TEACHERS FORUM®

QUESTION BANK

(solved)

Class VII

SCIENCE

SUBJECT EXPERTS

CONTENTS

1 NUTRITION IN PLANTS

IMPORTANT POINTS

Nutrition: It is the mode of taking food by an organism and its utilization by the body.

♦ Nutrients: The components of food that provide nourishement to the body.

♦ All organisms take food and utilise it to get energy for the growth and maintenance of their bodies.

♦ Green plants synthesise their food themselves by the process of photosynthesis. They are autotrophs.

♦ Photosynthesis: Green plants prepare their own food with the help of carbon dioxide and water in presence of sunlight. This process is known as photosynthesis. Chlorophyll and sunlight are the essential requirements for photosynthesis.

♦ Plants use simple chemical substances like carbon dioxide, water and minerals for the synthesis of food.

♦ Complex chemical substances such as carbohydrates are the products of photosynthesis.

♦ Solar energy is stored in the form of food in the leaves with the help of chlorophyll.

♦ Oxygen released in photosynthesis is utilised by living organisms for their survival.

♦ Fungi derive nutrition from dead, decaying matter. They are saprotrophs. Plants like Cuscuta are parasites. They take food from the host plant.

♦ A few plants and all animals are dependent on others for their nutrition and are called heterotrophs.

♦ Organisms that live on the body of other organisms are parasitic.

♦ Saprophytic: Organisms that obtain nutrition from dead and decaying plant and animal matter. Eg. Mushrooms, moulds and certain types of fungi and bacteria.

♦ Insectivorous Plants: Green plants which obtain their nourishment partly from soil and atmosphere and partly from small insects. Eg. pitcher plant, bladderwort and venus fly trap.

♦ Symbiosis: Mode of nutrition in which two different individuals associate with each other to fulfil their requirement of food. Lichens found on tree trunks is the association between alga and fungus. Algaw obtains water from fungus and it in turn obtains food from alga.

NCERT SOLUTIONS

1. Why do organisms need to take food?

Ans. Organisms need to take food to get nutrients and energy for the growth, development and maintenance of their bodies.

2. Distinguish between a parasite and a saprotroph.

Ans. Difference between a parasite and a saprotroph:

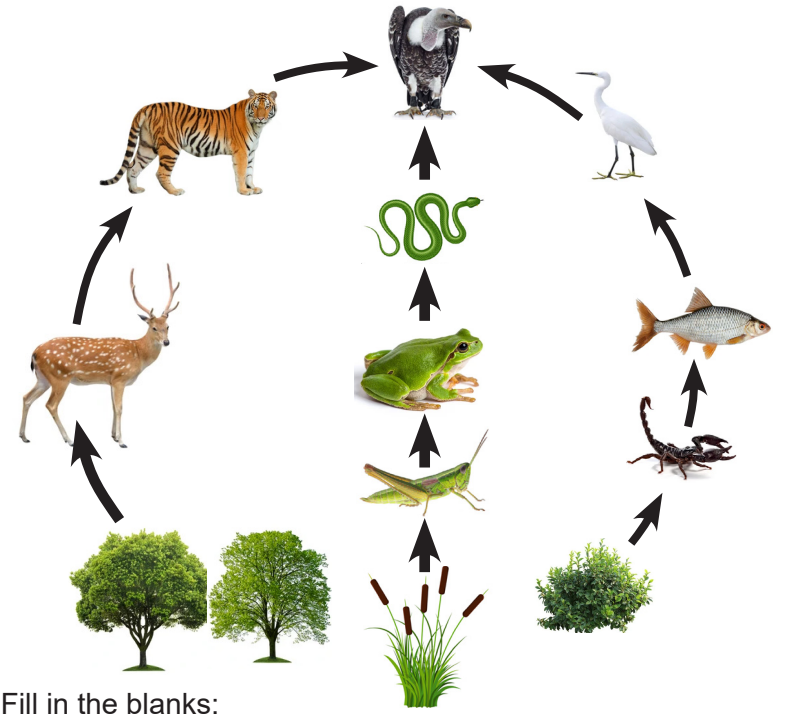
S. No.	Parasite	Saprotroph
1	Derive nutrition from the body of other living organisms.	Derive nutrition from dead and decaying organisms.
2	Example: Cuscuta, Leech	Example: Mushrooms, Fungi

4. Give a brief description of the process of synthesis of food in green plants.

Ans. The synthesis of food in plants occurs in leaves. Water and minerals absorbed by the root reaches the leaves. The leaves have a green pigment called chlorophyll which helps leaves to capture the energy of the sunlight. This energy is used to synthesise (prepare) food from carbon dioxide and water. $CO_2 + H_2O \xrightarrow{\text{sunlight}} C_6H_{12}O_6 + O_2$

5. Show with the help of a sketch that the plants are the ultimate source of food.

Ans. All the living beings depend on plants directly or indirectly. The plant eating animals depend directly on plants but carnivores depend indirectly on plants. The following sketch shows some examples of plant dependency.



6. Fill in the blanks:

(a) Green plants are called _____ since they synthesise their own food.

(b) The food synthesised by the plants is stored as _____.

(c) In photosynthesis solar energy is captured by the pigment called _____.

(d) During photosynthesis plants take in _____ and release _____.

Ans. (a) autotrophs (b) starch (c) Chlorophyll (d) carbon dioxide and release oxygen.

7. Name the following :

(i) A parasitic plant with yellow, slender and tubular stem.

(ii) A plant that has both autotrophic and heterotrophic mode of nutrition.

(iii) The pores through which leaves exchange gases.

Ans. (i) Cuscuta (ii) Pitcher plant (iii) Stomata

8. Tick the correct answer:

(a) Amarbel is an example of :

(i) autotroph (ii) parasite (iii) saprotroph (iv) host

(b) The plant which traps and feeds on insects is:

(i) cuscuta (ii) china rose (iv) pitcher plant (iv) rose

Ans. (a) (ii) parasite (b) (iv) pitcher plant.

9. Match the items given in Column I with those in Column II:

Column I	Column II
(a) Chlorophyll	(i) Bacteria
(b) Nitrogen	(ii) Heterotrophs
(c) Amarbel	(iii) Pitcher plant
(d) Animals	(iv) Leaf
(e) Insects	(v) Parasite

Ans. (a) - (iv), (b) - (i), (c) - (v), (d) - (ii), (e) - (iii)

10. Mark 'T' if the statement is true and 'F' if it is false:

(i) Carbon dioxide is released during photosynthesis. (T/F)

(ii) Plants which synthesise their food themselves are called saprotrophs. (T/F)

(iii) The product of photosynthesis is not a protein. (T/F)

(iv) Solar energy is converted into chemical energy during photosynthesis. (T/F)

Ans. (i) False (ii) False (iii) True (iv) True

11. Choose the correct option from the following:

Which part of the plant gets carbon dioxide from the air for photosynthesis.

(i) root hair (ii) stomata (iii) leaf veins (iv) sepals

Ans. (ii) Stomata

12. Plants take carbon dioxide from the atmosphere mainly through their:

(i) roots (ii) stem (iii) flowers (iv) leaves

Ans. (iv) leaves

Additional Questions and Answers

I. Choose the correct answer :-

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

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

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)

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.

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

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

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

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

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

9. Plants prepare their food by the process of

(a) Respiration (b) Photosynthesis (c) Transpiration (d) All of these.

10. Which of the following is not required by plant for food synthesis?

(a) Water (b) Oxygen (c) Carbon dioxide (d) Chlorophyll

11. To test the presence of starch by iodine, the green leaf is first boiled in alcohol to

(a) Dissolve chlorophyll (c) Remove starch

(c) Make the leaf soft (d) Make the leaf transparent

12. Which of the following is an insectivorous plant?

(a) Cuscuta (b) Croton (c) Nepenthes (d) Lichen

13. Plant eating animals are called

(a) Omnivorous (b) Carnivorous (c) Herbivorous (d) Insectivorous

14. Exchange of gases in leaves takes place through

(a) Stomata (b) Lenticels (c) Epidermis (d) Guard cells

15. The balance between CO_2 and O_2 is maintained by

(a) Respiration (b) Transpiration (c) Photosynthesis (d) Translocation

16. Which of the following is an omnivorous organism?

(a) Horse (b) Cow (c) Buffalo (c) Dog

17. Rate of photosynthesis is not dependent upon

(a) Water (b) Carbon dioxide (c) Temperature (d) Oxygen

Ans. 1. b 2. b 3. a 4. b 5. c 6. a 7. d 8. b 9. b
10. b 11. a 12. c 13. c 14. a 15. c 16. c 17. d

II. Match the following :-

1.

Column A	Column B
(a) Autotrophs	(i) Tiger
(b) Heterotrophs	(ii) Mushroom
(c) Carnivores	(iii) Cuscuta
(d) Saprophytes	(iv) Green plants
(e) Parasite	(v) Animals

2.

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

3.

Column A	Column B
(a) Herbivores	(i) Amarbel
(b) Carnivores	(ii) Yeast
(c) Omnivores	(iii) Cow
(d) Saprophytes	(iv) Lion
(e) Parasite	(v) Cat

4.

Column A	Column B
(a) Lichens	(i) Herbivores
(b) Pitcher plant	(ii) Parasitic
(c) Amarbel	(iii) Insectivores
(d) Deer	(iv) Exchange of gases
(e) Stomata	(v) Symbiotic association

Ans. 1. a - (iv), b - (v), c - (i), d - (ii), e - (iii)

2. a - (iii), b - (iv), c - (i), d - (v), e - (ii)

3. a - (iii), b - (iv), c - (v), d - (ii), e - (i)

4. a - (v), b - (iii), c - (ii), d - (i), e - (iv)

III. Fill in the blanks :-

1. Green plants are called ----------, since they synthesize their own food.
2. ---------- live on dead and decaying animals.
3. ---------- is the green coloured pigments present in leaves.
4. The food synthesized by the plants is stored as ----------.

Ans. 1. Autotrophs 2. saprophytes 3. chlorophylls 4. starch

IV. Write True or False :-

1. Green plants prepare their food hence they are Autotrophs.
2. Carbon dioxide gas is released in the process of photosynthesis.
3. Carnivores are flesh eating animals.
4. Minute pores on the leaf surface are called stomata.
5. Cuscuta is an insectivorous plant.
6. Plants obtain nitrogen from soil.
7. Human being is an omnivorous organism.
8. Solar energy is captured by leaves.
9. Mushroom is a saprophytic organism.

Ans. 1. True 2. False 3. True 4. True 5. False
6. True 7. True 8. True 9. True

V. Answer the following :-

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

Ans. In both the plants, shoot system and leaves are above ground. They prepare food through photosynthesis and transport it to the underground parts for storage.

2. 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?

Ans. The plant survived on the food stored in the stem and roots.

3. Unscramble the following to form terms related to modes of nutrition.

(i) RASPAEIT (ii) ROPEHYTSAP (iii) TOROPHAUT (iv) SIBIOMSYS

Ans. (i) PARASITE (ii) SAPROPHYTE (iii) AUTOTROPH (iv) SYMBIOSIS

4. 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?

Ans. Roots of pulses (leguminous plants) have a symbiotic association with a bacterium called Rhizobium which fixes nitrogen. Hence, farmers need not use nitrogenous fertilizers.

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

Ans. Carbohydrates in wheat dough encourage growth of yeast and other saprophytic fungi which break down carbohydrates and emit a foul smell.

6. 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 : _____

Ans. (a) chlorophyll (b) water, minerals (c) carbon dioxide (d) sunlight

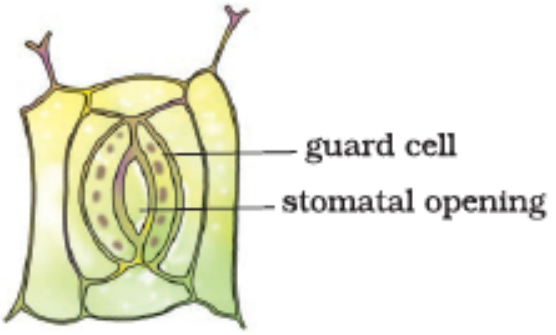
7. Wild animals like tiger, wolf, lion and leopard do not eat plants. Does this mean that they can survive without plants? Can you provide a suitable explanation?

Ans. It is true that these animals do not eat plants. They hunt and eat herbivorous animals like deer, gaur, bison, zebra, giraffe, etc. which are dependent on plants for food. If there are no plants, herbivorous animals will not survive in this case animals like tiger, wolf, lion and leopard will have nothing to eat.

8. Observe the diagram given as Figure and label the following terms given in the box.

stomatal opening, guard cell

Ans.



9. 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) _____ .

Ans. (a) chlorophyll (b) energy

(c) energy (d) photosynthesis

(e) carbon dioxide (f) water (g) food/carbohydrates

10. 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.

eg : I am tall but I cannot move. I am green and can prepare my own food. tree, autotroph

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

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

(c) 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. _____ , _____

Ans. (a) fish, heterotroph

(b) mosquito, parasite

(c) mushroom, saprophyte

11. What is the mode of nutrition in plants?

Ans. The mode of nutrition in plants is autotrophic. Plants prepare their food by the process of photosynthesis.

12. Why green leaf is boiled in alcohol before testing it for starch.

Ans. Green leaf is boiled in alcohols for testing the starch to dissolve the chlorophyll present in the leaves. After boiling in alcohols leaf will lose its green colour.

13. Observe the diagrams of organisms given below. Name them and write their category.

(A)

(B)

(C)

Ans. (A) Name - Mushroom. Category - Saprophytes.

(B) Name - Pitcher plant. Category - Insectivores.

(C) Name - Cuscuta. Category - Parasites.

14. What are Heterotrophs? Give two examples.

Ans. The living organisms that obtain their food directly or indirectly from plants are called Heterotrophs. It includes all animals, human, dog and horse.

15. What are nutrients? Name main nutrients.

Ans. The components of food that provides us energy to work, to grow and gives us resistance against disease are called nutrients.

Main nutrients are carbohydrates, fats, proteins, vitamins and minerals,

16. Why is sun said to be ultimate source of energy?

Ans. Sun is the ultimate source of energy as all organisms obtain their food from plants and plants obtain energy from sun during photosynthesis. The energy present in coal and petroleum are also from sun.

17. Name the following.

(a) A parasitic plant which is devoid of leaves, having yellow, slender tubular stem.

(b) A solution used to test the presence of carbohydrates.

(c) A plant that has both autotrophic and heterotrophic nutrition.

(d) The process by which organism obtain energy from the digested food.

Ans. (a) Cuscuta (b) Iodine solution

(c) Pitcher plant (d) Respiration.

18. What is parasitic nutrition? Give two examples.

Ans. It is a type of heterotrophic nutrition in which one organism obtains their food from other organism by harming them but not killing. The organism that obtains food is called parasite and other organism is called host.

Eg: Cuscuta, mosquito

19. Name the raw materials required for photosynthesis.

Ans. (a) Carbon dioxide (b) Water (c) Chlorophyll (d) Sunlight

20. Classify the following organism as herbivores, carnivores and omnivores.

Dog, Cat, Human beings, Elephant, Crow, Cow, horse, deer, Tiger, Lion.

Herbivores	Carnivores	Omnivores
Elephant	Tiger	Dog
Horse	Lion	Cat
Cow		Human beings
Deer		Crow

SELF ASSESSMENT TEST

Choose the correct answer :

1. Which one is an insectivorous plant?

(a) Banyan tree (b) Cuscuta

(c) Pitcher plant (d) Neem plant

2. In the process of photosynthesis, the gas given out by green leaves is

(a) Oxygen (b) Carbon dioxide

(c) Nitrogen (d) Ozone

3. Green pigments present in the leaves are called

(a) Leucoplasts (b) Chloroplasts

(c) Chromoplast (d) Amphiplast

4. Which one is saprophytic organism?

(a) Neem plant (b) Mushroom (c) Cuscuta (d) Pitcher plant.

5. Insectivorous plants are found mostly in areas which are

(a) Dry and sandy (b) Wet and marshy

(c) Nitrogen deficient (d) Nitrogen rich

Fill in the blanks :

6. ---------- is the ultimate source of energy.

7. Gas released during photosynthesis is ----------.

Match the following :

8.

Column A	Column B
(a) Exchange of gases	(i) Rhizobium
(b) Nitrogen	(ii) Chlorophyll
(c) Autotrophs	(iii) Stomata
(d) Omnivores	(iv) Green plants
(e) Photosynthesis	(v) Bear

Answer the Following :

9. What is photosynthesis?

10. What are insectivorous plants? Give two examples.

11. Why do organisms need to take food?

12. What is symbiotic relationship? How it benefits the organisms?

ANSWERS

1. (c) Pitcher plant 2. (a) Oxygen 3. (b) Chloroplasts

4. (b) Mushroom 5. (c) Nitrogen deficient 6. Sun

7. Oxygen

8.

Column A	Column B
(a) Exchange of gases	(iii) Stomata
(b) Nitrogen	(i) Rhizobium
(c) Autotrophs	(iv) Green plants
(d) Omnivores	(v) Bear
(e) Photosynthesis	(ii) Chlorophyll

9. The process by which green plants synthesis their food using sunlight, carbohydrates, water and chlorophyll is called photosynthesis.

10. Those plants that eat insects by trapping them are called insectivorous plants. They obtain protein from insects. Eg :- Pitcher plants and Drosophila.

11. Organisms need food to obtain energy for various metabolic activities and to maintain the body parts from wear and tear. It also provides nutrients for protection against the disease.

12. It is the relationship between two organisms in which both organisms get benefited from each other. Symbiotic relationship between algae and fungi is called lichen.