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Chapter – 6 Life Processes

Multiple Choice Questions

Q1. Which of the following statements about the autotrophs is incorrect?

a) **They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll**
b) **They store carbohydrates in the form of scratch**
c) **They convert carbon dioxide and water into carbohydrates in the absence of sunlight**
d) **They constitute the first trophic level in food chains**

Answer: Option c)

Autotrophs convert carbon dioxide and water into carbohydrates in the presence of sunlight with green pigment chlorophyll which trap sun energy.

Q2. In which of the following groups of organisms, food material is broken down outside the body and absorbed?

a) **Mushroom, green plants, Amoeba**
b) **Yeast, mushroom, bread mould**
c) **Paramecium, Amoeba, Cuscuta**
d) **Cuscuta, lice, tapeworm**

Answer: Option b)

Yeast, mushroom and bread mould are saprophytes. They break down and convert the complex organic molecules present in dead and decaying matter into simpler substance outside their body.

Q3. Select the correct statement

a) **Heterotrophs do not synthesis their own food.**
b) **Heterotrophs utilise solar energy for photosynthesis.**
c) **Heterotrophs synthesis their own food.**
d) **Heterotrophs are capable of converting carbon dioxide and water into carbohydrates.**

Answer: Option a)

Heterotrophs do not make their own food from CO_2 and water because of absence of chlorophyll for solar energy, example; bacteria, fungi and animals.

Q4. Which is the correct sequence of parts in human alimentary canal?

a) $Mouth \longrightarrow Stomach \longrightarrow Small\ intestine \longrightarrow Oesophagus \longrightarrow Large\ intestine$
b) $Mouth \longrightarrow Oesophagus \longrightarrow Stomach \longrightarrow Large\ intestine \longrightarrow Small\ intestine$
c) $Mouth \longrightarrow Stomach \longrightarrow Oesophagus \longrightarrow Small\ intestine \longrightarrow Large\ intestine$
d) $Mouth \longrightarrow Oesophagus \longrightarrow Stomach \longrightarrow Small\ intestine \longrightarrow Large\ intestine$

Answer: Option d)

The correct sequence in which various organs have mouth, oesophagus, stomach, small intestine, large intestine and anus.

Q5. If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected?

a) Proteins breaking down into amino acids
b) Starch breaking down into sugars
c) Fats breaking down into fatty acids and glycerol
d) Absorption of vitamins

Answer: Option b)

Human saliva contains enzymes called salivary amylase, which breaks down the starch present in the food into sugars. Digestion of starch starts in mouth and if saliva is missing then it will affect the breakdown of starch.

Q6. The inner lining of stomach is protected by one of the following from hydrochloric acid. Choose the correct one

a) Pepsin
b) Mucus
c) Salivary amylase
d) Bile

Answer: Option b)

Mucus is in the gastric juice in the glands of stomach wall which protects it from secretion of hydrochloric acid which cause the erosion of inner lining of stomach leading to ulcer formation.

Q7. Which part of alimentary canal receives bile from the live?

a) Stomach
b) Small intestine
c) Large intestine
d) Oesophagus

Answer: Option b)

Small intestine receives bile from liver, which is stored in gall bladder.

Q8. A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water contains

a) **Complex proteins**
b) **Simple proteins**
c) **Fats**
d) **Starch**

Answer: Option d)

Blue-black colour of rice water shows the presence of starch, and there is no change in colour when proteins or fats in iodine solution.

Q9. In which part of the alimentary canal food is finally digested?

a) **Stomach**
b) **Mouth cavity**
c) **Large intestine**
d) **Small intestine**

Answer: Option d)

The small intestine is the slit of digestion of food in human beings, also it is the main region for absorption of digested food.

Q10. Choose the function of the pancreatic juice from the following

a) **Trypsin digests protein and lipase carbohydrates**
b) **Trypsin digests emulsified fats and lipase proteins**
c) **Trypsin and lipase digest fats**
d) **Trypsin digests proteins and lipase emulsified fats**

Answer: Option d)

Pancreas secretes pancreatic juice which contain the digestive enzymes amylases, lipases, trypsin. Amylase will break down the starch, trypsin digests the protein and lipase breaks down the emulsified fats.

Q11. When air is blown from mouth into a test-tube containing lime water, the lime water turned milky due to the presence of

a) **Oxygen**
b) **Carbon dioxide**
c) **Nitrogen**
d) **Water vapour**

Answer: Option b)

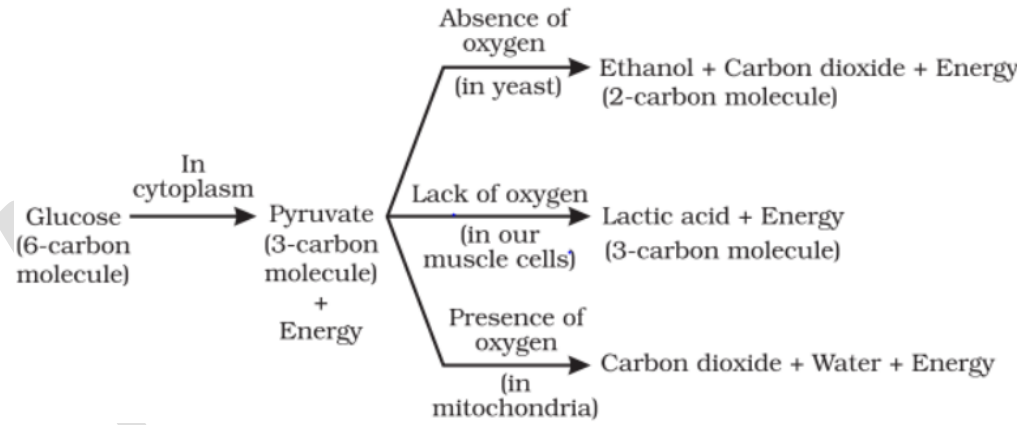
Carbon dioxide gas will turn lime water into milky, and when air is blown from mouth into test tube, the lime water will turn into milky since air we exhale has more CO_2.

Q12. The correct sequence of anaerobic reaction in yeast is

a) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate** $\xrightarrow{\text{mitochondria}}$ **Ethanol + Carbon dioxide**
b) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate** $\xrightarrow{\text{cytoplasm}}$ **Lactic acid**
c) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate** $\xrightarrow{\text{mitochondria}}$ **Lactic acid**
d) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate** $\xrightarrow{\text{cytoplasm}}$ **Ethanol + Carbon dioxide**

Answer: Option d)

Glucose convert into pyruvate in the cytoplasm of the cell which is the initial stage of respiration and then pyruvate gets converted into different compounds in the presence or absence of oxygen.



Breakdown of glucose by various pathways

Q13. Which of the following is most appropriate for aerobic respiration?

a) **Glucose** $\xrightarrow{\text{mitochondria}}$ **Pyruvate** $\xrightarrow{\text{cytoplasm}}$ $\boldsymbol{CO_2 + H_2O + Energy}$
b) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate** $\xrightarrow{\text{mitochondria}}$ $\boldsymbol{CO_2 + H_2O + Energy}$
c) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate + Energy** $\xrightarrow{\text{mitochondria}}$ $\boldsymbol{CO_2 + H_2O}$

d) **Glucose** $\xrightarrow{\text{cytoplasm}}$ **Pyruvate + Energy** $\xrightarrow{\text{mitochondria}}$ $\boldsymbol{CO_2 + H_2O + Energy}$

Answer: Option b)

Oxygen for respiration is used in aerobic respiration, which takes place in mitochondria. After the glycolysis, pyruvate enters the mitochondria to oxidise in a series of reactions to produce considerable amount of energy (ATP), CO_2 and H_2O.

Q14. Which of the following statements is are true about respiration?

i) **During inhalation, ribs inward and diaphragm is raised.**
ii) **In the alveoli, exchange of gases takes place, i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from blood into alveolar air**
iii) **Haemoglobin has greater affinity for carbon dioxide than oxygen**
iv) **Alveoli increases surface area for exchange of gases**

Answer: Option d)

As we inhale, we lift our ribs and flatten our diaphragm, and chest cavity becomes larger. Alveoli is a balloon structure which provides a surface for exchange of gases takes place, the walls of alveoli consists of network of blood vessels. The air goes into the lungs to fill alveoli.

The blood takes carbon dioxide from the body to release into the alveoli and the oxygen is taken by the blood in the alveolar blood vessels to be transported to all the cells in the body.

Q15. Which is the correct sequence of air passage during inhalation?

a) $\boldsymbol{Nostrils \longrightarrow Larynx \longrightarrow Pharynx \longrightarrow Trachea \longrightarrow Lungs}$
b) $\boldsymbol{Nasal\ passage \longrightarrow Trachea \longrightarrow Pharynx \longrightarrow Larynx \longrightarrow Alveoli}$
c) $\boldsymbol{Larynx \longrightarrow Nostrils \longrightarrow Pharynx \longrightarrow Lungs}$
d) $\boldsymbol{Nostrils \longrightarrow Pharynx \longrightarrow Larynx \longrightarrow Trachea \longrightarrow Alveoli}$

Answer: Option d)

Air for respiration is taken through our nostrils, then it goes into nasal passage. Then air enters into pharynx, larynx, into the windpipe, bronchi, lungs and finally to the alveoli where gaseous exchange takes place.

Q16. During respiration exchange of gases takes place in

a) **Trachea and larynx**

b) **Alveoli of lungs**
c) **Alveoli and throat**
d) **Throat and larynx**

Answer: Option b)

In alveoli in the lungs where the gaseous exchange takes place and millions of alveoli provides a large area for exchange of gases.

Q17. Which of the following statement is true about heart?

i) **Left atrium receives oxygenated blood from different parts of body while right atrium receives deoxygenated blood from lungs.**
ii) **Left ventricle pumps oxygenated blood to different body parts while right ventricle pumps deoxygenated blood to lungs**
iii) **Left atrium transfers oxygenated blood to right ventricle which sends it to different body parts**
iv) **Right atrium receives deoxygenated blood from different parts of the body while left ventricle pumps oxygenated blood to different parts of the body**

a) **i)**
b) **ii)**
c) **ii) and iv)**
d) **i) and iii)**

Answer: Answer c)

Oxygenated blood circulates by left part of the heart and deoxygenated blood circulates by its right part. Atrium receives blood and ventricle pumps the blood out of the heart.

Q18. What prevents backflow of blood inside the heart during contraction?

a) **Valves in heart**
b) **Thich muscular walls of ventricles**
c) **Thin walls of atria**
d) **All of these**

Answer: Option a)

Valves in the heart ensures that blood are responsible for only pumping and ensures that blood does not flow backwards during contraction.

Q19. Single circulation, that is, blood flows through the heart only during one cycle of passage through the body, is exhibited by

a) **Labeo, Chameleon, Salamander**
b) **Hippocampus, Exocoetus, Anabas**
c) **Hyla, Rana, Draco**
d) **Whale, Dolphin, Turtle**

Answer: Option b)

Since, all are Amphibians and they show partial double circulation.

Q20. In which of the following vertebrate group/groups, heart does not pump oxygenated blood to different parts of the body?

a) **Pisces and amphibians**
b) **Amphibians and reptiles**
c) **Amphibians only**
d) **Pisces only**

Answer: Option d)

In Pisces, there is a heart which is of 2 chambered oral pumps deoxygenated blood to the gills, where oxygenation takes place by diffusion. The oxygenated blood from the gills goes to the body parts where oxygen is used and CO_2 enters it to deoxygenated blood. This deoxygenated blood enters into the heart. Hence, it has single circulation, that is, blood passes through the heart only once during one complete cycle.

Q21. Choose the correct statement that describes arteries.

a) **They have thick elastic walls, blood flows under high pressure, collect blood from different organs and bring it back to the heart**
b) **They have thin walls with valves inside, blood flows under low pressure and carry blood away from the heart to various organs of the body**
c) **The have thick elastic walls, blood flows low pressure carry blood from the heart to various organs of the blood**
d) **The have thick elastic walls, without valves inside, blood flows under high pressure and carry blood away from the heart to different parts of the body.**

Answer: Option d)

Arteries are the vessels which carry blood from the heart to various organs of the body which have thick elastic walls without valves, blood flows under high pressure and carry blood from the heart to various parts of the body.

Q22. The filtration units of kidneys are called

a) **Ureter**
b) **Urethra**
c) **Neurons**
d) **Nephrons**

Answer: Option d)

Nephron is the functional unit of kidney which helps to remove the waste products from our body.

Q23. Oxygen liberated during photosynthesis comes from

a) **Water**
b) **Chlorophyll**
c) **Carbon dioxide**
d) **Glucose**

Answer: Option a)

In photosynthesis process, water molecule produce Oxygen and Hydrogen Ions. Oxygen is given out of plants and Hydrogen is used to reduce carbon di oxide and produce carbohydrates.

Q24. The blood leaving the tissue becomes richer in

a) **Carbon dioxide**
b) **Water**
c) **Haemoglobin**
d) **Oxygen**

Answer: Option a)

In respiration carbon dioxide accumulate in tissues so blood in tissues become rich in carbon dioxide.

Q25. Which of the following is an incorrect statement?

a) **Organisms grow with time**
b) **Organisms must repair and maintain their structure**
c) **Movement of molecules does not take place among cells**
d) **Energy is essential is essential for life process**

Answer: Option c)

The movement of molecules takes place in active and passive mode like diffusion, osmosis, facilitated diffusion etc in the cell.

Q26. The internal (cellular) energy reserve in autotrophs is

a) **Glycogen**
b) **Protein**
c) **Starch**
d) **Fatty acid**

Answer: Option c)

The glucose produced is not used immediately and it gets stored in plants. In animals, food is stored in the form of glycogen.

Q27. Which of the following equations is the summary of photosynthesis?

a) $6CO_2 + 12H_2O \longrightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$
b) $6CO_2 + H_2O + Sunlight \longrightarrow C_6H_{12}O_2 + O_2 + 6H_2O$
c) $6CO_2 + 12H_2O + Chrophyll + Sunlight \longrightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$
d) $6CO_2 + 12H_2O + Chrophyll + Sunlight \longrightarrow C_6H_{12}O_6 + 6CO_2 + 6H_2O$

Answer: Option c)

Photosynthesis is a process in which green plants makes their own food, for example; glucose, CO_2 and H_2O with solar energy and chlorophyll, oxygen gas is released during the process of photosynthesis.

Q28. Choose the evet that does not occur in photosynthesis.

a) **Absorption of light energy by chlorophyll**
b) **Reduction of carbon dioxide to carbohydrates**
c) **Oxidation of carbon-to-carbon dioxide**
d) **Conversion of light energy to chemical energy**

Answer: Option c)

CO_2 is used in photosynthesis for the products of food. The oxidation of carbon compounds occurs in respiration.

Q29. The opening and closing of the stomatal pore depend upon

a) **Oxygen**
b) **Temperature**
c) **Water in guard cells**

d) **Concentration of CO_2 in stomata**

Answer: Option c)

The opening and closing of pore is a function of the guard cells. The guard cells when flows into them, causing the stomatal pores to open. The pores closes if the guard cell shrink or losses water in them.

Q30. Choose the forms in which most plants absorb nitrogen

i) Proteins
ii) Nitrates and Nitrites
iii) Urea
iv) Atmospheric nitrogen

Answer: Option b)

Nitrogen is an essential element used for synthesis of proteins and other compounds, it is also used by organic compounds, that is, urea which have been prepared by bacteria from atmospheric nitrogen.

Q31. Which is the first enzyme to mix with food in the digestive tract?

a) **Pepsin**
b) **Cellulase**
c) **Amylase**
d) **Trypsin**

Answer: Option c)

First step of digestion starts from mouth where salivary glands are present, which produces amyloses. So, amylase is the first enzyme to mix with the food.

Q32. Which of the following statements (s) is (are) correct?

i) Pyruvate can be converted into ethanol and carbon dioxide by yeast
ii) Fermentation takes place in aerobic bacteria
iii) Fermentation takes place in mitochondria
iv) Fermentation is a form of anaerobic respiration

a) **i) and iii)**
b) **ii) and iv)**
c) **i) and iv)**
d) **ii) and iii)**

Answer: Option c)

Fermentation is anaerobic respiration and pyruvate is converted into ethanol and CO_2 in yeast, this process takes place in the absence of air.

Q33. Lack of oxygen in muscles often leads to cramps among cricketers. This result due to

a) **conversion of pyruvate to ethanol**
b) **conversion of pyruvate to glucose**
c) **non-conversion of glucose to pyruvate**
d) **conversion of pyruvate to lactic acid**

Answer: Option d)

Breakdown of Pyruvate in presence of oxygen takes place in mitochondria leading to the formation of Lactic acid. Due to workout oxygen is used for the production of energy leading to the lack of oxygen and production of lactic acid.

Q34. Choose the correct path of urine in our body

a) $\boldsymbol{Kidney \longrightarrow Ureter \longrightarrow Urethra \longrightarrow Urinary\ bladder}$
b) $\boldsymbol{Kidney \longrightarrow Urinary\ bladder \longrightarrow Urethra \longrightarrow Ureter}$
c) $\boldsymbol{Kidney \longrightarrow Ureters \longrightarrow Urinary\ bladder \longrightarrow Urethra}$
d) $\boldsymbol{Urinary \longrightarrow Bladder \longrightarrow Kidney \longrightarrow Ureter \longrightarrow Urethra}$

Answer: Option c)

Urine from kidney enters the ureter, which connects the kidney with the urinary bladder. Urine is stored in the urinary bladder, the pressure of the expanded bladder leads to the urge and pass through the urethra.

Q35. During deficiency of oxygen in tissues of human beings, pyruvic acid is converted into lactic acid in the

a) **Cytoplasm**
b) **Chloroplast**
c) **Mitochondria**
d) **Golgi body**

Answer: Option a)

Pyruvic acid converts into lactic acid in the cytoplasm of muscle cells when there is deficiency of oxygen in human beings.

Short Answer Type Questions

Q36. Name the following

a) **The process in plants that links light energy with chemical energy**
b) **Organisms that can prepare their own food**
c) **The cell organelle where photosynthesis occurs**
d) **Cells that surround a stomatal pore**
e) **Organisms that cannot prepare their own food**
f) **An enzyme secreted from gastric glands in stomach that acts on proteins**

Answer:

a) Photosynthesis – the process by which green plants which are having chlorophyll synthesis sugar from water and carbon dioxide using the energy of sunlight
b) Autotrophs – those organisms which make their own food from organic substances present in environment.
c) Chloroplasts – Chlorophyll is the green pigment capable of trapping light energy, required for photosynthesis. These pigment present in the chloroplast, which is there in leaves.
d) Guard cells – each stomatal pore is surrounded by a pair of guard cells.
e) Heterotrophs – those organisms which cannot make their own food from inorganic their opening and closing by the inflow and outflow of water.
f) Pepsin – the protein digesting enzymes secreted from gastric glands in the wall of the stomach.

Q37. "All plants give out oxygen during day and carbon dioxide during night". Do you agree with this statement? Give reason.

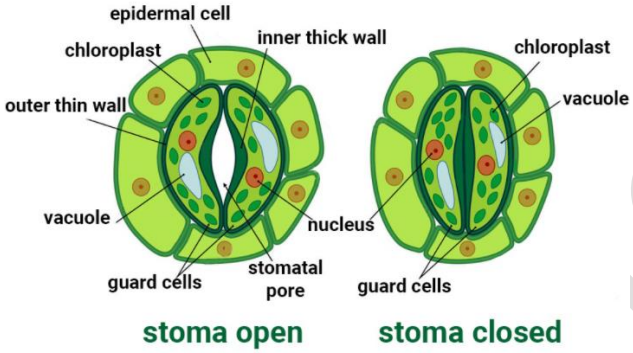
Answer:

The statement is correct. The plants respire throughout the day, while photosynthesis takes place only in the presence of sunlight. In daytime, CO_2 produced during respiration is used by the plants in photosynthesis, CO_2 is not released into the environment. At night, oxygen is not released so there is no photosynthesis. CO_2 produced in respiration is not used by the plants and released in the air.

Q38. How do the guard cells regulate opening and closing of stomatal pores?

Answer:

Opening and closing of stomata – exchange of gases and large amount of water is also lost through stomata. Hence, plants close stomata when they does not need carbon dioxide. Each stoma is bounded by two kidney shaped guard cells. When this guard cells take up water and become turgid, the stoma opens and when guard lose water and shrink, it closes.



Q39. Two green plants are kept separately in oxygen free containers, one in the dark and the other in continuous light. Which one will live longer? Give reasons.

Answer:

The plant kept in light would be able to carry out photosynthesis and convert CO_2 into oxygen. Hence, the plant would live for a longer duration of time.

Q40. If plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring? Justify your answer.

Answer:

Releasing of CO_2 and intake of O_2 suggests that either photosynthesis is not taking place or its rate is low. The rate of photosynthesis is more than that of respiration.

Q41. Why do fishes die when taken out of water?

Answer:

Fishes take oxygen by gills, with the help of blood capillaries and can absorb oxygen dissolved in water. Gills of fishes cannot take in gaseous oxygen. Hence, fish when taken out of water is unable to inhale oxygen rich air and so dies quickly.

Q42. Differentiate between an autotroph and a heterotroph.

Answer:

The difference between autotroph and a heterotroph are:

Autotroph	Heterotroph
Organisms that prepare their own food.	They are dependent on other organisms for food.
They have chlorophyll to trap light energy.	They lack chlorophyll.
They are called as producers.	They are called as consumers.
They do not show locomotion.	Most of them show locomotion because they need to move in search of food.

Q43. Is 'nutrition' a necessity for an organism? Discuss.

Answer:

Living organisms require energy for various life processes, from food. So, food is basic requirement of all living organisms.

a) It gives energy for various metabolic processes.
b) It helps for the growth of new cells and repair or replacement of damaged cells.
c) It is needed to developed resistance against various disease.

Q44. What would happen if green plants disappear from earth?

Answer:

If green plants disappear from earth then it would cause a disaster in the ecosystem as green plants are the source of energy. All organisms directly or indirectly depend on them for food. All the herbivores as well as carnivore will die due to starvation.

Q45. Leaves of a healthy potted plant were coated with Vaseline. Will this plant remain healthy for long? Give reasons for your answer.

Answer:

The plant will not remain healthy and other adverse effect such as:

a) Plant will not get oxygen for respiration.
b) Plant will not get carbon dioxide for photosynthesis.
c) Upward movement of water and minerals woud be hampered due to lack of transpiration.

Q46. How does aerobic respiration differ from anaerobic respiration?

Answer:

The difference between aerobic and anaerobic respiration:

Aerobic Respiration	Anaerobic Respiration
Oxygen is used for the breakdown of respiratory substrate.	Oxygen is not required.
CO_2 and water are the end products.	Ethanol, carbon dioxide or lactic acid are end products.
It takes place in cytoplasm (glycolysis) and inside mitochondria (Krebs cycle).	It takes place in cytoplasm only.
Energy is released due to the complete oxidation of glucose.	Less energy is released due to incomplete oxidation.

Q47. Match the words of column I with that of column II

Column I	Column II
A. Phloem	Excretion
B. Nephron	Translocation of food
C. Veins	Clotting of blood
D. Platelets	Deoxygenated blood

Answer:

Column I	Column II
A. Phloem	Translocation of food
B. Nephron	Excretion
C. Veins	Deoxygenated blood
D. Platelets	Clotting of blood

Q48. Differentiate between an artery and a vein.

Answer:

The difference between artery and vein are:

Artery	Vein
Have thick elastic, muscular walls.	Have thin, non-elastic walls.
Lumen is narrow	Lumen is wide
It carries oxygenated blood from heart to other parts of body	It carries deoxygenated blood from all parts of body to heart
Valves are absent in artery	Valves are present

Q49. What are the adaptations of leaf for photosynthesis?

Answer:

a) Leaves provide large surface area for maximum light absorption.
b) The network of veins transport substances to and from the mesophyll cells.

c) The chloroplast is present, which are the site for photosynthesis. They are more in number on the upper surface.
d) Presence of numerous stomata on leaf's surface for gaseous exchange and transpiration.

Q50. Why is small intestine in herbivores longer than in carnivores?

Answer:

Digestion of cellulose takes longer time since enzymes are produced by the bacteria that are present in herbivore. Longer small intestine ensures that the food stays for a longer duration and proper digestion is possible. In carnivores, cellulose is not present in diet hence, the length of small intestine is less.

Q51. What will happen if mucus not secreted by the gastric glands?

Answer:

Mucus protects the inner wall of stomach from HCl in the stomach. If it is released, it will lead to corrosion of inner lining of stomach causing acidity and ulcers.

Q52. What is the significance of emulsification of fats?

Answer:

Fats are complex molecules present in food in the form of large globules that makes I difficult for enzymes to act to them. Emulsifying the fats increases the efficiency and making it easy for the fat digesting enzymes to act upon them.

Q53. What causes movement of food inside the alimentary canal?

Answer:

The alimentary canal has walls with muscle layers. Rhythmic contraction and relaxation of muscles pushes the food forward, known as peristalsis.

Q54. Why does absorption of digestion food occur mainly in the small intestine?

Answer:

The maximum absorption is because:

a) Digestion is completed in small intestine.

b) Inner wall of small intestine has villi which increases the surface area for absorption.
c) Wall of intestine is supplied with blood vessels.

Q55. Match the following columns.

Column I	Column II
A. Autotrophic nutrition	Leech
B. Heterotrophic nutrition	Paramecium
C. Parasitic nutrition	Deer
D. Digestion of food vacuoles	Green plant

Answer:

Column I	Column II
A. Autotrophic nutrition	Green plant
B. Heterotrophic nutrition	Deer
C. Parasitic nutrition	Leech
D. Digestion of food vacuoles	Paramecium

Q56. Why is the breathing in aquatic organisms much faster than in terrestrial organisms?

Answer:

Aquatic organisms such as fishes obtain dissolved oxygen from water through gills. the amount of dissolved oxygen is low compared to the oxygen in the air, so the rate of breathing in aquatic organisms is faster than terrestrial organisms.

Q57. Why is blood circulation in human heart called double circulation?

Answer:

The blood circulation in human heart is double circulation as the blood passes through the heart twice during cardiac cycle.

Firstly, from the right ventricle to the left auricle of the heart, that is, pulmonary circulation. Second from left ventricle to the right auricle of the heart, body tissues, i.e., systemic circulation.

Q58. What is the advantage of having four chambered heart?

Answer:

In a four chambered heart, septa separate the left half from the right half, also it serves 2 purposes:

a) segregation of oxygenated and deoxygenated blood.
b) efficient supply of oxygenated blood to all parts of the body.

Q59. Mention the major events during photosynthesis.

Answer:

Major events of photosynthesis are;

a) Absorption of unlight energy by chlorophyll.
b) Conversion of light energy into chemical energy.
c) Reduction of carbon dioxide to produce carbohydrates.

Q60. In each of the following situations what happens to the rate of photosynthesis?

a) Cloudy days
b) No rainfall in the area
c) Good manuring in the area
d) Stomata get blocked due to dust

Answer:

a) Cloudy days – the rate of photosynthesis will decrease since sunlight is necessary for photosynthesis.
b) No rainfall in the area – the rate of photosynthesis will decrease since water is one of the raw materials needed by the plant for photosynthesis, if no rainfall then there will be less water available to the plant.
c) Good manuring in the area – the rate will be increased since plants need raw minerals for building their body and these minerals are present in soil.
d) Stomata get blocked due to dust – the rate will decrease since CO_2 gas required for photosynthesis enters the leaves through the stomata. If stomata get blocked due to dust, less or no carbon dioxide will enter leaves.

Q61. Name the energy currency in the living organisms. When and where is it produced?

Answer:

Adenosine Triphosphate (ATP) is the energy source in the living organisms, which is produced by respiration in mitochondria.

This energy released is used to make an ATP molecule from ADP and inorganic phosphate.

$$ADP + P \longrightarrow Energy \longrightarrow ADP - P + ATP$$

Q62. What is common for Cuscuta, ticks and leeches?

Answer:

Cuscuta, ticks and leeches, all are parasites, that is, organisms which feeds on another living organism known as its host.

Q63. Explain the role of mouth in digestion of food.

Answer:

We take food from mouth where the digestion of food begins which has following roles to play:

a) The teeth breaks-down the food into small pieces, chew and grind it, that is it helps in physical digestion.
b) The salivary glands secretes saliva with an enzyme known as salivary amylase which digest the starch present in food into sugar, that is, help in chemical digestion.
c) Tongue helps in through mixing of food with saliva.

Q64. What are the functions of gastric glands present in the wall of the stomach?

Answer:

Stomach has three tabular glands that secrets gastric juice.

a) Hydrochloric acid – makes the medium acidic so that it kills bacteria's that may enter the stomach.
b) Mucus – it helps in protecting stomach wall from its own secretions HCl.
c) Enzymes pepsin – it begins the digestion of proteins present in food to form smaller molecules.

Q65. Match the terms in Colum I with those in Column II

Column I	Column II
A. Trypsin	Pancreas
B. Amylase	Liver
C. Bile	Gastric glands

D. Pepsin	Saliva

Answer:

Column I	Column II
A. Trypsin	Pancreas
B. Amylase	Saliva
C. Bile	Liver
D. Pepsin	Gastric glands

Q66. Name the correct substrates for the following enzymes

a) **Trypsin**
b) **Amylase**
c) **Pepsin**
d) **Lipase**

Answer:

Enzyme	Substrate
A. Trypsin	Proteins
B. Amylase	Starch
C. Pepsin	Proteins
D. Lipase	Emulsified fats

Q67. Why do veins have thin walls as compared to arteries?

Answer:

Arteries have thick-walled blood vessels which carry blood from heart to all parts of body, but veins have thin-walled blood vessels which carry deoxygenated blood from all parts of the body back to the heart. They do not have thick walls since blood flowing through them is no longer under high pressure.

Q68. What will happen if platelets were absent in the blood?

Answer:

If platelets are absent, the process of clotting will be affected. In case of an injury, it is a dangerous situation. No blood coagulation would result in excessive blood loss.

Q69. Plants have low energy needs as compared to animals. Explain.

Answer:

Since, plants do not move. Movements in plants are at cellular level. In a large plant body, there are many dead cells which are not involved in cellular function but provides strength to the plot. So, they require less energy.

Animals, needs more energy to move from one place to another, in search of food and other activities, examples: mating, shelter, predation etc, so the energy need is higher compared to plants.

Q70. Why and how does water enter continuously into the root xylem?

Answer:

Plants require water for photosynthesis and metabolic activities. The water loss through stomata is replaced by xylem vessels. Evaporation of water molecules from cells of leaf produces suction to pull water from the xylem of roots to leaves.

Cells of roots are in contact with soil. The ion-concentration increases inside the root and so osmotic pressure increases the movement of water from soil into root .

Q71. Why is transpiration important for plants?

Answer:

Transpiration is vital because:

a) It helps in the absorption and movement of water and minerals from roots to leaves.
b) It prevents the plant parts from heating up or helps in temperature regulation.

Q72. How do leaves of plants help in excretion?

Answer:

a) Gaseous waste of respiration and photosynthesis are removed through the stomata in leaves.
b) Many plants store waste materials in the vacuoles of mesophyll cells and epidermal cells. When older leaves fall, the waste materials are excreted along with the leaves.

Long Answer Type Question

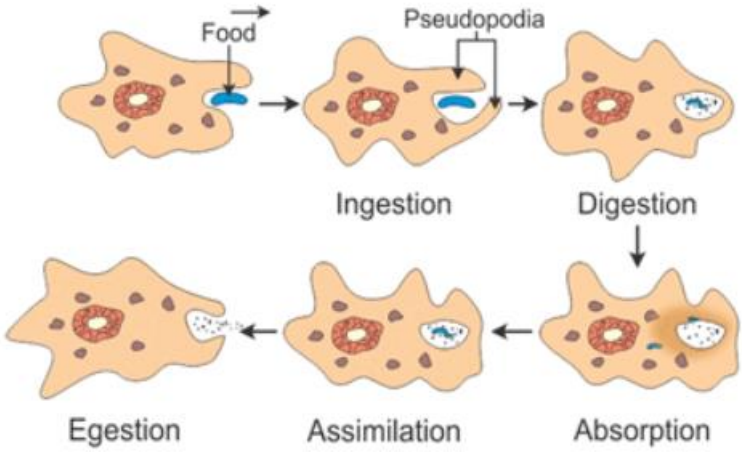
Q73. Explain the process of nutrition in Amoeba.

Answer:

Amoeba is obtaining the food by a process called as phagocytosis.

The steps involved in phagocytosis are: -

i) Ingestion – amoeba ingests food by forming a finger like projection known as pseudopodia.
ii) Digestion – in food vacuole, complex substances are broken into simpler ones by digestive enzymes.
iii) Absorption – the digested food present in the food vacuole diffuse into the cytoplasm.
iv) Assimilation – food absorbed is used by Amoeba for different processes.
v) Egestion – remaining undigested material moves to the surface of the cell, the cell membrane ruptures at any place and undigested food is removed out of the body.



Nutrition in Amoeba

Q74. Describe the alimentary canal of man.

Answer:

Alimentary canal of man extends from mouth to anus, which has different parts:

i) Mouth – it consists of oral cavity, from which the food is ingested. It contains teeth, tongue and three pairs of salivary glands.
ii) Pharynx – oral cavity opens in pharynx; the swallowing mechanism guides the masticated food through the pharynx into a tube.
iii) Oesophagus – it is a muscular, tubular part of the alimentary canal. The muscular movement called as peristalsis carries the food down to the stomach.
iv) Stomach – it is a muscular structure that serves a storehouse of food. It is a large organ which expands when food enters it. The muscular walls help in mixing of food with more digestive juices.

v) Small intestine – it is large approximate 6 metres and it has 3 divisions, that is, duodenum, jejunum and ileum.

vi) Large intestine – the ileum passes into large intestine, which is divided into 2 parts, anterior colon and posterior rectum.
The terminal part of rectum is anal canal. It opens through the anus; it allows the faecal matter to be egested out.

Q75. Explain the process of breathing in man.

Answer:

The three- step process of breathing in humans are:

1. Inspiration – When we breathe in, the muscles between ribs and the diaphragm contracts and moves downwards. As the chest cavity becomes large, air is sucked in from outside into the lungs, and it gets filled up with air and expand.
2. Gaseous exchange – Haemoglobin in RBCs binds with oxygen and carries with blood. As blood passes through the tissues, the oxygen from blood diffuses into the cell whereas CO_2 produced diffuse into the blood and is carried to the lungs.
3. Expiration – When we breath out, the muscles between the ribs relax and the diaphragm relaxes and moves upwards. As chest cavity becomes smaller, air is pushed out from the lungs.

Q76. Explain the importance of soil for plant growth.

Answer:

Soil is important for plant growth because:

i) Soil provides anchorage to plants. It provides the base on which all the terrestrial and some aquatic plants grow.

ii) Soil is reservoir of water and minerals, essential for all metabolic activities of a plant.

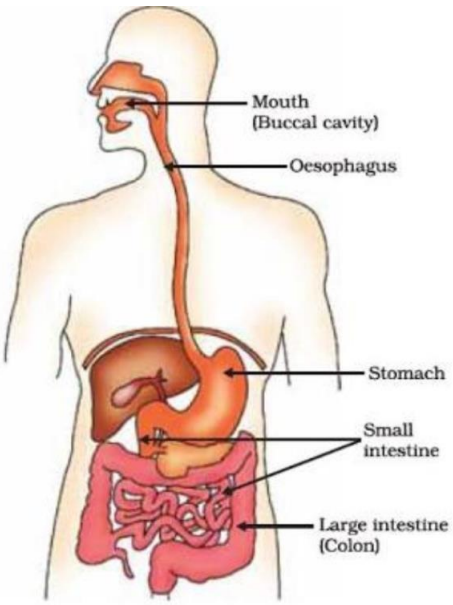
iii) The root of a plant also takes the oxygen required for respiration from the soil particles by the process of diffusion.

iv) Some plants also form symbiotic association with microbes present in the soil to absorb like nitrogen.

Q77. Draw the diagram of alimentary canal of man and label the following parts.

Mouth, Oesophagus, Stomach, Intestine

Answer:



Alimentary canal of man

Q78. How do carbohydrates, proteins and fats get digested in human beings?

Answer:

Digestion of carbohydrate or Starch is in the mouth by salivary amylase. Other carbohydrates are digested in the small intestine.

$Starch + Salivary\ Amylase \longrightarrow Sucrose$

$Maltose + Maltase \longrightarrow Glucose$

$Lactose + Lactase \longrightarrow Glucose + Galactose$

Digestion of Protein takes place in the stomach by gastric enzyme pepsin and also in the small intestine.

$Protein + Pepsin \longrightarrow Peptone + Proteose$

$(Protein + Peptone + Proteose) + (trypsin + chymotrypsin) \longrightarrow Dipeptides$

Digestion of fat is at first emulsified by bile and then its digestion takes place in the small intestine.

$Fat + Lipase \longrightarrow Fatty\ acids + Glycerol$

Q79. Explain the mechanism of photosynthesis.

Answer:

The process by which green plants prepare food is known as photosynthesis. The photosynthesis can be represented as:

$$6CO_2 + 6H_2O \xrightarrow{sunlight+chlorophyll} C_6H_{12}O_6 + 6O_2$$

Steps of Photosynthesis:

i) Sunlight activates the chlorophyll.
ii) The light energy convert into chemical energy
iii) Water molecule is splitted into hydrogen and oxygen. Water required is taken from the soil, which is transported to leaves from the soil through the roots and stem.
iv) The oxygen gas produced as a by-product goes into the air.
v) The hydrogen released is utilised for reduction of carbon dioxide to form glucose by the chemical energy. The carbon dioxide enters the leaves through tiny pores called stomata.
vi) The extra glucose is stored as starch in the leaves of the plant.

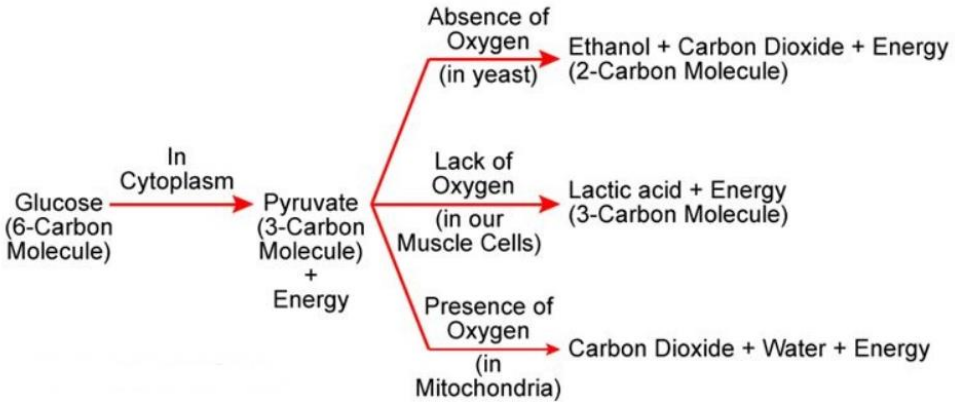
Q80. Explain the three pathways of breakdown in living organisms.

Answer:

The breaking of pyruvic acid take place in mitochondria and the molecules formed depend on the type of respiration in an organism. Respiration is of 2 types, aerobic and anaerobic respiration.

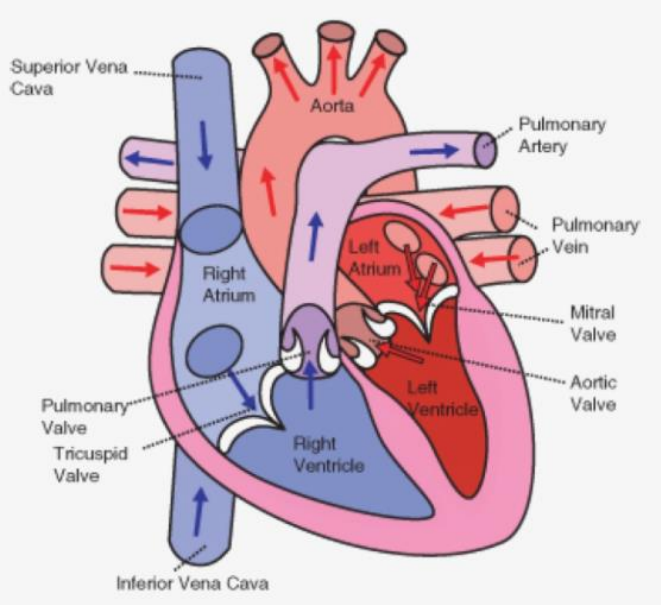
Aerobic respiration – it happens in the absence of oxygen. Pyruvic acid is either converted into carbon dioxide and water. Thus, releasing a lot of energy.

Anaerobic respiration – it happens in the presence of oxygen. Pyruvic acid is converted either into carbon dioxide and ethanol or into lactic acid.



Q81. Describe the flow of blood through the heart of human beings.

Answer:



The Human Heart

The rich oxygenated blood from lungs comes to a thin-walled upper chamber called as left atrium.

Left atrium relaxes when it is collecting blood and contracts when the blood is entering the left ventricle. When the muscular left ventricle contracts, blood is pumped out of the body.

De-oxygenated blood from the upper chamber on the right atrium, and it gets expand. As the right atrium contracts, the lower chamber, the right ventricle dilates. And transfers blood to right ventricle, which pumps it to the lungs for oxygenation.

The whole process is repeated continuously.

Q82. Describe the process of urine formation in kidneys.

Answer:

Urine is formed in the kidney in the nephron, that is, the structural and functional unit of kidney.

The following three stages are involved in the process of urine formation:

1. Glomerular filtration – Water and solutes smaller than proteins are forced through the capillary walls and pores of the glomerular capsule into the rental tubule.
2. Tubular Reabsorption – water, glucose, amino acids, and needed ions are transported out of the filtrate into the tubule cells and then enter the capillary blood.
3. Tubular Secretion - H^+, K^+, creatinine and drugs are removed from the peritubular blood and secreted by the tubule cells into the filtrate.

   The urine is collected in urinary bladder.