**INDIAN SCHOOL MULADHA**

**LIFE PROCESSES**

Prepared by Mr. John Ebenezer

**CLASS: X BIOLOGY**

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**Multiple Choice Questions**

**1. 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 starch**

**(c) They convert carbon dioxide and water into carbohydrates in the absence of sunlight**

**(d) They constitute the first trophic level in food chains**

**Ans. (c) They convert carbon dioxide and water into carbohydrates in the absence of sunlight**

**Explanation:**

They need sunlight to convert carbon dioxide and water into carbohydrates.

**2. 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**

**Ans. (b) Yeast, mushroom, bread mould**

**Explanation:**

Yeast, mushroom and bread mould are saprophytes and Saprophytes break the food material outside their body and absorbed.

**3. Select the correct statement**

**(a) Heterotrophs do not synthesise their own food**

**(b) Heterotrophs utilise solar energy for photosynthesis**

**(c) Heterotrophs synthesise their own food**

**(d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates**

**Ans. (a) Heterotrophs do not synthesise their own food**

**Explanation:**

Heterotrophs either dependent on Phototrophs or other organisms for their food.

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

**(a) Mouth → stomach → small intestine → oesophagus → large intestine**

**(b) Mouth →oesophagus → stomach → large intestine → small intestine**

**(c) Mouth → stomach → oesophagus → small intestine → large intestine**

**(d) Mouth → oesophagus → stomach → small intestine → large intestine**

**Ans. (d) Mouth → oesophagus → stomach → small intestine → large intestine**

**5. 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**

**Ans. (b) Starch breaking down into sugars**

**Explanation:**

Salivary Amylase enzyme present in the saliva breaks down Starch into simpler sugar and helps in digesting them. Hence the breakdown of starch will be affected if salivary amylase is lacking in the saliva.

**6. The inner lining of the stomach is protected by one of the following from hydrochloric acid. Choose the correct one (a) Pepsin**

**(b) Mucus**

**(c) Salivary amylase**

**(d) Bile**

**Ans. (b) Mucus**

**7. Which part of alimentary canal receives bile from the liver?**

**(a) Stomach**

**(b) Small intestine**

**(c) Large intestine**

**(d) Oesophagus**

**Ans. (b) Small intestine**

**Explanation:**

Bile goes to small intestine from gall bladder through hepta pancreatic duct.

**8. 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**

**Ans. (d) starch**

**Explanation**

Starch is made up of two components Amylose and Amylopectin. When we add iodine to starch-containing water Amylose reacts with iodine to form a blue colour complex. Here the solution gives blue-black colour on adding Iodine which confirms the presence of starch in the rice water.

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

**(a) Stomach**

**(b) Mouth cavity**

**(c) Large intestine**

**(d) Small intestine**

**Ans. (d) Small intestine**

**Explanation:**

Although primary digestion process is conducted in mouth and stomach most of the digestion process occurs in the small intestine and large intestine digestion process will not take place.

**10. Choose the function of the pancreatic juice from the following**

**(a) trypsin digests proteins 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**

**Ans. (d) trypsin digests proteins and lipase emulsified fats**

**Explanation:**

Trypsin breaks down proteins into polypeptides and Lipase digest emulsified fat molecules into fatty acids and glycerol.

**11. When air is blown from the 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**

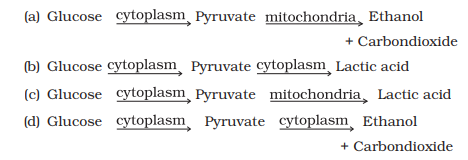
**(d) water vapour**

Ans. **(b) carbon dioxide**

**Explanation:**

Carbon dioxide reacts with lime water and turns the lime water milky.

**12. The correct sequence of anaerobic reactions in yeast is**

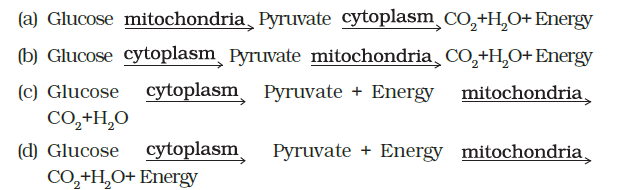


**Ans. d)**

**Explanation:**

In Yeast cytoplasm Glucose is breakdown in anaerobic condition to produce Pyruvate which is further breakdown to Ethanol and carbon-di-oxide

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



**Ans. (B)**

**14. Which of the following statement(s) is (are) true about respiration?**

**(i) During inhalation, ribs move 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 the blood into the alveolar air**

**(iii) Haemoglobin has a greater affinity for carbon dioxide than oxygen**

**(iv) Alveoli increase surface area for exchange of gases**

**(a) (i) and (iv)**

**(b) (ii) and (iii)**

**(c) (i) and (iii)**

**(d) (ii) and (iv)**

**Ans. (d) (ii) and (iv)**

**Explanation:**

Statement i) is wrong because ribs move outward and the diaphragm is lowered during inhalation. Similarly Option iii) is wrong because Hemoglobin has greater affinity for Oxygen than CO2.

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

**(a) Nostrils →larynx →pharynx →trachea →lungs**

**(b) Nasal passage →trachea →pharynx →larynx →alveoli**

**(c) larynx →nostrils →pharynx →lungs**

**(d) Nostrils →pharynx →larynx →trachea →alveoli**

**Ans. (d) Nostrils →pharynx →larynx →trachea→alveoli**

**Explanation:**

Air enters respiratory system through nostrils, passes to pharynx, larynx, trachea and then to alveoli. After inhalation diaphragm and intercoastal muscles contract along with expansion of thoracic muscles which creates enough space for the air to enter into the lungs.

**16. During respiration exchange of gases take place in**

**(a) trachea and larynx**

**(b) alveoli of lungs**

**(c) alveoli and throat**

**(d) throat and larynx**

**Ans. (b) alveoli of lungs**

**Explanation:**

Trachea, Larynx provide a passage for the movement of air. Gas exchange takes place in Alveoli of lungs. From alveoli, oxygen diffuses into blood and Carbon-di-oxide exhaled out of blood.

**17. Which of the following statement (s) is (are) true about the heart?**

**(i) The left atrium receives oxygenated blood from different parts of the body while the 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 the right ventricle which sends it to different body parts**

**(iv) The right atrium receives deoxygenated blood from different parts of the body while the left ventricle pumps oxygenated blood to different parts of the body**

**(a) (i)**

**(b) (ii)**

**(c) (ii) and (iv)**

**(d) (i) and (iii)**

**Ans. (c) (ii) and (iv)**

**Explanation:**

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

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

**(a) Valves in heart**

**(b) Thick muscular walls of ventricles**

**(c) Thin walls of atria**

**(d) All of the above**

**Ans. (a) Valves in the heart**

**Explanation:**

Walls in the heart are responsible for only pumping of the blood and they are not responsible for blocking backflow of blood inside the heart during contraction.

**19. Single circulation i.e., blood flows through the heart only once 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**

**Ans. (b) Hippocampus, Exocoetus, Anabas**

**Explanation:**

In Option a) Chameleon is a reptile and Salamander is an amphibian which are having 3 chambered hearts and show partial double circulation. In Option c) all are Amphibians and they show partial double circulation. In option d) Whale is a mammal but turtle is a reptile hence option d) is wrong.

**20. In which of the following vertebrate group/groups, the 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**

**Ans. (d) Pisces only**

**Explanation:**

This is because of the single circulation where deoxygenated blood from all part of the body is pumped into the heart. From the heart, it is pumped to gills where it gets oxygenated and gets transferred to all parts of the body. Hence it proves Pisces will not receive oxygenated blood.

**21. 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) They have thick elastic walls, blood flows under low pressure; carry blood from the heart to various organs of the body**

**(d) They 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.**

**Ans. (d) They 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.**

**22. The filtration units of kidneys are called**

**(a) ureter**

**(b) urethra**

**(c) neurons**

**(d) nephrons**

**Ans. (d) nephrons**

**Explanation:**

Nephron is called as the functional unit of the kidney. It helps in removing the waste products and excess substances from our body.

**23. Oxygen liberated during photosynthesis comes from**

**(a) water**

**(b) chlorophyll**

**(c) carbon dioxide**

**(d) glucose**

**Ans. (a) water**

**Explanation:**

During photosynthesis, water molecule splits to produce Oxygen and Hydrogen Ions. Oxygen is expelled out of plants and Hydrogen is used to reduce Carbon-di-oxide to produce carbohydrates.

**24. The blood leaving the tissues becomes richer in**

**(a) carbon dioxide**

**(b) water**

**(c) haemoglobin**

**(d) oxygen**

**Ans. (a) carbon dioxide**

**Explanation:**

Because of respiration Carbon-di-oxide gets accumulated in tissues. Hence blood leaving the tissues becomes richer in Carbon-di-oxide.

**25. 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 for life processes**

**Ans. (c) Movement of molecules does not take place among cells**

**Explanation:**

Movement of molecule is a vital process. Movement of molecules in cells take place in active and passive modes such as Diffusion, osmosis, facilitated diffusion etc.

**26. The internal (cellular) energy reserve in autotrophs is**

**(a) glycogen**

**(b) protein**

**(c) starch**

**(d) fatty acid**

**Ans. (c) starch**

**Explanation:**

Glycogen is the stored energy in animals, Plants stores energy in the form of Starch.

**27. Which of the following equations is the summary of photosynthesis?**

**(a) 6CO2 + 12H2O → C6H12O6 + 6O2 + 6H2O**

**(b) 6CO2 +H2O + Sunlight→C6H12O6 + O2 + 6H2O**

**(c) 6CO2 + 12H2O + Chlorophyll + Sunlight→ C6H12O6 + 6O2 + 6H2O**

**(d) 6CO2 + 12H2O + Chlorophyll + Sunlight→ C6H12O6 + 6CO2 + 6H2O**

**Ans. (c) 6CO2 + 12H2O + Chlorophyll + Sunlight→ C6H12O6 + 6O2 + 6H2O**

**Explanation:**

Option a does not show the factors responsible for photosynthesis . Option b) is not a balanced equation. Option d) is wrong as it has CO2 in the products.

**28. Choose the event 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**

**Ans. (c) Oxidation of carbon to carbon dioxide**

**29. The opening and closing of the stomatal pore depends upon**

**(a) oxygen**

**(b) temperature**

**(c) water in guard cells**

**(d) concentration of CO2 in stomata**

**Ans. (c) water in guard cells**

**Explanation:**

Opening of guard cells is facilitated by the entry of water inside guard cells. This make the guard cell turgid. Closing of guard cells is facilitated by water coming out of guard cells. This will make the guard cells flaccid.

**30. Choose the forms in which most plants absorb nitrogen**

**(i) Proteins**

**(ii) Nitrates and Nitrites**

**(iii) Urea**

**(iv) Atmospheric nitrogen**

**(a) (i) and (ii)**

**(b) (ii) and (iii)**

**(c) (iii) and (iv)**

**(d) (i) and (iv)**

**Ans. (b) (ii) and (iii)**

**Explanation:**

Plants cannot absorb atmospheric Nitrogen. They can absorb the Nitrogen in the form of Nitrates, Nitrites and Urea present in the soil.

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

**(a) Pepsin**

**(b) Cellulase**

**(c) Amylase**

**(d) Trypsin**

**Ans. (c) Amylase**

**Explanation:**

Amylase is secreted in mouth and acts on the starch to convert into simpler molecules. Hence Amylase is the first enzyme to mix with food in the digestive tract.

**32. Which of the following statement(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)**

**Ans. (c) (i) and (iv)**

**Explanation:**

Fermentation is carried out by anaerobes in the cytoplasm. Hence option ii) and iii) are wrong.

**33. Lack of oxygen in muscles often leads to cramps among cricketers. This results 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**

**Ans. (d) conversion of pyruvate to lactic acid**

**Explanation:**

Breakdown of Pyruvate in the 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.

**34. Choose the correct path of urine in our body**

**(a) kidney → ureter → urethra → urinary bladder**

**(b) kidney → urinary bladder → urethra → ureter**

**(c) kidney → ureters → urinary bladder → urethra**

**(d) urinary bladder → kidney → ureter → urethra**

**Ans. (c) kidney → ureters → urinary bladder → urethra**

**Explanation:**

Urine from nephron is brought to the collecting duct of kidneys where the urine enters the ureters. There are 2 ureters, each opening from one kidney into the urinary bladder. The urinary bladder stores urine and its size increases as the amount of urine collected increases. When the CNS gives a voluntary message the muscles of bladder contract and the bladder sphincter relaxes thus excreting urine out through the urethra.

**35. 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**

**Ans. (a) cytoplasm**

**Explanation:**

When there is lack of oxygen Breakdown of Pyruvate takes place in the cytoplasm of muscle cells leading to the formation of Lactic acid.

**Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**

(a) Both A and R are true and R is the correct explanation of A.  
(b) Both A and R are true but R is not the correct explanation of A.  
(c) A is true but R is false.  
(d) A is false but R is true.

**1. Assertion (A) :**Plants lack excretory organs.  
**Reason (R) :**Plants usually absorb essential nutrients.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**2. Assertion (A) :**In anaerobic respiration, one of the end product is alcohol.  
**Reason (R) :** There is an incomplete breakdown of glucose.

Answer (a) Both A and R are true and R is the correct explanation of A.

**3. Assertion (A) :**In plants there is no need of specialised respiratory organs.  
**Reason (R) :**Plants do not have great demands of gaseous exchange.

Answer (a) Both A and R are true and R is the correct explanation of A.

**4. Assertion (A) :**Bile is essential for digestion of lipids.  
**Reason (R) :**Bile juice contains enzymes.

Answer (c) A is true but R is false.

**5. Assertion (A) :**Carbohydrate digestion mainly takes place in small intestine.  
**Reason (R) :** Pancreatic juice contains the enzyme lactase.

Answer (c) A is true but R is false.

**6. Assertion (A) :**Aerobic respiration requires less energy as compared to anaerobic respiration.  
**Reason (R) :**Mitochondria is the powerhouse of the cell.

Answer (d) A is false but R is true.

**7.** **Assertion (A):** Arteries are thick-walled and elastic in nature.  
**Reason (R) :** Arteries have to transport blood away from the heart.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**8. Assertion (A) :**Human heart is four-chambered.  
**Reason (R) :** Vena cava is the only artery that supplies deoxygenated blood to the heart.

Answer (c) A is true but R is false.

**9. Assertion (A):** Energy is required to carry out different life processes.  
**Reason (R) :** Energy is obtained in the form of ATP in the mitochondria.

Answer (a) Both A and R are true and R is the correct explanation of A.

**10. Assertion (A):** Rings of cartilage are present in the throat,  
**Reason (R) :** These ensure that the air-passage does not collapse

Answer (a) Both A and R are true and R is the correct explanation of A.

**11. Assertion (A):** Pyruvate is a six-carbon molecule  
**Reason (R) :** It is prepared in the cytoplasm as the first step to cellular respiration

Answer (d) A is false but R is true.

**12. Assertion (A):** Molecular movements are needed for life.  
**Reason (R):** Body structures made up of these molecules need continuous repair and maintenance

Answer (a) Both A and R are true and R is the correct explanation of A.

**13. Assertion (A):** Diffusion does not meet high energy requirements of multi-cellular organisms  
**Reason (R) :** Diffusion is a fast process but occurs at the surface of the body.

Answer (c) A is true but R is false.

**14. Assertion (A):** The opening and closing of the pore is a function of the guard cells.  
**Reason (R) :** Stomatal pores are the site for exchange of gases by diffusion.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**15. Assertion (A):** The purpose of making urine is to filter out undigested food from intestine  
**Reason (R):** Kidneys filter the waste and produce urine,

Answer (d) A is false but R is true.

**16. Assertion (A):** The inner lining of the small intestine has numerous finger-like projections called villi.  
**Reason (R) :** The villi increase the surface area for absorption.

Answer (a) Both A and R are true and R is the correct explanation of A.

**17. Assertion (A):** In human beings, the respiratory pigment is haemoglobin  
**Reason (R) :** It is a type of protein which has high-affinity carbon dioxide.

Answer (c) A is true but R is false.

**18. Assertion :** The plants store some of the waste products in their body parts.  
**Reason:**Raphides are the solid waste products of plants.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**19. Assertion :** The movement of water and dissolved salts in xylem is always upwards.  
**Reason:**‘The upward movement of water is due to low pressure created by transpiration.

Answer (a) Both A and R are true and R is the correct explanation of A.

**20. Assertion :** Photosynthesis takes place in green parts of the plants.  
**Reason:**Photosynthesis always takes place in leaves.

Answer (c) A is true but R is false.

**21. Assertion:**The average number of heart beat of a person at rest is about 80 per minute.  
**Reason:**One contraction and relaxation of the heart constitutes a complete heart beat.

Answer (d) A is false but R is true.

**22. Assertion :**Ureters are the tubes which carry urine from kidneys to the bladder.  
**Reason:**Urine is stored in the urethra.

Answer (c) A is true but R is false.

**23. Assertion :**Ventricles have thicker walls than auricles.  
**Reason:**Ventricles have to pump blood into various organs with great pressure

Answer (a) Both A and R are true and R is the correct explanation of A.

**24. Assertion :**Capillaries are the thinnest blood vessels.  
**Reason:**Capillaries connect the branches of arteries and veins.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**25. Assertion :**Blood takes up oxygen from the alveolar air and release CO2 during exchange.  
**Reason:**‘The concentration of O, is more in alveolar air.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**26. Assertion:**The large intestine is the largest part of the alimentary canal.  
**Reason:**Tiger has a shorter small intestine, than herbivores.

Answer (d) A is false but R is true.

**27. Assertion :**Most of the living organisms carry out aerobic respiration.  
**Reason:**Mitochondria is the site of aerobic respiration in the cell.

Answer (b) Both A and R are true but R is not the correct explanation of A.

**28. Assertion :**The Bowman’s capsule and the tubule together make a nephron.  
**Reason :**The function of tubule is to allow the selective reabsorption of substances like glucose, amino  
acids, urea, salts and water into the blood capillaries.

Answer (c) A is true but R is false.

**29. Assertion :**Pancreatic juice digests starch, proteins and fats.  
**Reason:**Pancreatic juice contains digestive enzymes like pancreatic amylase, trypsin and lipase.

Answer (a) Both A and R are true and R is the correct explanation of A.

**30. Assertion:**The accumulation of lactic acid in the muscles causes muscle cramps.  
**Reason:**During vigorous physical exercise leg muscles respire anaerobically.

Answer (a) Both A and R are true and R is the correct explanation of A.

**31. Assertion :**Phloem helps in translocation of food from the leaves.  
**Reason:** Phloem provides mechanical support to plant.

Answer (c) A is true but R is false.

**32. Assertion :**Trachea does not collapse, when there is no air in it.  
**Reason :**Trachea is supported by cartilage.

Answer (a) Both A and R are true and R is the correct explanation of A.

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