogen.

(2) Butterflies have a long tube-like proboscis.

Answer. Butterflies have a long tube-like proboscis to suck nectar from deep inside flowers. This structure allows them to reach the nectar while hovering and feeding efficiently without damaging the flower.

Question. 7. Think and answer: (HOTS)

(1) We prepare a variety of foodstuffs and dishes at home. Are we then autotrophic organisms?

Answer. No, we are not autotrophic organisms because we do not produce our own food; instead, we rely on consuming food prepared from other sources, which classifies us as heterotrophs.

(2) Which organisms are greater in number-autotrophs or heterotrophs? Why?

Answer. Heterotrophs are greater in number than autotrophs because they include a wide range of organisms, such as animals, fungi, and many bacteria, which depend on various food sources, while autotrophs primarily include plants and some bacteria that can produce their own food.

(3) The number of heterotrophs found in desert regions is smaller. However, they are found in greater numbers in the sea. Why is this so?

Answer. Heterotrophs are fewer in desert regions due to the harsh conditions and limited food sources, while the sea provides a rich and diverse ecosystem with abundant food availability, allowing for larger populations of heterotrophic organisms.

(4) Why is plant food not produced in any other parts of the plant except the green ones?

Answer. Plant food is mainly produced in the green parts because they contain chlorophyll, which is essential for photosynthesis to capture sunlight and convert carbon dioxide and water into food.

(5) What damage or harm do ectoparasitic and endoparasitic animals cause?

Answer. Ectoparasitic animals, such as ticks and fleas, harm their hosts by feeding on blood, which can lead to irritation, infection, and diseases, while endoparasitic animals, like tapeworms, damage their hosts by consuming nutrients from within the body, leading to malnutrition and other health issues.

Question. 8. Use your brain power! (Textbook page 29)

(1) From where do they obtain minerals and water?

Answer. Plants obtain minerals and water from the soil through their root systems, which absorb these essential nutrients to support growth and metabolic processes.

(2) Why is Loranthus known as a partially parasitic plant?

Answer. Loranthus is known as a partially parasitic plant because it attaches to the host plant to absorb water and nutrients while still being capable of photosynthesis to produce some of its own food.

(3) Why does the pitcher plant feed on insects even though it produces food by photosynthesis?

Answer. The pitcher plant feeds on insects to obtain additional nutrients, particularly nitrogen, which may be limited in the poor soil where it grows, enhancing its growth and overall health.

(4) How does photosynthesis occur in dark red or purple coloured leaves? (HOTS) (Textbook page 27)

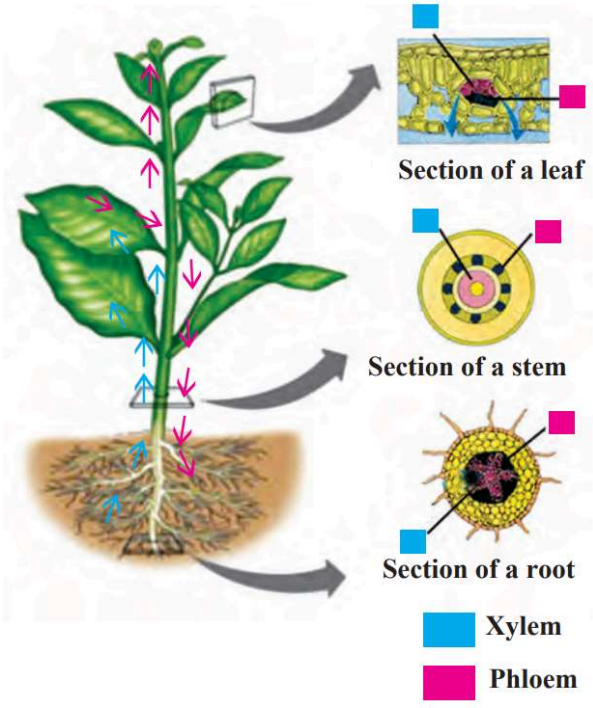
Answer. Photosynthesis occurs in dark red or purple leaves due to the presence of pigments like anthocyanins, which can capture light energy and assist in the process, although they may reflect certain wavelengths instead of absorbing them like chlorophyll.

(5) What is chemosynthesis? Which plants produce their food by chemo-synthesis? (HOTS) (Find out: Textbook page 27)

Answer. Chemosynthesis is the process by which certain organisms produce food using chemical energy derived from inorganic compounds, rather than sunlight. Plants like some bacteria and archaea, found in deep-sea vents and other extreme environments, perform chemosynthesis.

Question. 9. Draw neat and well-labelled diagrams of the following:

(1) Transport system in plants



(2) Feeding in Amoeba