

# Chapter - 1

## Nutrition in Plants

### Multiple Choice Questions

**1. Organisms which prepare food for themselves using simple naturally available raw materials are referred to as**

- (a) heterotrophs
- (b) autotrophs
- (c) parasites
- (d) saprophytes

**Soln:**

**Answer is (b) autotrophs**

**Explanation:**

Organisms which prepare food for themselves using simple naturally available raw materials are referred to as autotrophs.

Organisms which are dependent on plants for their food are known as heterotrophs.

Parasites are those organisms which live and dependent on the host for food. They obtain food at the cost of their host.

Saprophytes are the organisms which eat dead and decaying matter as food.

**2. In the absence of which of the following will photosynthesis not occur in leaves?**

- (a) Guard cells
- (b) Chlorophyll
- (c) Vacuole
- (d) Space between cells

**Soln:**

**Answer is (b) Chlorophyll**

**Explanation:**

The leaves have a green pigment called chlorophyll. It helps leaves to capture the energy of the sunlight. This energy is used to synthesise (prepare) food from carbon dioxide and water.

**3. Which of the following statements is/are correct?**

- (i) All green plants can prepare their own food.**
- (ii) Most animals are autotrophs.**
- (iii) Carbon dioxide is not required for photosynthesis.**
- (iv) Oxygen is liberated during photosynthesis.**

**Choose the correct answer from the options below:**

- (a) (i) and (iv)**
- (b) (ii) only**
- (c) (ii) and (iii)**
- (d) (i) and (ii)**

**Soln:**

Answer is (a) (i) and (iv)

**Explanation:**

Statement ii) is wrong because animals are heterotrophs.

Statement iii) is wrong because CO<sub>2</sub> is necessary for photosynthesis.

**4. Pitcher plant traps insects because it**

- (a) is a heterotroph.**
- (b) grows in soils which lack in nitrogen.**
- (c) does not have chlorophyll.**
- (d) has a digestive system like human beings.**

**Soln:**

Answer is (b) grows in soils which lack in nitrogen.

**Explanation:**

Pitcher plant grows in soil which is deficient in Nitrogen. Pitcher plant carrying out photosynthesis to produce carbohydrates. But for nitrogen source it traps and digests the insects.

**5. The term that is used for the mode of nutrition in yeast, mushroom and bread-mould is**

- (a) autotrophic**
- (b) insectivorous**
- (c) saprophytic**
- (d) parasitic**

**Soln:**

Answer is (c) saprophytic

**Explanation:**

These all are fungi, They absorb the nutrients from the dead and decaying matter. They secrete digestive juices which help them to digest organic material. This type of absorbing nutrition is called saprophytic mode of nutrition.

**6. When we observe the lower surface of a leaf through a magnifying lens we see numerous small openings. Which of the following is the term given to such openings?**

- (a) Stomata
- (b) Lamina
- (c) Midrib
- (d) Veins

**Soln:**

Answer is (a) Stomata

**Explanation:**

Lamina is the green expanded part of the leaf with veins and veinlets. Midrib is middle prominent vein. Veins provide rigidity to leaf and act as channels for transport of water, minerals and food materials. Stomata are the minute pores usually located on the underside of the leaves and take part in exchange of gases (O<sub>2</sub> and CO<sub>2</sub>) during photosynthesis and respiration. They are surrounded by guard cells.

**7. Two organisms are good friends and live together. One provides shelter, water, and nutrients while the other prepares and provides food. Such an association of organisms is termed as**

- (a) saprophyte
- (b) parasite
- (c) autotroph
- (d) symbiosis

**Soln:**

Answer is (d) symbiosis

**Explanation:**

Saprophyte are those which feed on dead and decaying matter. Parasites are the organisms which feed on other organisms. Autotrophs are those which prepare their own food.

**8. Which of the following raw material is available in the air for photosynthesis?**

- (a) Oxygen
- (b) Carbon dioxide
- (c) Nitrogen
- (d) Hydrogen

**Soln:**

Answer is (b) Carbon dioxide

**Explanation:**

Plants prepare their own food by using Carbon dioxide and water to produce carbohydrates and oxygen. Carbon-di-oxide present in air is utilized by plants as carbon source.

**Very Short Answer Questions**

**9. Potato and ginger are both underground parts that store food. Where is the food prepared in these plants?**

**Soln:**

In these plants shoot system and leaves stays above ground. They prepare food by photosynthesis and stores energy in the underground part of plant.

**10. Photosynthesis requires chlorophyll, and a few other raw materials. Add the missing raw materials to the list given below: Water, minerals, \_\_\_\_\_, \_\_\_\_\_.**  
(a) \_\_\_\_\_ (b) \_\_\_\_\_

**Soln:**

Sunlight/light energy, (b) carbondioxide.

**Short Answer Questions**

**11. 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?**

**Soln:**

Plants have stored food in their stems and roots. Because of this plants live for few days without leaves.

**12. Unscramble the following to form terms related to modes of nutrition.**

(i) RASPAEIT

(ii) ROPEHYTSAP

(iii) TOROPHAUT

(iv) SIBIOMSYS

**Soln:**

(i) PARASITE

(ii) SAPROPHYTE

(iii) AUTOTROPH

(iv) SYMBIOSIS

**13. 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 fertilizers during cultivation. Why?**

**Soln:**

Roots of pulses has symbiotic relationship with a bacteria called Rhizobium. This bacteria fixes atmospheric nitrogen which will be utilized by leguminous plants. Hence farmers don't apply nitrogen fertilizers while cultivating cereals.

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

**Soln:**

Carbohydrates present in dough will provide nutrients for the growth of yeast and other fungi. These breaks down glucose to emit foul smell and spoils dough.

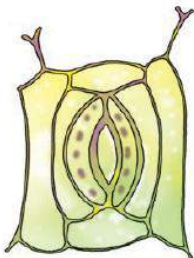
**15. Sunlight, chlorophyll, carbon dioxide, water and minerals are raw materials essential for photosynthesis. Do you know where they are available? Fill in the blanks with the appropriate raw materials.**

- (a) Available in the plant : \_\_\_\_\_
- (b) Available in the soil : \_\_\_\_\_, \_\_\_\_\_
- (c) Available in the air : \_\_\_\_\_
- (d) Available during day : \_\_\_\_\_

**Soln:**

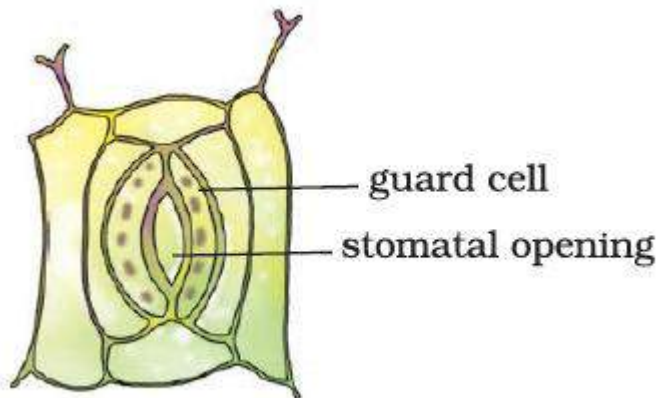
- (a) Available in the plant : Chlorophyll
- (b) Available in the soil : Water, Minerals
- (c) Available in the air : Carbon-di-oxide
- (d) Available during day : Sunlight

**16. Observe the diagram given as Figure 1.1 and label the following terms given in the box**



**Fig. 1.1**

**Soln:**



### Long Answer Questions

**17. Match the organisms given in Column I with their mode of nutrition given in Column II.**

Column I	Column II
a) Mango tree	i) Insectivorous plant
b) Mushroom	ii) Heterotroph
c) Pitcher Plant	iii) Autotroph
d) Cuscuta	iv) Saprophyte
e) Elephant	v) Parasitic

**Soln:**

Column I	Column II
a) Mango tree	iii) Autotroph
b) Mushroom	iv) Saprophyte
c) Pitcher Plant	i) Insectivorous plant
d) Cuscuta	v) Parasitic
e) Elephant	ii) Heterotroph

**18. 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?**

**Soln:**

Wild animals like tiger, wolf, lion and leopard do not eat plants. But they feed on herbivore animals which eat plants. If plants do not exist, if plants will not exist due to lack of food. Further wild animals cannot live as they will not be having food. Hence it is said that directly or indirectly all the living organisms depend on plants for food.

19. Fill in the blanks of the paragraph given below with the words provided in the box.

chlorophyll, energy, food, carbon dioxide, water, photosynthesis

*Note: A word can be used more than once.*

Leaves have a green pigment called (a) which captures (b) from sunlight. This (c) is used in the process of (d) and along with other raw materials like (e) and (f) synthesize (g).

Soln:

Leaves have a green pigment called Chlorophyll which captures energy from sunlight. This energy is used in the process of photosynthesis and along with other raw materials like water and carbon-di-oxide synthesize food.

20. Spot as many organisms as possible in the puzzle given as Figure 1.2 by encircling them as shown. Write the names on a sheet of paper and categorise them into autotrophs and heterotrophs. Classify the heterotrophs into herbivores, carnivores, omnivores and saprophytes.

Soln:

Number of organisms : 22

(Some examples are given. You may find the rest of the organisms.)



Autotrophs – Rose, Mango, Bhindi, Carrot, Banyan, Tulsi, Ginger, Yam

Heterotrophs – Elephant, Ant, Yeast, Tiger, Mushroom, Fox, Mice, Owl, Cow, Crow, Rabbit, Bee, Fish

Herbivores – Elephant, Cow, Rabbit, Bee

Carnivores – Fox, Tiger

Omnivores – Ant, Mice, Owl, Crow, Fish

Saprophytes – Mushroom, Yeast

**21. Can you give me a name? Solve each of the following riddles by writing the name of the organism and its mode of nutrition. One riddle is solved to help you.**

**(a) I am tall but I cannot move. I am green and can prepare my own food. tree, autotroph**

**(b) I live in water; people keep me in an aquarium and feed me. ,**

**(c) I am small and I can fly. I disturb your sleep, bite you and suck your blood which is my food. ,**

**(d) I am white and soft. I grow well in the rainy season. Children pluck me from the ground and admire me. I absorb nutrients from decomposed dead parts of plants and animals in the soil. , .**

**Soln:**

(b) fish, heterotroph

(c) mosquito, parasite

(d) mushroom, saprophyte