LIFE PROCESSES

1. **Why is diffusion insufficient to meet the oxygen requirements of multi-cellular organisms like humans?**

- Humans possess complex body designs for performing various functions of the body.
- Their cells are not in direct contact with the outside environment.

2. **What is the significance of Photosynthesis?**

A. Helps in maintaining the balance of carbon dioxide and oxygen in the air.

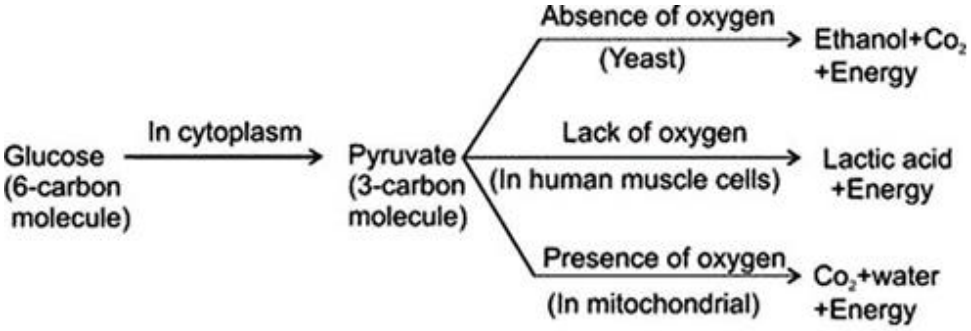
3. **State the function of digestive enzymes.**

A. Digestive enzymes such as amylase, lipase, pepsin, trypsin, etc. help in the breaking down of complex food particles into simple ones.

4. **What is the role of the acid in our stomach?**

- The hydrochloric acid kills the harmful microbes that enter with food
- Creates acidic medium for activation of pepsin

5. **What are the different ways in which glucose is oxidized to provide energy in various organisms?**



(Break down of glucose by various pathways)

6. **How are the lungs designed in human beings to maximize the area for exchange of gases?**

- Lungs have numerous alveoli increase the surface area for gaseous exchange making the process of respiration more efficient.

- The exchange of gases takes place between blood of the capillaries that surround the alveoli li. Thus, alveoli are the site for exchange of gases.

7. Give the functions of each: A) RBC B) WBC C) Platelets

A. Blood is composed of plasma, blood cells and platelets.

A) Red Blood Corpuscles (RBCs): These are of red colour because of the presence of haemoglobin which is a pigment. The **transport of oxygen** happens through haemoglobin.

B) White Blood Corpuscles (WBCs): They play important role in the **immunity.**

C) Platelets: Platelets are responsible for **blood clotting**.

8. **Give 2 functions of lymph**

A. It transports digested fats

It provides immunity.

8. Explain double circulation.

A. In the human heart, blood passes through the heart twice in one cardiac cycle. This type of circulation is called double circulation.
Pulmonary circulation: Deoxygenated blood flows into the lungs , oxygenates and return to heart
Systemic circulation: Oxygenated blood flows to various parts of the body through aorta.

9. Name the conducting elements of xylem and phloem. Give their functions.

A. **Function of Xylem**: Xylem is responsible for transportation of water and minerals.
It is composed of tracheids, xylem vessels, xylem parenchyma and xylem fibre.
Tracheids and xylem vessels are the conducting elements.
Function of Phloem : Transport of food in plants happens because of utilization of energy

It is composed of sieve cells, companion cells, phloem parenchyma and phloem fibres.

10. How is food transported in plants?

- Phloem transports food materials from the leaves to different parts of the plant body, by utilizing energy from ATP.
- The osmotic pressure moves the food material such as sucrose in the phloem to the tissues which have less pressure, according to the needs of the plant.

11. How are water and minerals transported in plants?

A. Xylem tracheids and vessels of roots, stems and leaves forms continuous water-conducting channels that reaches all parts of the plant.
Transpiration creates a suction pressure, as a result of which water is forced into the xylem cells of the roots. Then, there is a steady upward movement of water from the root xylem to all the plant parts.

12. How is excretion carried out in plants?

A. Excretion is carried out in the plants in the following ways:
    - Oxygen, carbon dioxide and water vapour are removed through stomata of leaves and lenticels of stems.
    - Tannins, resins, gum, rubber and essential oils are some such excretory wastes.

13. How are fats digested in our bodies? Where does this process take place?

A. The bile salts (from the liver) break down the large fat globules into smaller globules so that the pancreatic enzymes can easily act on them to break them into smaller molecules. It takes place in the small intestine.

14. State the role of saliva in the digestion of food.

A. Saliva is secreted by the salivary glands.
It moistens the food for easy swallowing.
It contains an enzyme salivary amylase, which breaks down starch into sugar

15. Differentiate between aerobic and anaerobic respiration.

A. **Aerobic Respiration**	**Anaerobic Respiration**
It occurs in the presence of O2	It occurs in the absence of O2.
It occurs in cytoplasm and Mitochondria	It occurs only in cytoplasm.
Large amount of energy is released	Less amount of energy is released

16. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

A. These animals require more oxygen (O2) for more cellular respiration so that they can produce more energy to maintain their body temperature.
Thus, it is necessary for them to separate oxygenated and de-oxygenated blood, so that their circulatory system is more efficient

17. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration?

A. Terrestrial organisms take up oxygen from the atmosphere whereas aquatic animals need to utilize oxygen present in the water.
Air contains more O2 as compared to water. So, the terrestrial animals do not have to breathe faster to get more oxygen.

18. How is the small intestine designed to absorb digested food?

A. The small intestine has millions of tiny finger-like projections called villi.
These villi increase the surface area for more efficient food absorption.
Many blood vessels within villi are present that absorb the digested food

19. A) Name the kind of nutrition followed by Amoeba.
B) Name the process by which it ingests food.

A. Holozoic type of nutrition
Endocytosis

20. What is translocation in plants?

A. Transport of food (soluble products) through phloem in plants.

21. Name the pigment responsible for the transportation of gases in human beings.

A. Haemoglobin

22. Why do walls of trachea not collapse when there is less air in it?

A. Because it is supported by rings of cartilage.

23. Why are the walls of ventricles thicker than the auricles?

A. Because ventricles have to pump the blood to all parts of the body.

24. State 2 vital functions of the human kidney.

A. Excretion and osmoregulation

25. List 3 events that occur during photosynthesis.

A. 1. Absorption of light by chlorophyll
2. conversion of light energy to chemical energy
3. splitting of water into hydrogen and oxygen
4. reduction of carbon dioxide to carbohydrates

26. State two functions of stomata.

- Help in gaseous exchange
- transpiration

27. State 2 functions of liver.

- Help in digestion of fats
- Make the acidic food alkaline for enzymes to act on it.

28. Draw a sectional view of human heart and label the chamber:

a. that receives deoxygenated blood from all parts of the body

b. that receives oxygenated blood from lungs

c. that sends oxygenated blood to all parts of the body

d. that sends deoxygenated blood to lungs

A. For the Diagram refer textbook

a. Right auricle

b. Left auricle

c. Left ventricle

d. Right ventricle

29. What will happen if mucus is not secreted by gastric glands?

A. It will lead to excessive acidity , discomfort and ulcers.

Mucus protects inner lining of stomach from the action of HCl

30. When do desert plants take up CO_2 and perform photosynthesis.

A. During night

CO_2 is stored in organic acid at night and

Photosynthesis takes place during the day with light energy available to the plant.

31. What would be the consequence of deficiency of haemoglobin in our bodies.

A. The person shows symptoms like breathlessness, tiredness with iron deficiency leading to anaemia.

32. What are the raw materials required by the plant to perform photosynthesis?

A. CO_2 and H_2O

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