

SECTION A: MULTIPLE CHOICE QUESTIONS

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

Solution: (b) autotrophs

Explanation:

Organisms that create their own food using basic, naturally available ingredients are called autotrophs. In contrast,

heterotrophs depend on plants or other organisms for their food.

Parasites live on a host organism and get their food at the host's expense.

Saprophytes consume dead and decaying matter for sustenance.

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

Solution: (b) Chlorophyll

Explanation:

Leaves contain a green pigment called chlorophyll, which is essential for capturing energy from sunlight. This captured energy is then used to synthesize food from carbon dioxide and water. Without chlorophyll, this process cannot begin.

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)

Solution: (a) (i) and (iv)

Explanation: Statement (ii) is incorrect because animals are heterotrophs, not autotrophs. Statement (iii) is incorrect as carbon dioxide is a necessary component for photosynthesis to occur.

4. Pitcher plant traps insects because it...

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

Solution: (b) grows in soils which lack nitrogen.

Explanation: The pitcher plant is a carnivorous plant that often grows in nitrogen-deficient soil. While it does perform photosynthesis to produce carbohydrates, it traps and digests insects to obtain the necessary nitrogen that is missing from its environment.

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

Solution: (c) saprophytic

Explanation: Yeast, mushrooms, and bread mould are all types of fungi. They follow a

saprophytic mode of nutrition, which means they secrete digestive juices onto dead and decaying organic matter and then absorb the resulting nutrients.

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

Solution: (a) Stomata

Explanation: The tiny pores, typically found on the underside of leaves, are called stomata (singular: stoma). These openings are surrounded by guard cells and are crucial for the exchange of gases like oxygen and carbon dioxide during photosynthesis and respiration.

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

Solution: (d) symbiosis

Explanation: This type of mutually beneficial relationship where two different organisms live together is known as symbiosis.

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

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

Solution: (b) Carbon dioxide

Explanation: Plants utilize carbon dioxide from the air as a primary raw material to produce carbohydrates and oxygen during photosynthesis.

Very Short Answer Questions

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

Solution: In plants like potato and ginger, the food is prepared in the leaves and shoot system, which are above the ground. Through the process of photosynthesis, they create food and then transport it to be stored in their underground parts.

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

- Solution:** (a) Sunlight/light energy
- (b) Carbon dioxide

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?

Solution: The balsam plant was able to survive because it had food stored in its stem and roots. This stored energy allowed the plant to live for a few days without leaves and eventually sprout new ones.

12. Unscramble the following to form terms related to modes of nutrition. (i) RASPAEIT (ii) ROPEHYTSAP (iii) TOROPHAUT (iv) SIBIOMSYS

Solution: (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?

Solution: Farmers cultivating pulse crops (legumes) do not need to add nitrogenous fertilizers because these plants have a symbiotic relationship with nitrogen-fixing bacteria called *Rhizobium*, which live in their roots. This bacteria converts atmospheric nitrogen into a usable form for the plant.

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.

Solution: The carbohydrates in the wheat dough serve as nutrients for the growth of organisms like yeast and other fungi. These microorganisms break down the glucose in the dough, a process which produces substances that emit a foul smell and spoil it.

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: _____

Solution:

(a) Available in the plant: Chlorophyll

(b) Available in the soil: Water, Minerals

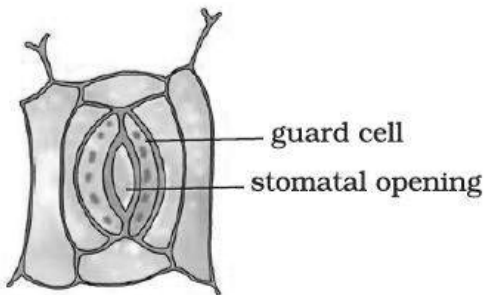
(c) Available in the air: Carbon dioxide

(d) Available during day: Sunlight

16. Observe the diagram given and label the following terms.



Solution: The diagram shows:



- Guard cell
- Stomatal opening

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 |

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Solution:

| Column I | Column II |
|------------------|------------------------|
| a) Mango tree | iii) Autotroph |
| b) Mushroom | iv) Saprophyte |
| c) Pitcher Plant | i) Insectivorous plant |
| d) Cuscuta | v) Parasitic |

| Column I | Column II |
|-------------|-----------------|
| e) Elephant | ii) Heterotroph |

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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?

Solution: No, these wild animals cannot survive without plants. Although carnivores like tigers and lions do not eat plants directly, they prey on

herbivorous animals (like deer or zebra) which are entirely dependent on plants for their food. If plants were to disappear, the herbivores would have no food and would die out. Consequently, the carnivores would also run out of food and would not be able to survive. This demonstrates that, directly or indirectly, all living organisms depend on plants for food.

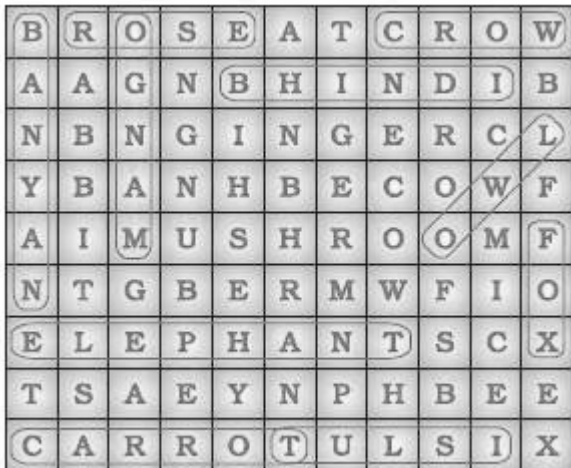
19. Fill in the blanks of the paragraph given below with the words provided in the box. (chlorophyll, energy, food, carbon dioxide, water, photosynthesis) Note: A word can be used more than once.

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) _____.

Solution: Leaves have a green pigment called (a) chlorophyll which captures (b) energy from sunlight. This

(c) energy is used in the process of (d) photosynthesis and along with other raw materials like (e) carbon dioxide and (f) water synthesize (g) food.

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



Solution:

- Autotrophs: Rose, Mango, Bhindi, Carrot, Banyan, Tulsi, Ginger, Yam
- Heterotrophs:
 - Herbivores: Elephant, Cow, Rabbit, Bee
 - Carnivores: Fox, Tiger
 - Omnivores: Ant, Crow, Fish, Mice, Owl
 - 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.

Answer: tree, autotroph

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

Answer: fish, heterotroph

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

Answer: mosquito, parasite

(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.

Answer: mushroom, saprophyte