Nutrition in Living Organisms

EXERCISE [PAGE 33]

Exercise | Q 1.01 | Page 33

Classify according to food-type: Tiger

1. **carnivore**
2. herbivore
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: tiger- carnivore

Exercise | Q 1.02 | Page 33

Classify according to food-type: Cow

1. carnivore
2. **herbivore**
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: cow- herbivore

Exercise | Q 1.03 | Page 33

Classify according to food-type: Vulture

1. carnivore
2. herbivore
3. **scavenger**
4. omnivore
5. decomposers
6. parasite

Solution: vulture- scavenger

Exercise | Q 1.04 | Page 33

Classify according to food-type: Bacteria

1. carnivore
2. herbivore
3. scavenger
4. omnivore
5. **decomposers**
6. parasite

Solution: bacteria- decomposers

Exercise | Q 1.05 | Page 33

Classify according to food-type: Deer

1. carnivore
2. **herbivore**
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: deer- herbivore

Exercise | Q 1.06 | Page 33

Classify according to food-type: Goat

1. carnivore
2. **herbivore**
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: Goat- herbivore

Exercise | Q 1.07 | Page 33

Classify according to food-type: Human

1. carnivore
2. herbivore
3. scavenger
4. **omnivore**
5. decomposers
6. parasite

Solution: human- omnivore

Exercise | Q 1.08 | Page 33

Classify according to food-type: Fungus

1. carnivore
2. herbivore
3. scavenger
4. omnivore
5. **decomposers**
6. parasite

Solution: fungus- decopmosers

Exercise | Q 1.09 | Page 33

Classify according to food-type: Lion

1. **carnivore**
2. herbivore
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: lion- carnivores

Exercise | Q 1.1 | Page 33

Classify according to food-type: Sparrow

1. carnivore
2. **herbivore**
3. scavenger

4. omnivore
5. decomposers
6. parasite

Solution: sparrow- herbivore

Exercise | Q 1.11 | Page 33

Classify according to food-type: Buffalo

1. carnivore
2. **herbivore**
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: buffalo- herbivore

Exercise | Q 1.12 | Page 33

Classify according to food-type: Frog

1. **carnivore**
2. herbivore
3. scavenger
4. omnivore
5. decomposers
6. parasite

Solution: frog- carnivore

Exercise | Q 1.13 | Page 33

Classify according to food-type: Cockroach

1. carnivore
2. herbivore
3. scavenger
4. **omnivore**
5. decomposers
6. parasite

Solution: Cockroach - omnivore

Exercise | Q 1.14 | Page 33

Classify according to food-type: Tick

1. carnivore
2. herbivore
3. scavenger
4. omnivore
5. decomposers
6. **parasite**

Solution: Tick- parasite

Exercise | Q 2 | Page 33

Match the pairs.

A		B	
1	Parasitic plant	a	Mushroom
2	Insectivorous plant	b	Lichen
3	Saprophytic plant	c	Drosera
4	Symbiotic plant	d	Cuscuta

Solution:

A		B	
1	Parasitic plant	d	Cuscuta
2	Insectivorous plant	c	Drosera
3	Saprophytic plant	a	Mushroom
4	Symbiotic plant	b	Lichen

Exercise | Q 3.1 | Page 33

Answer the following questions in your own words.

Why do living organisms need nutrition?

Solution: Nutrition is the process of uptake of nutrients from food and utilizing them for various functions of the cells. Nutrition is required for purposes like:

- supplying the energy required for doing work
- for growth and development of the body

- to fight diseases
- to replace the damaged cells and repair tissues

Exercise | Q 3.2 | Page 33

Answer the following questions in your own words.

Explain the process of production of food in plants.

Solution: Leaves are the food factories of plants. They are the sites where the synthesis of food occurs in plants. The leaves of plants contain a green pigment called chlorophyll. This pigment captures the sun's energy, which is used to prepare food from carbon dioxide and water. The process of synthesis of food using sunlight, carbon dioxide, and water is known as photosynthesis. During the process of photosynthesis, the leaves containing chlorophyll convert carbon dioxide and water into carbohydrates in the presence of sunlight. Carbohydrates, which are produced during photosynthesis, are ultimately converted into starch to be stored in plants.This process can be represented in the form of the following equation:

$$6\,CO_2 + 6\,H_2O \xrightarrow[\text{sunlight}]{\text{Chlorophyll}} \underset{\text{(Glucose)}}{C_6H_{12}O_6} + 6\,CO_2$$

Exercise | Q 3.3 | Page 33

Answer the following questions in your own words.

What is meant by parasitic plants? Name their different types with examples of each.

Solution: Cuscuta survives by growing on the body of another plant and deriving nutrients from this plant in the process. This mode of nutrition is known as parasitic mode of nutrition. Cuscuta is known as a parasite as it depends on another plant for its survival. The plant on which it grows is known as the host. Cuscuta can be seen around in the form of yellow tubular structures growing on the stems of other plants. It is devoid of leaves. Another such example of parasitic plants is Loranthus.

Exercise | Q 3.4 | Page 33

Answer the following questions in your own words.

Explain the various steps of nutrition in animals.

Solution: The various steps of nutrition in animals are:

- Ingestion − The process of taking in of food into the body is called ingestion. Ingestion of food in humans is done with the help of the buccal cavity.
- Digestion − The process where conversion of food into soluble form occurs.
- Absorption − The nutrients from the digested food are absorbed in the small intestine with the help of finger-like projections called villi.

- Assimilation − The absorbed nutrients are transported via the blood vessels to the different organs, to be utilised for different life processes.
- Egestion − The process of removal of faecal matter through the anus is called egestion.

Exercise | Q 3.5 | Page 33

Answer the following questions in your own words.

Name some unicellular organisms in which all life-processes take place within their unicellular body.

Solution: The unicellular organisms in which all life processes take place within their body are- Amoeba, Paramoecium and Euglena.

Exercise | Q 4.1 | Page 33

Give reasons: Insectivorous plants are attractively coloured.

Solution: Insectivorous plants are attractively coloured so that they can attract insects and feed upon them. Insectivorous plants grow in soil or water which are deficient in nitrogen compounds and in order to meet this deficiency, they feed on insects.

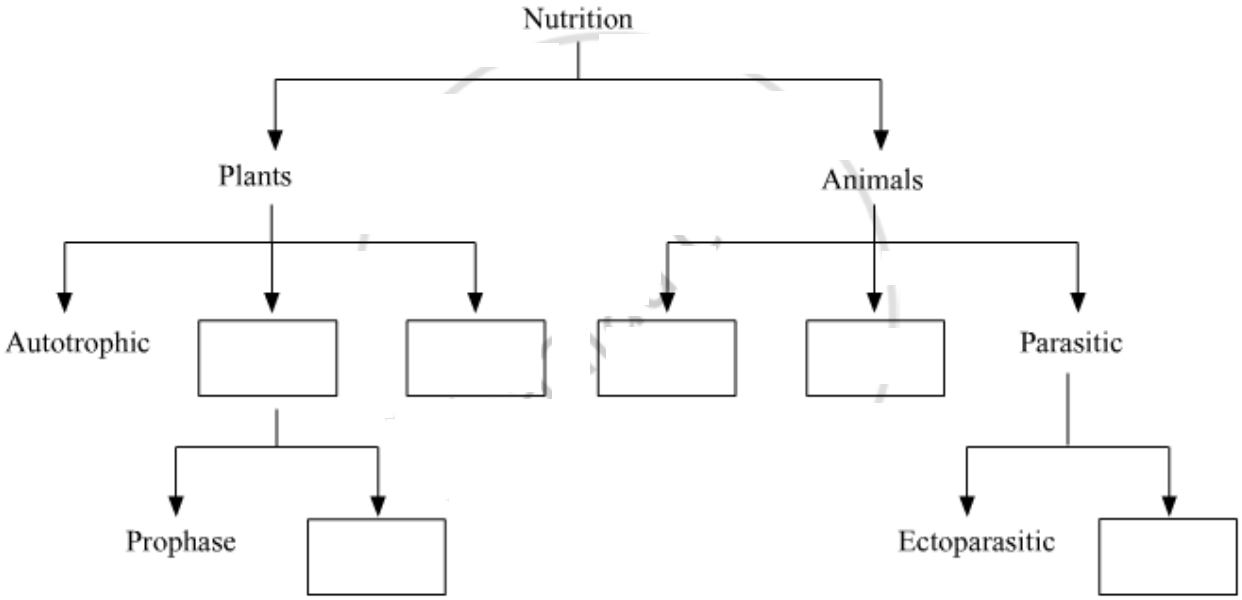
Exercise | Q 4.2 | Page 33

Give reasons: Butterflies have a long tube-like proboscis.

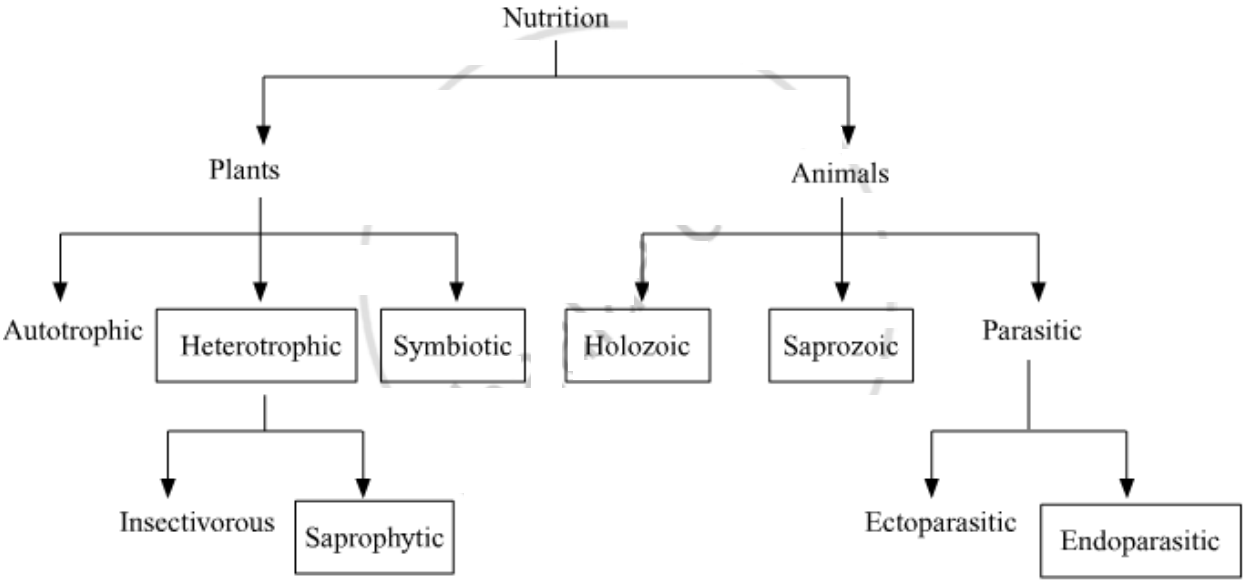
Solution: Butterflies have a long tube like proboscis which is a straw-like structure which enables them to drink juices and nectar. It is coiled-up like a garden hose when it is not in use.

Exercise | Q 5 | Page 33

Prepare and complete the flowchart according to type of nutrition.



Solution:



Exercise | Q 6.1 | Page 33

Think and answer.

We prepare a variety of foodstuffs and dishes at home. Are we then autotrophic organisms?

Solution: By preparing variety of foodstuffs and dishes at home, we do not become autotrophic. Autotrophic is a term which is used for organisms which can produce their own food. We humans depend on plants for our food and the products which we get

from them are used by us to make a variety of foodstuffs. Also, autotrophic organisms contain chloroplast which is an absolute necessity to be classified as an autotroph and we do not possess any such structures. So, we cannot be considered autotrophs.

Exercise | Q 6.2 | Page 33

Think and answer.

Which organisms are greater in number - autotrophs or heterotrophs? Why?

Solution: Autotrophs are the organisms which are greater in number. It is because heterotrophs are dependant on autotrophs to meet their food requirements. If heterotrophs exceed the number of autotrophs, then all the autotrophs will vanish and so will be the heterotrophs. However, this is not the case because autotrophs are always more than heterotrophs so that they can help in sustaining the heterotrophs.

Exercise | Q 6.3 | Page 33

Think and answer.

The number of heterotrophs found in desert regions is smaller. However, they are found in greater numbers in the sea. Why is this so?

Solution: The conditions in deserts are extremely difficult for survival of organisms. Not all kinds of organisms can survive in such harsh climatic conditions, which means there are only few types of organisms which would be found in this region. Since, there are not many kinds of plants and animals which are found in this region, heterotrophs would not be able to survive and would die of starvation. That is why less heterotrophs are found in desert areas. However, in case of a habitat like sea, there are plenty of organisms which are found in region ranging from aquatic plants, to small fishes to big fishes. It is an environment which supports the survival of heterotrophs and thus more heterotrophs are found in this region.

Exercise | Q 6.4 | Page 33

Think and answer.

What damage or harm do ectoparasitic and endoparasitic animals cause?

Solution: Parasitism is a type interaction in which one of the partners is benefited because it resides outside or inside the body of the host and gets free accommodation and food while the host is affected due to loss of nutrients. Ectoparasites and endoparasites devoid the host of its nutrition. Some of the parasites are known to cause

diseases like Ascaris/roundworm which is an endoparasite of intestine causes ascariasis. Another example is of Wuchereria which causes elephantiasis or filariasis. It is an endoparasite which lives in lymphatic vessels of lower limbs.

Lice or ticks which are found in humans and dogs respectively are examples of ectoparasites. They absorb the nutrients from their host.

Exercise | Q 6.5 | Page 33

Think and answer.

Why is plant food not produced in any other parts of the plant except the green ones?

Solution: Plant food is produced by a special process known as photosynthesis. The process of photosynthesis requires specialised structures called chloroplasts and these structures are found only in green regions of plants. The green colour of specific parts of plants is due to the presence of chlorophyll pigment present in these chloroplasts. Structures in plants which do not contain chloroplast, do not appear green in colour and are not capable of producing food.