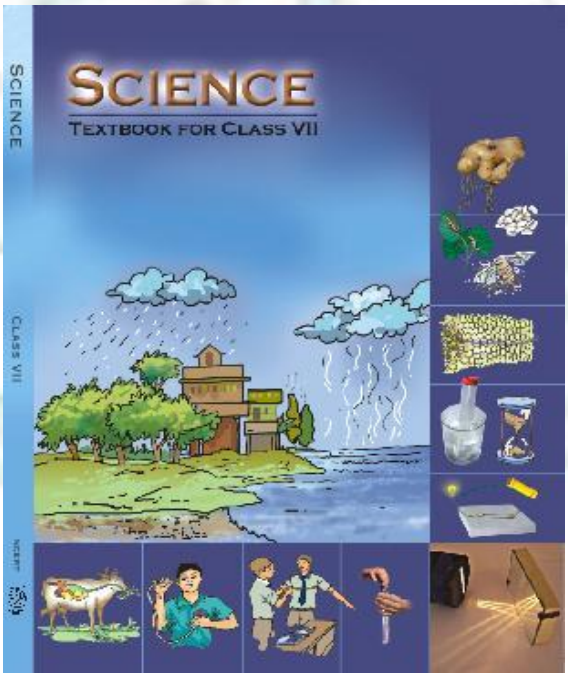
# पुष्पना International School

Shree Swaminarayan Gurukul, Zundal

# CLASS – VII

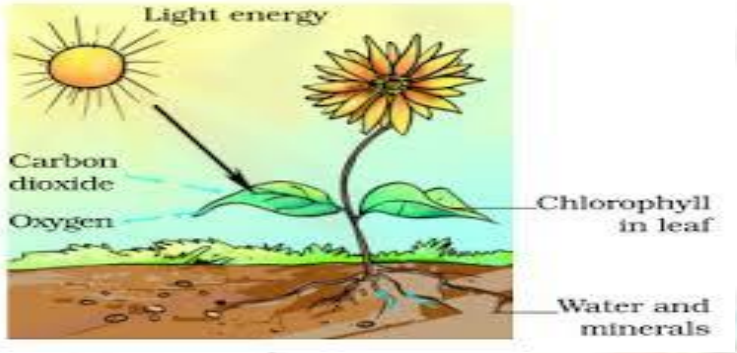
# Sub – SCIENCE

## APRIL MONTH



# CHAPTER – 1
# Nutrition in plants

- **Key words :-**
- **Nutrition:** It is the mode of taking food by an organism and its utilization by the body.
- **Nutrients:** The components of food that provide nourishment to the body.
- **Photosynthesis**: Green plants prepare their own food with the help of **chlorophyll (found in green plants),** carbon dioxide and water taken from the environment in presence of sunlight . This process is known as photosynthesis.




- All parasitic plants feed on other plants as either:
  (i) **Partial Parasites:** Obtain some of their nutrition from the host, e.g. painted cup
  (ii) **Total Parasites:** dependent completely on the host for nutrition, e.g. mistletoe.
- **Saprophytic:** Organisms that obtain nutrition from dead and decaying plant and animal matter.

- **Insectivorous Plants:** Green plants which obtain their nourishment partly from soil and atmosphere and partly from small insects. Example: 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 algae and fungus. Algae obtains water from fungus and it in turn obtains food from algae.

**EXTRA QUESTION ANSWERS**

**VERY SHORT QUESTION:-**

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

**Ans.** Organisms which prepare food for themselves using simple naturally available raw materials are referred to as autotrophs (auto = self; trophos = nourishment).

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

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

**Ans.** Fungi secrete digestive juices on dead and decaying materials and convert them into a solution from which they absorb the nutrients. This mode of nutrition is known as saprophytic nutrition.

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

**Ans.** Carbon-dioxide present in air is required for photosynthesis.

**5. 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 lie above ground where the entire process of photosynthesis takes place and the final food is transported to the underground parts for storage.

**6. 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. The bacterium can take atmospheric nitrogen and convert it into a soluble form. But Rhizobium cannot make its own food. So it lives in the roots of these legumes and provides them with nitrogen accomplishing the symbiosis. Hence farmers need not apply nitrogenous fertilizers during the cultivation of legumes.

7**. 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.

**8. 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

**LONG ANSWER QUESTIONS**

**1. 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 which case animals like tiger, wolf, lion and leopard will have nothing to eat. So, indirectly carnivorous animals are also dependent on plants for their survival.

**EXERCISE QUESTION ANSWERS:-**

**Question 1.** Why do organisms need to take food?

**Answer:** Organism needs food to
(i) Get energy to do work.
(ii) Build body
(iii) Repair damage in the body
(iv) Maintain the functions of the body

**Question 2.** Distinguish between a parasite and saprophyte.

**Answer:**

| Parasite | Saprotroph |
|---|---|
| The organism that grows on the body of another organism and derives nutrients from it is known as a parasite | The organism that obtains nutrients from the dead or decaying organic matter is called saprotroph. |
| They directly feed on living organisms for their nutrition. | They feed on dead and decaying organism. |
| They take the readymade food from the host. | They take the digested and decayed food. |

| | |
|---|---|
| Examples: Cuscuta and orchids | Examples: Fungi and some bacteria. |

**Question 3.** How would you test the presence of starch in leaves?

**Answer:** Steps to test the presence of starch in leaves :
Step 1: A fresh leaf is taken.
Step 2: The leaf is boiled in water for few minutes to kill the cells in the leaf.
Step 3: Now, dip this leaf in iodine solution.
Step 4: The color of the leaf will changes into blue black color when iodine is added to it which shows the presence of starch in it.

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

**Answer:** Photosynthesis is the process synthesis of food in the plants with the help of chlorophyll and carbon dioxide in the presence of sunlight. Water and minerals present in the soil are absorbed by the roots and transported to the leaves by the vessels.
Carbon dioxide from air is taken through stomata present in leaves. Leaves are the food factories of the plants which capture the energy of the sunlight with the help of chlorophyll. This energy is used to synthesize food from carbon dioxide and water.


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

**Answer:**


**Question 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 ----------.

**Answer:** Fill in the blanks:
(a) Green plants are called **autotrophs** since they synthesise their own food.
(b) The food synthesised by the plants is stored as **starch**.
(c) In photosynthesis solar energy is captured by the pigment called **chlorophyll**.
(d) During photosynthesis plants take in **carbon dioxide** and release **oxygen**.

**Question 7.** Name the following:
(a) A parasitic plant with yellow, slender and tubular stem.

(b) A plant that has both autotrophic and heterotrophic mode of nutrition.
(c) The pores through which leaves exchange gases.

**Answer:** (i) Cuscuta
(ii) Insectivorous plants
(iii) Stomata

**Question 8.** Tick the correct answer:
**(a)** Amarbel is an example of :
(i) Autotroph
(ii) Parasite
(iii) Saprophyte
(iv) Host

**(b)** The plant which traps and feeds on insects is:
(i) Cuscuta
(ii) China rose
(iii) Pitcher plant
(iv) Rose

**Answer:**(a) (ii) parasite (b) (iii) Pitcher plant

**Question 9.** Match the item in given column I with those in column II.

| Column I | Column II |
|---|---|
| Chlorophyll | Bacteria |
| Nitrogen | Heterotrophs |
| Amarbel | Pitcher plant |
| Animals | Leaf |
| Insects | Parasite |

**Answer:**

| Column I | Column II |
|---|---|
| Chlorophyll | Leaf |
| Nitrogen | Bacteria |
| Amarbel | Parasite |
| Animals | Heterotrophs |
| Insects | Pitcher plant |

**Question 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 synthesis 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)

**Answer:** (i) F (ii) F (iii) T (iv) T

**Question 11.** Choose the correct option from the following:
Which part of plant takes in carbon dioxide from the air for photosynthesis?

(i) Root hair
(ii) Stomata
(iii) Leaf veins
(iv) Sepals

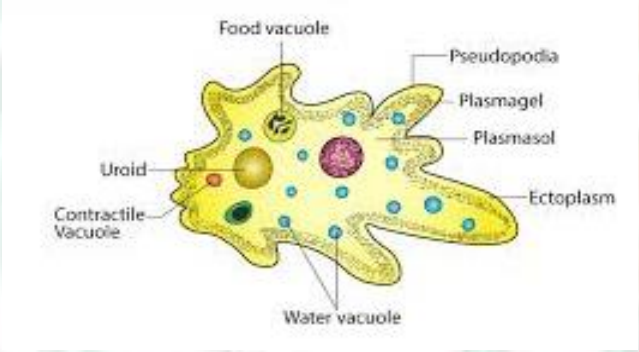
**Answer:** (ii) Stomata

**Question 12.** Choose the correct option from the following:
Plants take carbon dioxide from the atmosphere mainly through their:
(i) Roots
(ii) Stem
(iii) Flowers
(iv) Leaves

**Answer:** (iv) leaves

## Chapter – 2
## Nutrition in Animals

- **Key words:-**
- **Classification based on Eating Habits:**
  (i) **Herbivorous: A**nimals that eat plants or plant products. Example: cow, sheep, goat, deer, elephant, kangaroo, giraffe, etc.
  (ii) **Carnivorous:** Animals that eat only flesh of other animals. They never eat plants. Example: tiger, lizard, lion, etc.
  (iii) **Omnivorous:** Animals consume plants as well as other animals as their food. Example: bear, dog, human being, etc.
  (iv) **Parasites:** Organisms that obtain their food from other animals either by living inside (endoparasites) or outside (ectoparasites) their body. Example: tapeworm and roundworm (inside body), tick and lice (outside body).
- (v) **Scavengers:** Animals which feed on the remains of dead animals preyed by predators. Example: vulture, crows, jackal, etc.
- **Amoeba** ingests its food with the help of its false feet or pseudopodia. The food is digested in the food vacuole. It pushes out finger-like pseudopodia which engulf the prey.

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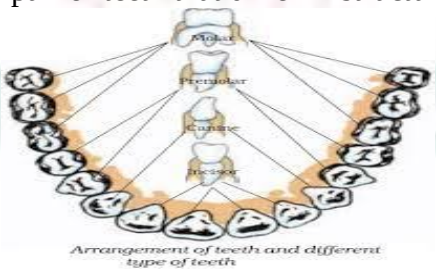
**EXTRA QUESTIONS**:-

**1. Which of the following pair of teeth differ in structure but are similar in function?**

**Ans.** Molars and premolars are the pair of teeth that differ in structure but are similar in function



Arrangement of teeth and different type of teeth

i.e. tearing and crushing the food.

**2. What is the function of acid present in the stomach ?**

**Ans.** The acid present in the stomach kills most of the bacteria entering along with the food and makes the medium in the stomach acidic and helps the digestive juices to act.

**3. The false feet of Amoeba are used for**

**Ans. (c)** Amoeba has one, or more finger-like projections, called pseudopodia or false feet that helps in movement and capture of food.

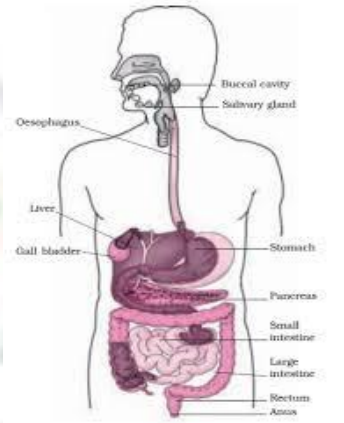
**4. The enzymes present in the saliva convert**

**Ans.** The saliva breaks down the starch into simple sugars.

**SHORT ANSWER QUESTIONS**

**1. Name the parts of the alimentary canal where**

(i) water gets absorbed from undigested food.




(ii) digested food gets absorbed.

(iii) taste of the food is perceived.

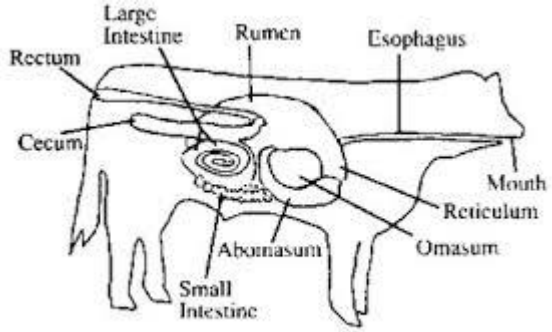
(iv) bile juice is produced.

**Ans.** (i) Large intestine (ii) Small intestine (iii) Tongue (iv) Liver

**2. Ruminants such as cows and buffaloes swallow their food hurriedly and then sit restfully and chew their food. Can you reason why?**

**Ans.** Ruminants quickly swallow the food and store it in an isolated part of the stomach called rumen where the food gets partially digested and is called cud which later on return to the mouth

in the form of small lumps and then chewed up by animal. This process is called rumination **and**




**these animals are called rumination.**

**LONG QUESTION ANSWERS**

**1. Label the below given Figure 2.1 as directed below in (i) to (iv) and give the name of each type of teeth.**

*Fig. 2.1*

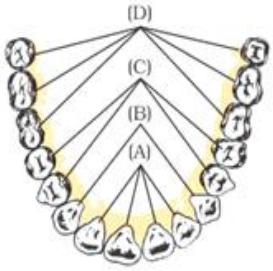
**(i) The cutting and biting teeth as 'A'**

**(ii) The piercing and tearing teeth as 'B'**

**(iii) The grinding and chewing teeth as 'C'**

**(iv) The grinding teeth present only in adult as 'D'**

**Ans.** A. Incisors B. Canines C. Premolars D. Molars



**EXERCISE :-**

**Question 1.** Fill in the blanks:

(a) The main steps of nutrition in humans are _____, _____, _____, _____ and _____ .
(b) The largest gland in the human body is _____.
(c) The stomach releases hydrochloric acid and _____ juices which act on food.
(d) The inner wall of the small intestine has many finger-like outgrowths called _____.
(e) Amoeba digests its food in the _____.

**Answer:** Fill in the blanks:
(a) The main steps of digestion in humans
are **ingestion**, **digestion**, **absorption**, **assimilation** and **egestion**.
(b) The largest gland in the human body is **liver**.
(c) The stomach releases hydrochloric acid and **digestive** juices which act on food.
(d) The inner wall of the small intestine has many finger-like outgrowths called **villi**.
(e) Amoeba digests its food in the **food vacuole**.

**Question 2.** Mark 'T' if the statement is true and "F" if it is false.

(a) Digestion of starch starts in the stomach. (T/F)
(b) The tongue helps in mixing food with saliva. (T/F)
(c) The gall bladder temporarily stores bile. (T/F)
(d) The ruminants bring back swallowed grass into their mouth and chew it for some time. (T/F)

**Answer:** (a) F (b) T (c) T (d) T

**Question 3.**Tick ( ) mark the correct answers in each of the following:

(a) Fat is completely digested in the
(i) Stomach
(ii) mouth
(iii) Small intestine
(iv) large intestine.

(b) Water from the undigested food is absorbed mainly in the
(i) stomach
(ii) food pipe
(iii) small intestine
(iv) large intestine

**Answer:** (a) (iii) small intestine. (b) (iv) large intestine.

**Question 4.** Match the item of Column I with those given in Column II.

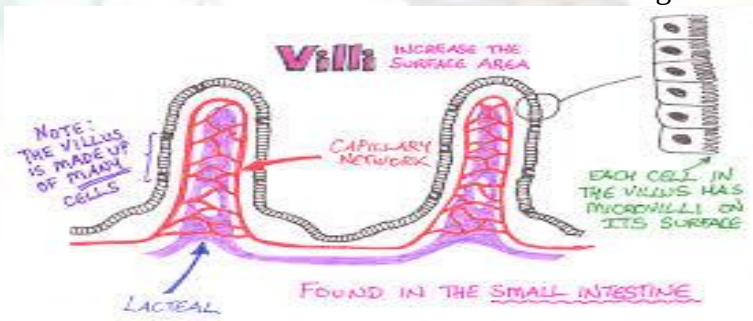
| Column I | Column II |
|---|---|
| **Food Components** | **Product of digestion** |
| Carbohydrates | Fatty acids and glycerol |
| Proteins | Sugar |
| Fats | Amino Acids |

**Answer:**

| Column I | Column II |
|---|---|
| **Food Components** | **Product of digestion** |
| Carbohydrates | Sugar |
| Proteins | Amino acids |
| Fats | Fatty acids and glycerol |

**Question 5.** What are villi? What is their location and function?

**Answer:** The inner wall of the small intestine have thousands of finger-like outgrowths. These are called villi. Villi are located in the small intestine. The villi increase the surface area for absorption of the digested food. Each villus has a network of thin and small blood vessels close to its surface. The surface of the villi absorbs the digested food materials.




**Question 6.** Where is the bile produced? Which component of the food does it digest?

**Answer:** Bile is produced in liver and stored in gall bladder. Bile juice digests fat.

**Question 7.** Name the type of carbohydrate that can be digested by ruminants but not by humans. Give the reason also.

**Answer:** Cellulose is a type of carbohydrate that can be digested by ruminants and not by humans. Ruminants have a large saclike structure called rumen between the oesophagus and the small intestine. The cellulose of the food is digested here by the action of certain bacteria which are not present in humans.

**Question 8**. Why do we get instant energy from glucose?

**Answer:** Glucose is the simplest form of carbohydrate which can be broken easily to give energy. So we get instant energy from glucose.

**Question 9.** Which part of the digestive canal is involved in :

(i) Absorption of food ----------.
(ii) Chewing of food ----------.
(iii) Killing of Bacteria ----------.
(iv) Complete digestion of food ----------.
(v) Formation of faeces ----------.

**Answer:** (i) small intestine (ii) mouth (iii) stomach (iv) small intestine
(v) large intestine

**Question 11.** Write one similarity and one difference between the nutrition in amoeba and humanbeings.

**Answer:** Similarity: Both Amoeba and human have holozoic type of nutrition.

Difference: Human beings have complex structure for the ingestion, digestion and egestion of food while Amoeba has simple process in which it engulfs the with the help of pseudopodia and food get trapped in food vacuoles.

**Question 12.** Match the items of Column I with suitable items in Column II.

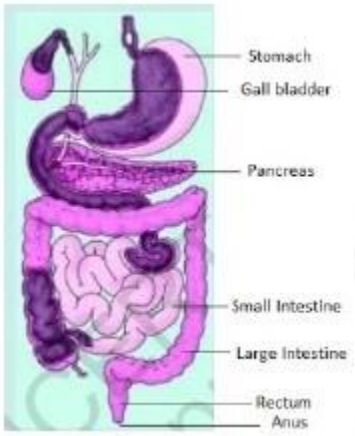
| Column I | Column II |
|---|---|
| (a) Salivary gland | (i) Bile juice secretion |
| (b) Stomach | (ii) Storage of undigested food |
| (c) Liver | (iii) Saliva secretion |
| (d) Rectum | (iv) Acid release |
| (e) Small intestine | (v) Digestion is completed |
| (f) Large intestine | (vi) Absorption of water |
| | (vii) Release of faeces. |

**Answer:**

| Column I | Column II |
|---|---|
| (a) Salivary gland | (iii) Saliva secretion |
| (b) Stomach | (iv) Acid release |
| (c) Liver | (i) Bile juice secretion |
| (d) Rectum | (ii) Storage of undigested food |
| (e) Small intestine | (v) Digestion is completed |
| (f) Large intestine | (vi) Absorption of water |
| | (vii) Release of faeces. |

**Question 13.** Label fig. 2.2 of the digestive system.

**Answer:**




**Question 14.** Can we survive only on raw, leafy vegetables/grass? Discuss.

**Answer:** No, because to live alive a healthy life we need a complete balance of all nutrients. Raw green vegetables may have cellulose which cannot be digested by us. So, only green leafy vegetables will not solve the purpose