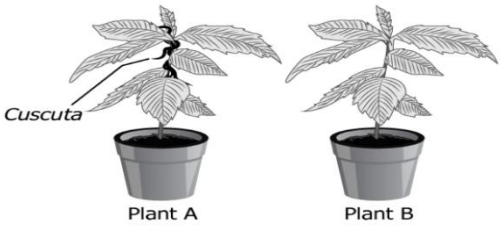
INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VII	**DEPARTMENT: SCIENCE 2025-26**	**DATE: 01/05/2025**
WORKSHEET NO: 2	**TOPIC: NUTRITION IN PLANTS**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS:

1. Cuscuta is a yellow wiry branched structure that climbs on other plants as it lacks chlorophyll. A student sets up an experiment using two potted plants, one with Cuscuta and the other without it as shown. Which of these plants will show more growth?



a) Plant A, as Cuscuta provides valuable nutrients to host plants for photosynthesis.
b) Plant B, as Cuscuta shares the chlorophyll of the host plants to synthesise its food.
c) Plant B, as Cuscuta uses readymade food of plant A that weakens the host plant.
d) Plant A, as Cuscuta shares its readymade food with host plant to increase their combined growth.

2. How does photosynthesis help to maintain the percentage of oxygen and carbon dioxide in the atmosphere?
a) By giving off carbon dioxide and absorbing oxygen.
b) By giving off oxygen and absorbing carbon dioxide.
c) By releasing oxygen and carbon dioxide.
d) By absorbing oxygen and carbon dioxide.

3. Take a potted plant. Put it in a cardboard box and close the box. Make a hole on one side of the cardboard box in such a way that light enters only through the hole. Keep watering the plant regularly for a few days. Which of the following statements is correct regarding the response of the plant?

a) The plant would grow upright because it is getting all the essential requirements for its growth.
b) The plant would bend towards the hole because the plant responds to light.
c) The plant would grow upright because it is getting direct sunlight.
d) The plant would bend towards the hole because it has to exchange gases through the hole.

4. The food synthesised by green plants is stored as:

a) Sugar

b) Starch

c) Iodine

d) Fats

5. The table shows the mode of nutrition in two different organisms.

What is the likely mode of nutrition of the organisms?

Organism 1	Utilises raw material from surroundings to prepare its own food.
Organism 2	Consumes food prepared by organism 1.

a) Organism 1 - autotrophic, Organism 2 - autotrophic

b) Organism 1 - autotrophic, Organism 2 - heterotrophic

c) Organism 1- heterotrophic, Organism 2 - autotrophic

d) Organism 1 - heterotrophic, Organism 2 - heterotrophic

6. A farmer observes the growth of Rhizobium on the roots of a leguminous plant. How will this likely to benefit the farmer?

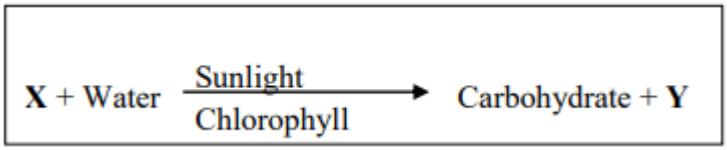
a) It will increase the growth of unwanted plants.

b) It will increase the use of pesticides in the field.

c) It will reduce the need of nitrogen fertilizers in the field.

d) It will increase the growth of insects.

7. The X and Y in the given equation represent:



a) X- carbon dioxide; Y- oxygen

b) X- oxygen; Y- carbon dioxide

c) X – carbon dioxide; Y- hydrogen

d) X- carbon; Y- oxygen

For question numbers 8-10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below -

i) Both A and R are true and R is the correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion.
iii) A is true but R is false.
iv) A is false but R is true.

8. **Assertion (A):** Mushrooms are saprotrophs.

Reason (R): Mushrooms absorb nutrients from dead and decaying matter.

9. **Assertion (A):** Lichens are a symbiotic association of algae and fungi.

Reason (R): The fungus supplies food to the algae and, in return, the algae supply water and minerals to the fungus.

10. **Assertion (A):** Plants convert light energy into chemical energy during the process of photosynthesis.

Reason (R): Chlorophyll traps sunlight for photosynthesis.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. Explain the structure of a cell.

[Hint- The units which constitute the bodies of living organisms are called cells. The cell is enclosed by a thin outer boundary, called the cell membrane. Most cells have a distinct, centrally located spherical structure called the nucleus. The nucleus is surrounded by a jelly-like substance called cytoplasm.]

2. Write the difference between autotrophic and heterotrophic nutrition.

[Hint: The mode of nutrition in which organisms make their own food using inorganic materials such as carbon dioxide, water and minerals is called autotrophic nutrition. The mode of nutrition in which organisms do not prepare their own food but are directly or indirectly dependent on plants for food is called heterotrophic nutrition.]

3. A person observes that some plants have deep red, violet and brown-coloured leaves. Can these leaves carry out photosynthesis? Give reason for your answer.

[Hint: Yes, plants having deep red-, violet or brown-coloured leaves can also carry out photosynthesis because they contain chlorophyll. But the green colour of chlorophyll is masked by the large amount of all other coloured pigments.]

4. Justify- "Fungi can be useful as well as harmful."

[Hint: Many fungi like yeast and mushrooms are useful. Mushroom is eaten as vegetables and yeast is used in baking. Some fungi can cause diseases in crops and humans.]

5. Define the terms Host and Parasite.

[Hint: Hosts are those organisms on which parasites grow and absorb nutrients. Parasites are organisms that grow on the body of other living organisms (hosts) and derive nutrients from them.]

6. What would happen in the absence of photosynthesis?

[Hint: There would be no plants in the absence of photosynthesis. In the absence of plants, survival of other living organisms would not be possible as they are directly or indirectly dependent on the food made by the plants. Also, oxygen which is a byproduct of photosynthesis would not be released into the atmosphere for the survival of all living organisms.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. Give reasons for the following statements:

a. The sun is the ultimate source of energy for all living organisms.

[Hint: Plants convert light energy from the sun into chemical energy (food) by the process of photosynthesis. All animals directly or indirectly depend on plants for their food.]

b. Cuscuta is categorised as a parasite.

[Hint: Cuscuta doesn't have chlorophyll. It takes readymade food from the plant on which it climbs. It deprives its host of valuable nutrients.]

c. Mushrooms cannot prepare its own food.

[Hint- Chlorophyll is absent in mushrooms.]

2. How do fungi and algae in lichens benefit each other? What is their relationship called?

[Hint: Some organisms live together to share shelter and food. These are said to have a symbiotic relationship. Lichen is an association between algae and fungi. Algae contains chlorophyll and provides food and nutrition to the fungus, while the fungus provides water, minerals and shelter to the algae.]

3. a) What do you understand by the term photosynthesis?

[Hint: The process by which green plants make their own food (Glucose) from carbon dioxide, water and minerals by using sunlight, in the presence of chlorophyll is called photosynthesis.]

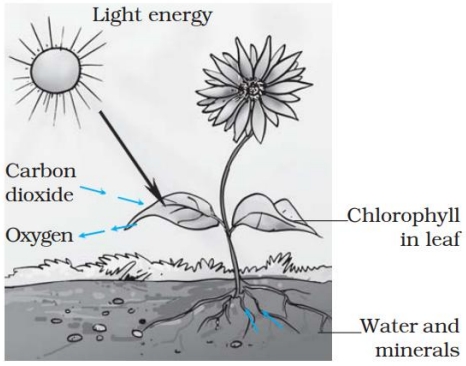
b) Write the word equation for it.

Sunlight

Carbon dioxide + Water ⟶ Carbohydrate + Oxygen

Chlorophyll (Glucose)

c) Draw a neat labelled diagram showing Photosynthesis.



4. Explain the symbiotic association found in rhizobium bacteria and legumes.

[Hint: Rhizobium bacteria are present in the soil and can convert nitrogen present in the air into a soluble form that can be consumed by the plants. But Rhizobium cannot make its own food. It generally lives in the roots of plants such as peas, beans and other legumes and provides nitrogen to these plants. In return, the plants provide food and shelter to the bacteria. This is an example of a symbiotic relationship.]

5. Can we say that the insectivorous plants are partial heterotrophs? Explain.

[Hint: Yes, Insectivorous plants have green leaves and can perform photosynthesis to prepare their own food. but they grow in nitrogen deficient soil. So, they feed on insects to obtain nitrogen compounds needed for their growth.]

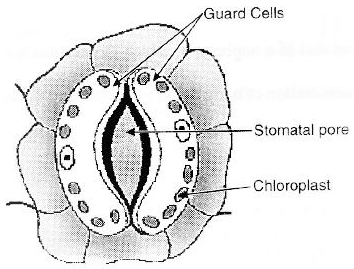
6. a) What are stomata and mention their role in plants?

[Hint: Stomata are the numerous small openings present on the lower surface of a leaf. The stomata help in the exchange of gases. During photosynthesis, carbon dioxide goes in and oxygen is released.]

b) What is the function of guard cells of stomata?

[Hint: Guard cells control the opening and closing of stomata for gaseous exchange.]

c) Draw a neat and labelled diagram of structure of stomata.



IV.LONG ANSWER TYPE QUESTIONS (5M):

1. How does a pitcher plant get its nutrition? Explain.

[Hint: The pitcher plant is green in colour and carries out photosynthesis. The nitrogen requirement of pitcher plant is provided by the insects which these plants capture. Pitcher plants have a pitcher-like structure which is a modified part of the leaf. The apex of the leaf forms a lid which can open or close the mouth of the pitcher. When an insect lands in the pitcher, the lid closes and the trapped insect gets entangled in the hair inside the pitcher. The insect is then digested by the digestive juices secreted in the pitcher.]

2. How would you test the presence of starch in leaves?

[Hint: The presence of starch in leaves can be tested by iodine test. Take a leaf in a test tube, immerse it in alcohol and place the test tube in a beaker filled with water. Heat the water in the beaker till all the green colour from the leaf comes out. Take out the leaf carefully and wash it in water. Place it on a watch glass and add two drops of iodine solution. If its colour changes to blue black, then it indicates the presence of starch.]

V. CASE STUDY- BASED / PASSAGE BASED QUESTIONS:

All living organisms require food. Nutrition is the mode of taking food by an organism and its utilisation by the body. The nutrients enable living organisms to build their bodies, to grow, to repair damaged parts of their bodies and provide the energy to carry out life processes. Plants can synthesise food for themselves but animals including humans cannot. They get it from plants or animals that eat plants. Thus, humans and animals are directly or indirectly dependent on plants. Plants are the only organisms that can prepare food for themselves by using water, carbon dioxide and minerals. The raw materials are present in their surroundings. Plants absorb minerals and nutrients from the soil. So, their amount in the soil keep on declining. Fertilisers and manures contain nutrients such as nitrogen, potassium, phosphorous, etc. These nutrients need to

be added from time to time to enrich the soil. We can grow plants and keep them healthy if we can fulfil the nutrient requirement of plants.

i) How do humans and animals obtain their nutrition?

[Hint: Humans and animals get their nutrition from plants or from animals that eat plants.]

ii) What is nutrition? How are nutrients helpful to living organisms?

[Hint: Nutrition is the mode of taking food by an organism and its utilisation by the body. The nutrients enable living organisms to build their bodies, to grow, to repair damaged parts of their bodies and provide the energy to carry out life processes.]

iii) Fertilisers and manures need to be added to the fields or gardens from time to time. Why?

[Hint: Plants absorb minerals and nutrients from the soil. So, their amount in the soil keep on declining. Fertilisers and manures contain nutrients such as nitrogen, potassium, phosphorous etc. These nutrients need to be added from time to time to enrich the soil.]

ANSWERS FOR OBJECTIVE TYPE QUESTIONS (1 to 10)

1.(c) 2. (b) 3. (b) 4. (b) 5.(b) 6.(c) 7.(a) 8.(i) 9.(iii) 10.(ii)

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