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परमाणु ऊर्जा शिक्षण संस्था, मुंबई

Atomic Energy Education Society

Session: 2023 – 24

CLASS- **VII** SUBJECT : **SCIENCE**

WORKSHEET No. – **1 ANSWER KEY**

Name of the Chapter: **Nutrition in Plants**

I. Choose the correct option:- (1 x 10 = 10M)

1. b. Chlorophyll
2. a. Rhizobium
3. d. Cuscuta
4. a. Pitcher plant
5. c. Oxygen
6. b. Saprotrophic
7. a. Symbiosis
8. a. An autotroph and a saprotroph
9. c. Fungi
10. b. Carbon dioxide

II Answer in one sentence. (1 x 10 = 10M)

1. Plants prepare their own food using carbon dioxide and water in presence of sunlight and chlorophyll by the process of photosynthesis.
2. Our body can have the raw materials required for the synthesis of food but our body does not have chlorophyll which can capture the energy of sunlight.
3. Water and minerals are transported to the leaves by the vessels called xylem which run like pipes throughout the root, the stem, the branches and the leaves.
4. The plants fulfil their requirements of nitrogen along with the other constituents using the fertilisers and can then synthesise proteins and vitamins.

5. Yes, the leaves other than green also have chlorophyll. The large amount of red, brown and other pigments mask the green colour.

6. The slimy and green patches in ponds or in other stagnant water bodies are formed by the growth of algae.

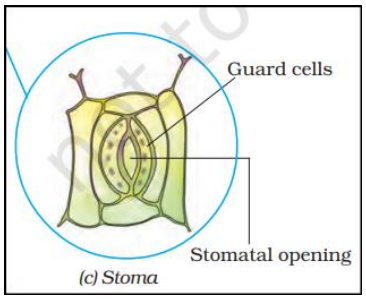
7. Mosquitoes, bed bugs, lice and leeches

8. The pitcher plant is green and carries out photosynthesis but it does not get all the required nutrients from the soil. So, it feeds on insects.

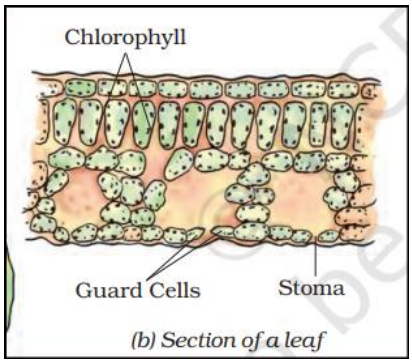
9. Cuscuta (Amarbel) does not have chlorophyll. It takes readymade food from the plant on which it is climbing and deprives the host of valuable nutrients. So, it is called a parasite.

10. Pickles, leather, clothes, shoes

III Answer in two to three sentences. (2 x 10 = 20M)

1. All living organisms need food for energy. Plants can make their own food but animals cannot. Food is necessary for all the organisms. So, all the animals directly or indirectly depend upon the plants for their food.
2. Functions of food:
   (i) It provides energy for doing physical work.
   (ii) It helps in the growth and development of the body.
   (iii) It helps to repair damaged tissues.
   (iv) It protects our body from diseases.
3. The bodies of living organisms are made of tiny units 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.
4. 

5. Insectivorous plants are green and can perform photosynthesis. So, they are called autotrophs.
   But they also can trap insects and digest them. Due to this, they are called partial heterotrophs.

6. 

7. The desert plants have scale- or spine-like leaves to reduce loss of water by transpiration. These plants have green stems which carry out photosynthesis.
8. Farmers add nitrogen containing manure or fertilisers to the soil to replenish the nutrients. Growing pulses in the soil replenishes nitrogen in the soil thus making the soil healthier.
9. Distinguish between Saprophytes and Parasites

Sr. No.	Saprophytes	Parasites
1	They obtain nutrition from dead and decaying plants and animals.	They obtain nutrition from the body of other organisms.
2	Example: Mushroom, mould, etc	Example: Dodder, Cuscuta, etc.

10. Write the differences between autotrophic and heterotrophic mode of nutrition.

Sr. No.	Autotrophic mode of nutrition.	Heterotrophic mode of nutrition.
1	These are plants that make their own food.	These depend on food made by plants.
2	They contain the green pigment chlorophyll.	These do not have any green pigment.
3	Example: All green plants.	Example: Deer, camel, etc.

III Answer in three to four sentences. (3 x 5 = 15M)

1. i. Autotrophic mode of nutrition: The mode of nutrition in which organisms make their own food themselves from simple substances is called autotrophic mode of nutrition. For example: green plants.

ii. Heterotrophic mode of nutrition: The mode of nutrition in which the organisms cannot make their own food but depend on plants and other organisms for their foods is called heterotrophic mode of nutrition. For example: humans and other animals.

2. Plants absorb the minerals and other nutrients from the soil. So the amount of these substances are decreased in the soil. Fertilisers and manures contain nutrients like nitrogen, phosphorous and potassium. Therefore, to overcome the deficit of these nutrients in the soil we need to add these fertilisers and manures from time to time.

3.Usually, crops require a lot of nitrogen to make proteins. They cannot utilize the atmospheric nitrogen. They can use it in soluble form. The Rhizobium bacteria convert atmospheric nitrogen into soluble form. In this way Rhizobium play an important role for the farmers because it helps farmers to save fertilisers and manures.

4.It is the mode of nutrition where two organisms live together for mutual benefit. For example, lichens. The association of algae and fungi is called lichen. Alga survives in water. Its need for water is fulfilled by the fungus which in turn consumes the food made by alga. The fungus in turn gives to the alga, water and minerals it obtains from the substratum on which it lives. This association of algae and fungi makes them look as if they are one single organism..

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

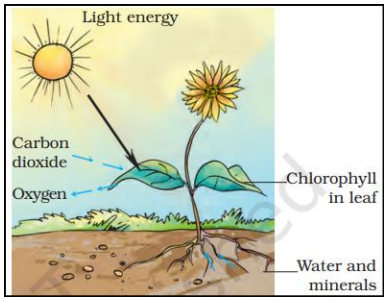
III Answer the following. (5 x 5 = 25 M)

1. (a)

(b) Autotrophic and Heterotrophic both

(c) partial heterotroph

2. (a) Draw a schematic diagram showing photosynthesis.



(b) Carbohydrates and oxygen

(c) All plants cannot do photosynthesis, only green plants can do photosynthesis.

3. The leaves of Lid the pitcher plants are modified into a pitcher like structure. The apex of the leaves form a lid which can open and close the mouth of the pitcher like structure of the leaves. Inside the pitcher there are hair which are directed downwards. When an insect lands in the pitcher the lid closes and the trapped insect gets entangled into the hair. The insect is digested by the digestive juices secreted in the pitcher. Such insect eating plants are called insectivorous plants. Such plants do not get all the required nutrients from the soil. So, they are called partial heterotrophs..

4. The presence of starch in leaves can be tested by Iodine test.

(i) Take two potted plants of the same kind.

(ii) Keep one in the dark (or in a black box) for 72 hours and the other in the sunlight.

(iii) Take one leaf from each of the plants.

(iv) Remove chlorophyll from leaf by boiling it in alcohol.

(v) Put few drops of iodine solution on each of the leaves.

(vi) The leaf kept in the sunlight will turn blue—black due to presence of starch. The leaf kept in the dark will not turn blue—black because of absence of starch.

5. (a) Fungus are non-green plants that grow on dead and decaying matter for their food.

(b) Fungus are also useful as it can cure different type of infections.

(c) Fungi like yeast and mushrooms are useful.

(d) Vivek is sincere, curious and knowledge with a keen sense of applying it where necessary.