6. Life Processes

Part-A

1. Question

In Monotropa, the special type of root which absorbs nourishment is the _____

A. Haustoria

B. Mycorrhizal root

C. Clinging root

D. Adventitious root

Answer

Mycorrhizal roots are found in monotropa which helps in nourishment.

2. Question

The product obtained in the anaerobic respiration of yeast is _____

A. Lactic acid

B. Pyruvic acid

C. Ethanol

D. Acetic acid

Answer

When yeast undergoes anaerobic respiration it releases alcohol and carbon dioxide. From the options given above ethanol is alcohol. Whereas rest of the options are acids.

3. Question

The roots of a coconut tree are seen growing far from the plant. Such a kind of movement of root for want of water is _____ .

A. Phototropism

B. Geotropism

C. Chemotropism

D. Hydrotropism

Answer

‘Tropism’ means movement towards something. ‘Photo’ means light, ‘Geo’ means earth, ‘Chemo’ means chemicals and ‘Hydro’ means water. So, therefore hydrotropism means movement of roots towards the water.

4. Question

The xylem in the plants is responsible for _____.

A. Transport of water

B. Transport of food

C. Transport of amino acids

D. Transport of oxygen

Answer

Xylem tissue is responsible for transporting water whereas phloem tissue is responsible for transport of food and amino acids.

5. Question

The autotrophic nutrition requires

A. CO_2 and water

B. chlorophyll

C. sunlight

D. all the above

Answer

'Auto' means on their own. So, autotrophic nutrition is a process in which organism is able to prepare their own food. For example plants, they require Carbon dioxide, water, chlorophyll, and sunlight to prepare their food.

6. Question

Leaf pores / stomata help in _____.

A. Intake of CO_2 during photosynthesis

B. Release of O_2 during photosynthesis

C. Release of water vapor during transpiration

D. All of these

Answer

Stomata are the small opening on the leaves. All the exchange of gases for the process of photosynthesis takes place through stomata. Along with this, it is responsible for water loss known as transpiration

7. Question

_____ of green plants are called factories of food production.

A. Mitochondria

B. Chloroplasts

C. Endoplasmic reticulum

D. Nucleus

Answer

Chlorophyll is responsible for trapping sunlight which is used in making food. It is present inside chloroplasts. So, chloroplasts are food factories of green plants.

8. Question

The special root-like structure of plant parasites in Cuscuta and Viscum are called _____ .

A. Rhizoids

B. Haustoria

C. Hyphae

D. Stolons

Answer

Haustoria roots are the roots which penetrate into host body to absorb nutrient. So, it is present in parasitic plants. Whereas, rhizoids, hyphae, and stolon are present in fungi.

9. Question

Pick out the odd one: The parts of the alimentary canal are

A. pharynx

B. mouth

C. buccal cavity

D. pancreas

Answer

Mouth or buccal cavity and pharynx are part of alimentary canal as food passes through them. Whereas, the pancreas secretes pancreatic juice which helps in digestion but it is not part of the alimentary canal.

Part-B

1. Question

Name the types of vascular tissues in the plant stem which are labelled A and B.

i) Name A and B

ii) What materials are transported through A?

iii) What materials are transported through B?

iv) How do the materials in A move upwards to the leaves?

Answer

(i) A- Xylem

B- Phloem

Due to Transpiration water moves upwards from roots to leaves in xylem. As phloem transports food from leaves to rest of the plant so its movement is downwards.

(ii) As is xylem so, it transports water and solutes from roots to the leaves.

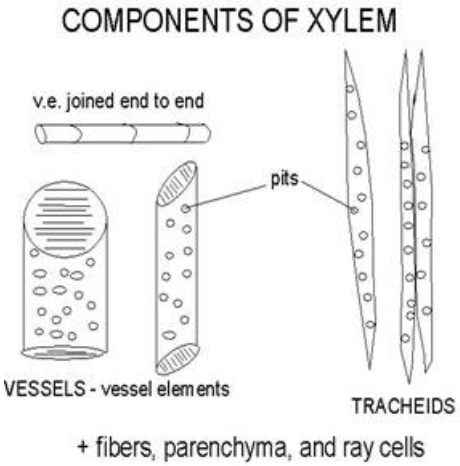
(iii) As B is phloem so, it transports food prepared by leaves to rest of the plant.

(iv) Tracheid, xylem parenchyma, xylem fibers, and vessels make Xylem. Transportation of water involves 3 steps which are interconnected.

(a) Absorption of water and minerals: - Due to the potential difference between roots and soil water and minerals move from high water potential to lower water potential and then to xylem. This pushes the water upwards.

(b) Upward movement of water: - Root pressure or transpiration pull are responsible for the movement of water.

(c) Transpiration or loss of water from leaves: - Helps in creating potential difference due to which water moves from soil to roots.



2. Question

What is nutrition? What type of nutrition is seen in green plants and the majority of animals?

Answer

Process of taking up nutrients from their surroundings and then breaking them into simpler and absorbable form is known as nutrition.

Autotrophic nutrition (Auto means self) is seen in green plants. In autotrophic nutrition, organism synthesizes its food on its own. So, as plants make their own food so, they have an autotrophic mode of nutrition.

Heterotrophic nutrition (Hetero means others) is seen in the majority of animals as they depend on other living organisms for nutrition.

3. Question

Match the methods of nutrition of special organs with suitable examples:

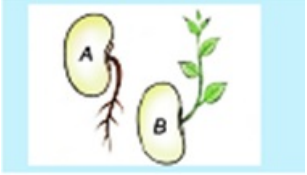
Autotrophs	Mycorrhiza	Cuscutta
Parasites	chlorophyll	Monotropa
Saprophytes	Haustoria	Hibiscus

Answer

A	B	Example
Autotrophs	Chlorophyll	Hibiscus
Parasites	Haustoria	Cuscuta
Saprophytes	Mycorrhiza	Monotropa

4. Question

Observe the diagram



i) Mention the type of movements shown in figure A and B.

ii) How does this movement differ from the movement of mimosa?

Answer

(i) A is geotropism as the roots are moving in the direction of gravity. And B is phototropism as shoots are growing towards the light stimulus. Therefore, this movement is dependent on growth.

(ii) In mimosa leaves show movement on touch that is when their leaves are touched they curl up. So, in

case of mimosa leaves show movement whereas in geotropism roots or shoot shows movement. Therefore, in this case, a movement is independent of growth.

5. Question

In the process of anaerobic respiration, _____ is a 6 carbon compound which gets converted into _____carbon compound called lactic acid.

Answer

Glucose ($C_6H_{12}O_6$)

3 carbon compound ($C_3H_6O_3$ - lactic acid)

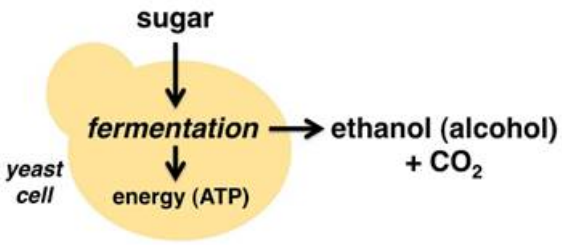
6. Question

Sugar is converted into alcohol. In the above reaction what kind of process takes place? Which microorganism is involved?

Answer

When sugar is converted into alcohol this process is known as fermentation. This process is carried out in the presence of yeast. In this process along with alcohol carbon dioxide and energy is also produced.

The figure is shown below:



7. Question

In human beings, air enters into the body through (i)_____ and moves into (ii)_____. In fishes, water enters into the body through (iii)_____ and the dissolved oxygen diffuses into _____(iv).

Answer

(i) Nostrils

(ii) Lungs

(iii) Mouth

(iv) Blood

8. Question

Give two examples of root parasites of plants. Mention the special structures present in them to draw the nutrients from the host plant.

Answer

Cuscutta and Viscum are two root parasites which draw their food from the host body. They have a special

structure called Haustoria which go into host plant to get nutrients for the plant.

9. Question

What are saprophytes? Give two examples.

Answer

Saprophytes are the organisms which get their nutrition from dead and decaying plants and animals that is they have a saprotrophic mode of nutrition.

Examples- Yeast, bread mould (Rhizopus).

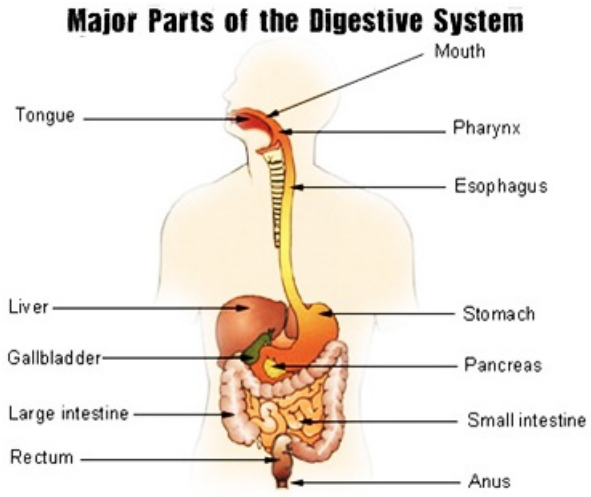
10. Question

What is the length of the alimentary canal in human beings? List out the parts of the gastrointestinal tract in the correct sequential order based on the passage of food.

Answer

Alimentary canal is about 9 meters long in human beings.

Passage of food in gastro-intestinal is:- Mouth, pharynx, esophagus, stomach, small intestine, large intestine, and anus



11. Question

What is respiration? Give a balanced equation for aerobic respiration.

Answer

Process of breaking down the carbohydrates to release energy by living organisms is known as respiration.

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ + Energy

(Aerobic Respiration: - Respiration in the presence of oxygen.)

12. Question

A fish taken out of water cannot survive for a long time. Why?

Answer

Fish also need oxygen to survive which they get in diffused form from the water. So, when they are taken out of the water they don't oxygen moreover their gills get collapsed which results in death on the fish.

13. Question

What are ammonia telic and ureotelic animals? Give examples.

Answer

Ammonia telic animals: - animals which excrete a large amount of ammonia. E.g. sponges, liver flukes, bony fish etc.

Ureotelic animals: - Animals which excrete large amount of urea. E.g. Frogs, earthworms, toads etc.

14. Question

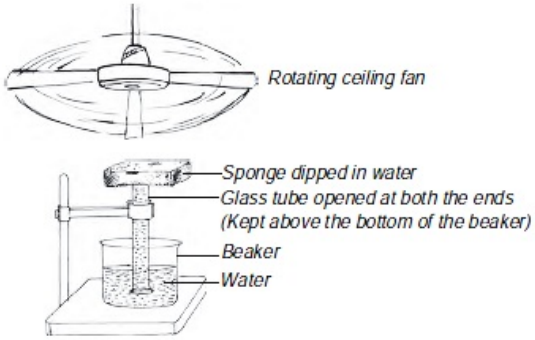
Describe the change that occurs in a touch-me-not plant when it is touched?

Answer

When we touch the leaf of a touch-me-not plant, its leaves start to fold inwards. This is due to force of water which is applied to the cell wall of the plant. This movement is often seen as a defense mechanism of the plant against its predators.

15. Question

Study the following model with which the transpiration mechanism in plants can be demonstrated



With which structure of the plant do you compare each of the following?

(i) Sponge (ii) Glass tube filled with water.

Answer

(i) The sponge can be compared to leaves as it exposed to the environment or in this case rotating ceiling fan just like leaves of the plants are exposed to sunlight.

(ii) A glass tube filled with water is compared to Xylem and Phloem (vascular bundles) specifically, xylem as water is transported through it from the beaker to the sponge. In a similar manner to water is transported from roots to leaves in the plant.

Part-C

1. Question

Describe the various movements of plants giving suitable examples.

Answer

There are basically two type of movements of plants, which are as follows:-

(a) Movement independent of the growth

(b) Movement dependent on the growth

Movement independent of the growth: - In this, the growth of a plant is not responsible for the movement. For e.g. in case of mimosa plant, the touch from external source makes the leaves to fold inwards. So, growth is not at all involved in this.

Movement-dependent on the growth: - In this, growth is involved. It is further of 4 types:-

(i) Geotropism: - In this gravity acts as the external stimuli and growth of the plant part is towards the gravity. E.g. roots of the plant grow downwards.

(ii) Phototropism: - In this light acts as the external stimuli and growth of the plant is towards the light. For e.g. shoot or stem.

(iii) Hydrotropism: - In this water acts as the external stimuli and growth are towards the water source.

(iv) Chemotropism: - In this chemicals acts as the external stimuli.

2. Question

Describe the various methods of excretion in animals.

Answer

● Amoeba: - Excretion by diffusion through their body surface.

● Protozoa: - No specific organ for excretion. Excretion by diffusion through the plasma membrane.

● Hydra: - Through mouth.

● Flatworms or leeches: - Highly specialized organ for excretion called simple tubular structure.

● Insects: - Tubular structure for excretion.

● Vertebrates: - Kidneys.

3. Question

Compare the respiration in higher plants with the respiration of lower plants.

Answer

Higher Plants	Lower plants
• Aerobic respiration	• Anaerobic respiration
• Oxygen is required for respiration.	• Respiration takes place in the absence of oxygen.
• Glucose is completely broken down into carbon dioxide and water.	• Glucose is broken into alcohol and carbon dioxide.
• The energy of 38 ATP is released.	• The energy of 2 ATP is released.

4. Question

In the touch - me - not plant the leaves show movements. What type of movement have you observed? Discuss.

Answer

In touch-me-not plant movement independent of the growth is observed as no growth is observed. In the presence of external stimulus leaves fold inwards and therefore no growth is seen. Therefore, it shows movement independent of growth.

5. Question

Differentiate extra-cellular digestion from intra-cellular digestion. Which one is an advanced form?

Answer

Extra-cellular Digestion	Intra-cellular Digestion
• Digestion takes place outside the cell.	• Intra means within so, digestion occurs within the cells.
• Occurs in multicellular organisms.	• Unicellular organisms show this type of digestion.
• The alimentary canal is the main track through which food is passed and digested.	• Digestion directly takes place in the cell.
• Requires digestive glands and enzymes for digestion.	• Does not require any specific digestive glands.
• An advanced form of digestion.	• A simpler form of digestion.
• E.g. human beings and other higher animals	• E.g. protozoan, sponges etc.

6. Question

Differentiate aerobic respiration from anaerobic respiration. Mention the event that is common to both.

Answer

Aerobic Respiration	Anaerobic Respiration
• Takes place in the presence of oxygen.	• Takes place in the absence of oxygen.
• Glucose is completely broken into carbon dioxide and water.	• Glucose is broken into ethanol and carbon dioxide.
• The energy released is 38 ATP molecules.	• The energy released is 2 ATP molecules.
• Observed in higher plants.	• Takes place in lower plants or organisms like yeast.

The process of glycolysis is common in both type of respiration.

7. Question

Observe the given model that can be used to demonstrate the breathing mechanism in human beings.

Name the structures which can be compared to:

(i) Lungs (ii) Diaphragm

(iii) Trachea (iv) Nostrils (Nose)

Answer

1. **Lungs** – Balloon because air will fill the balloon in the same manner as air from environment passes through nostrils to fill the lungs.

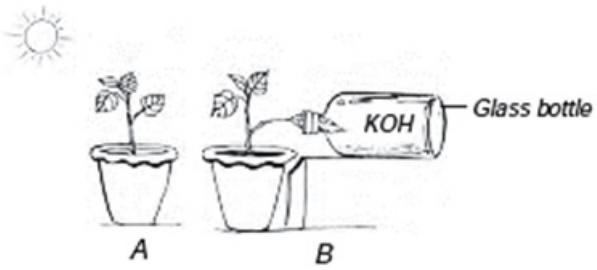
2. **Diaphragm** – Rubber sheet which is present at the bottom of the jar. It will show similar movement like diaphragm when air will enter the balloon or jar.

3. **Trachea** – the Plastic tube which is inserted in a balloon. It forms the pathway for air to enter the balloon just like trachea.

4. **Nostrils** – Opening of the tube. Air will enter through this opening.

8. Question

Observe the following figures:



Both the plants ‘A’ and ‘B’ were kept in sunlight after watering. The part of the leaf of plant ‘B’ which was inserted in the glass bottle containing KOH (Potassium hydroxide) did not turn blue in the iodine test/ starch test, indicating the absence of starch. The part of the leaf outside the bottle turns blue in the said test. Photosynthesis didn’t occur in that part of the leaf due to the non-availability of _____ .

a) Sunlight b) Chlorophyll

c) CO_2 d) Water

(i) List out the factors which are available to the part of the leaf outside the bottle.

Answer

Covered part of the leaf doesn’t show photosynthesis because of the absence of carbon dioxide.

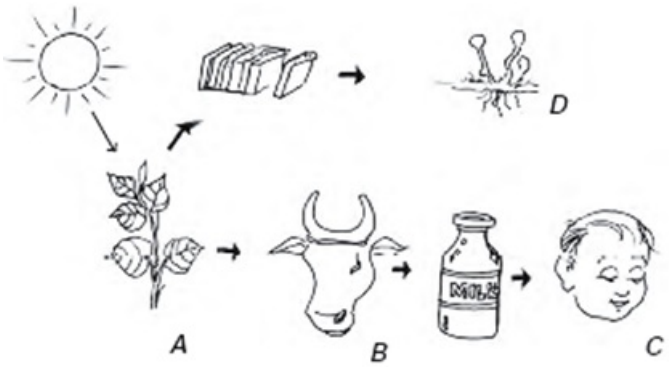
Factors which were available to the other part which was outside the bottle were – Carbon dioxide, sunlight and adequate temperature required for the process of photosynthesis.

9. Question

Look at the illustration depicting the food chain:

a. The correct explanation of the organisms is:

A	B	C	D
a) Saprophyte	Heterotrophs	Autotrophs	Heterotrophs
b) Heterotrophs	Autotrophs	Saprophyte	Saprophyte
c) Autotrophs	Saprophyte	Autotrophs	Heterotrophs
d) Autotrophs	Heterotrophs	Heterotrophs	Saprophyte



b. Why is ‘A’ called an autotroph?

Answer

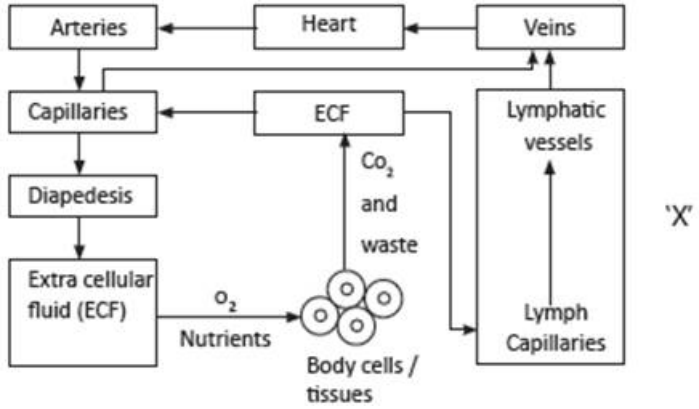
(a)

A	B	C	D
Autotrophs (plants)	Heterotrophs (Cow) because depends on plants for nutrition.	Heterotrophs (Child) because depends on the cow for nutrition.	Saprophytes (fungi) because gets their nutrition from dead and decaying organic wastes.

(b) 'A' is called an autotroph because they prepare their own food through the process of photosynthesis. Therefore, they do not depend on other organisms for nutrition.

10. Question

Observe the following flow-chart:



a) What is 'X' in this figure denote?

b) In what way is it different from blood?

Answer

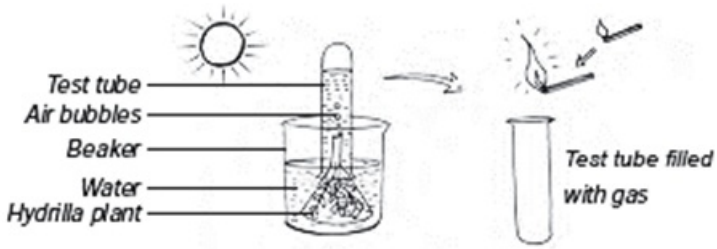
(a) 'X' in the figure shows Lymph because lymphatic vessels and lymph capillaries are the part of lymph.

(b) Difference between lymph and blood.

Lymph	Blood
• RBCs are absent	• RBCs are present
• Major function is in body's defense mechanism and immune system.	• Circulation of oxygen, carbon dioxide, and the food is the main function.
• Food is transported from tissue cells to blood.	• Food is transported from one organ to other.
• Lymphatic flow is low	• Blood flow is fast.

11. Question

Observe the following experiment:



i) Name the phenomenon it depicts and the gas that is released.

a) Respiration, CO_2

b) Photosynthesis, O_2

c) Transpiration, H_2O

d) Excretion, N_2

ii) What is photosynthesis? Write a balanced equation for this biochemical reaction.

Answer

(i) Above figure shows photosynthesis and O_2 is released. In the second diagram when matchstick is brought near the test tube, it ignites which shows that O_2 is released in the experiment.

(ii) Photosynthesis is the process carried out by green plants to make their own food in the presence of sunlight, carbon dioxide, water, and chlorophyll. Oxygen is released during this process.

$6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6H_2O + 6O_2$