

## CHAPTER 10

### LIFE PROCESSES

Very Short Answer Type Question [1 Mark]

Question 1- 11: Multiple Choice Questions- Choose the most appropriate option

1. Woody plants carry gaseous exchange through
  - (a) Root hair
  - (b) Lenticels
  - (c) Stem hair
  - (d) Epidermal cells
2. Which of the following are energy foods?
  - (a) Carbohydrates and fats
  - (b) Proteins and mineral salts
  - (c) Vitamins and minerals
  - (d) Water and roughage
3. In which mode of nutrition an organism derives its food from the body of another living organism without killing it?
  - (a) Saprotrophic nutrition
  - (b) Parasitic nutrition
  - (c) Holozoic nutrition
  - (d) Autotrophic nutrition
4. In amoeba, food is digested in the:
  - (a) food vacuole
  - (b) mitochondria
  - (c) pseudopodia
  - (d) chloroplast
5. The procedure used for cleaning the blood of a person by separating urea from it is called:
  - (a) osmosis
  - (b) filtration
  - (c) dialysis
  - (d) double circulation
6. The contraction and expansion movement of the walls of the food pipe is called:
  - (a) translocation
  - (b) transpiration

- (c) peristaltic movement
  - (d) digestion
7. What are the products obtained by anaerobic respiration in plants?
    - (a) Lactic acid + Energy
    - (b) Carbon dioxide + Water + Energy
    - (c) Ethanol + Carbon dioxide + Energy
    - (d) Pyruvate
  8. Which part of nephron allows the selective reabsorption of useful substances like glucose, amino acids, salts and water into the blood capillaries?
    - (a) Tubule
    - (b) Glomerulus
    - (c) Bowman's capsule
    - (d) Ureter
  9. Name the substances whose build up in the muscles during vigorous physical exercise may cause cramps?
    - (a) Ethanol + Carbon dioxide + Energy
    - (b) Lactic acid + Energy
    - (c) Carbon dioxide + Water + Energy
    - (d) Pyruvate
  10. Which is the correct sequence of body parts in the human alimentary canal?
    - (a) Mouth → stomach → small intestine → large intestine → oesophagus
    - (b) Mouth → oesophagus → stomach → small intestine → large intestine
    - (c) Mouth → stomach → oesophagus → small intestine → large intestine
    - (d) Mouth → oesophagus → stomach → large intestine → small intestine
  11. Identify the correct path of urine in the human body.
    - (a) Kidney → urinary bladder → urethra → ureter
    - (b) Urinary bladder → ureter → kidney → urethra
    - (c) Kidney → ureter → urethra → urinary bladder
    - (d) Kidney → ureter → urinary bladder → urethra
  12. The exit of food from the stomach is regulated by a ..... muscle.
  13. .... is the longest part of the alimentary canal.
  14. The process of breakdown of glucose, (a six-carbon molecule) into pyruvate, (a three-carbon molecule), takes place in .....
  15. Breaking of pyruvate using oxygen takes place in.....
  16. The blood has ..... cells which plug the leakage in the vessels by helping to clot the blood at the point of injury.
  17. Mention the raw materials required for photosynthesis.

18. What are the final products after digestion of carbohydrates and proteins?
19. Name the green dot like structures in some cells observed by a student when a leaf peel was viewed under a microscope. What is this green colour due to?
20. Name the process in plants where water is lost as water vapour.
21. What is translocation in plants?
22. Match column A with column B:

<b>Column (A)</b>	<b>Group (B)</b>
(a) Trypsin	(i) Pancreas
(b) Amylase	(ii) Liver
(c) Bile	(iii) Gastric glands
(d) Pepsin	(iv) Saliva

23. Name the component of blood that helps in the formation of blood clot in the event of a cut.
24. What will happen to a plant if its xylem is removed?
25. Name the mode of nutrition in human beings?
26. Name the cartilaginous flap which closes the glottis to check the entry of food into it during swallowing
27. Name the form in which the energy derived from the food is stored in humans.
28. Define photosynthesis.
29. Name the tissue that transports food from leaves to other parts of plants.
30. "The breathing cycle is rhythmic whereas exchange of gases is a continuous process". Justify this statement.
31. Define transpiration?
32. Name the tissue which transports water and minerals in a plant?

33. Where from autotrophs obtain CO<sub>2</sub> and H<sub>2</sub>O to make their food?
34. Which pancreatic enzyme is effective in digesting protein?
35. Name the tissue which transports soluble products of photosynthesis in a plant.
36. Which enzyme present in saliva breaks down starch?
37. Match group A with group B:

Group (A)	Group (B)
(a) Autotrophic nutrition	(i) Leech
(b) Heterotrophic nutrition	(ii) Paramecium
(c) Parasitic nutrition	(iii) Deer
(d) Digestion in food vacuoles	(iv) Green plant

38. What is the role of saliva in the digestion of food?
39. Name the stored food of animals.
40. How does transport of water occur at night in the absence of transpiration?
41. Name the component of food not digested in stomach.
42. Mention the site of complete digestion of carbohydrates, proteins and fats in humans.
43. How do plant cells change their shape?
44. Name the form in which energy derived from food is stored in humans.
45. Name the process used by single celled organism for taking in food, exchange of gases or removal of wastes
46. Identify the category in which organisms using carbon dioxide and water as food are placed?
47. Match column A with B:

Column (A)	Column (B)
(a) Phloem	(i) Excretion
(b) Nephron	(ii) Translocation of food
(c) Veins	(iii) Clotting of blood
(d) Platelets	(iv) Deoxygenated blood

**Question 48-57: Assertion-Reason Type Questions. Use the following key to choose the appropriate answer:**

- (A) If both assertion and reason are CORRECT and the reason is the CORRECT explanation of the assertion.
- (B) If both assertion and reason are CORRECT, but the reason is NOT THE CORRECT explanation of the assertion.

**(C) If the assertion is CORRECT, but the reason is INCORRECT**

**(D) If the assertion is INCORRECT, but the reason is CORRECT**

**(E) If both assertion and reason are INCORRECT QUESTIONS**

48. ASSERTION: Molecular movements are needed for life.  
REASON: Body structures made up of these molecules need continuous repair and maintenance.
49. ASSERTION: Diffusion does not meet high energy requirements of multi-cellular organisms.  
REASON: Diffusion is a fast process but only occurs at the surface of the body.
50. ASSERTION: The opening and closing of the pore is a function of the guard cells.  
REASON: Stomatal pores are the site for exchange of gases by diffusion.
51. ASSERTION: Saliva contains pepsin enzyme.  
REASON: Pepsin digests lipids.
52. ASSERTION: The inner lining of the small intestine has numerous finger-like projections called villi.  
REASON: The villi increase the surface area for absorption.
53. ASSERTION: Pyruvate is a six-carbon molecule.  
REASON: It is prepared in the cytoplasm as the first step to cellular respiration.
54. ASSERTION: Rings of cartilage are present in the throat.  
REASON: These ensure that the air-passage does not collapse.
55. ASSERTION: In human beings, the respiratory pigment is haemoglobin.  
REASON: It is a type of protein which has high-affinity carbon dioxide.
56. ASSERTION: Arteries are thick-walled and elastic in nature.  
REASON: Arteries have to transport blood away from the heart.
57. ASSERTION: The purpose of making urine is to filter out undigested food from intestine.  
REASON: Kidneys filter the waste and produce urine.

### Short Answer Type Questions [2 Marks]

1. What are enzymes? Name any one enzyme of our digestive system and write its function.

2. Explain the process of breakdown of glucose in a cell
  - (i) in the presence of oxygen,
  - (ii) in the absence of oxygen.
3. (i) Write the balanced chemical equation for the process of photosynthesis,  
(ii) When do the desert plants take up carbon dioxide and perform photosynthesis?
4. What would be the consequences of deficiency of haemoglobin in your body?
5. What is saliva? State its role in the digestion of food.
6. Explain the significance of peristaltic movement that occurs all along the gut during digestion.
7. Name the components of blood which transport
  - (i) Food, carbon dioxide and nitrogenous wastes
  - (ii) Oxygen
8. Even when we are not doing any apparent activity, we need energy. Justify giving reason.
9. State any two differences between autotrophic nutrition and heterotrophic nutrition.
10. State the basic difference between the process of respiration and photosynthesis.
11. Which processes would you consider essential for maintaining life?
12. How are water and minerals transported in plants?
13. How is food transported in plants?
14. What are the necessary conditions for autotrophic nutrition and what are its by-products?
15. Why do herbivores have longer, small intestine than carnivores?
16. How are the alveoli designed to maximize the exchange of gases?
17. Leaves of a healthy potted plant were coated with petroleum jelly. How will it affect the plant? State two reasons.
18. (i) Name two waste products which are stored in old xylem in plants.  
(ii) Name the process by which plants get rid of excess water. Name the pores through which this process takes place.

19. Which gland secretes a hormone when the blood sugar rises? Name the juices released by this organ.
20. The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms. Give reason. State the pathway of air from nostrils to the lungs in human beings.
21. (i) State the purpose of formation of urine.  
(ii) What will happen if there is no tubular reabsorption in the nephrons of kidney?
22. What is the advantage of a four chambered heart?
23. Ventricles have thicker muscular walls than atria. Give reason.
24. What happens to glucose, amino acids, salts and water that enter the nephron along with filtrate.
25. "Lymph is another type of fluid involved in transportation". Justify the statement by explaining the process.
26. (i) Name two different ways in which glucose is oxidised to provide energy in various organism.  
(ii) Write any two differences between the two oxidations of glucose in organisms.
27. What will happen to guard cells and the stomatal pore when water flows into guard cell.
28. How is required pH maintained in the stomach and small intestine?
29. What do the following transport?
  - (i) Xylem
  - (ii) Phloem
  - (iii) Pulmonary vein
  - (iv) Vena cava.

#### Short Answer Type Questions [3 Marks]

1. Draw a diagram of human excretory system and label kidneys, ureters on it.
2. (i) State reason for the following:
  - (a) Rings of cartilage are present in the trachea.
  - (b) Plants look green in colour.

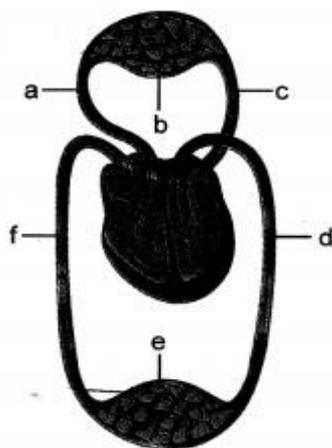
- (ii) Write other names of the following:
- (a) Alveolar sac
  - (b) Voice box
3. Name the type of asexual reproduction in which two individuals are formed from a single parent and the parental identity is lost. Write the first step from where such a type of reproduction begins. Draw first two stages of this reproduction.
4. (i) What happens to the heart when muscles work harder?  
(ii) Which body system is directly affected when a person has heart disease?  
(iii) Which cells increase in number during infection?
5. Name the intermediate and the end products of glucose breakdown in aerobic respiration.
6. Name the acid presents in the following:  
(i) Tomato (ii) Vinegar (iii) Tamarind
7. Give reasons for the following:  
(i) Arteries are thick walled.  
(ii) Plants have low energy needs.
8. State the role of the following in human digestive system:  
(i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi
9. How is small intestine designed to absorb digested food?
10. (i) Name the blood vessel that brings oxygenated blood to the human heart.  
(ii) Which chamber of the heart receives oxygenated blood?  
(iii) Explain how is the oxygenated blood from this particular chamber sent to all the body parts?
11. How does respiration in plants differ from that in animals?
12. Draw a diagram of human respiratory system and label on it:  
(i) Diaphragm (ii) Larynx
13. (i) Name the site of exchange of material between the blood and surrounding cells.  
  
(ii) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide in human body.

14. List in tabular form three differences between arteries and veins.
15. Explain the schematic representation of gaseous exchange in tissues.
16. (i) What is the role of HCl in our stomach?  
(ii) What is emulsification of fats?  
(iii) Which protein digesting enzyme is present in pancreatic juice?
17. List the three kinds of blood vessels of human circulatory system and write their functions in tabular form.
18. What are the functions of lymph in our body?
19. What is “translocation”? Why it is essential for plants?
20. Give an experiment to prove the essentiality of light for photosynthesis.
21. With the help of labelled diagram, discuss the structure of cross – section of leaf.
22. Dark reaction of photosynthesis does not need light. Do plants undergo dark reaction at night explain.
23. Differentiate between inhalation and exhalation.
24. List in tabular form two ways in which transpiration is different from translocation,
25. What is role of skin, lungs and intestine in the process of excretion in man?
26. Explain the structure of chloroplast.
27. List the major steps involved in formation of urine and state in brief their functions.
28. Name three different glands associated with the digestive system in humans. Also name their secretions.
29. (i) What is translocation? Why is it essential for plants?  
(ii) Where are the substances translocated by the phloem delivered?

30. (i) Explain how the separation of oxygenated and deoxygenated blood is useful in humans?  
(ii) Why is double circulation of blood necessary in humans?
31. How does opening and closing of stomata take place?
32. (i) Name the process by which autotrophs prepare their food.  
(ii) List the three events which occur during this process.  
(iii) State two sources from which plants obtain nitrogen for the synthesis of proteins and other compounds.
33. Name the products formed after complete digestion of carbohydrates, proteins and fats in small intestine.
34. (i) It was found that the leaves of a plant started getting wilted. Name the tissue which might have been blocked. State the role of this tissue in plants.  
(ii) Name the physical phenomenon by which exchange of gases occurs between plant body and atmosphere.
35. Give reasons  
(i) Lungs always contain residual volume  
(ii) Nostrils are lined with mucus

**Long Answer Type Question [5 Marks]**

1. (i) Explain how does the exchange of gases occur in plants across the surface of stems, roots and leaves.  
(ii) How are water and minerals transported in plants?
2. (i) In the given representation of transport and exchange of oxygen and carbon dioxide in human heart label the parts marked as a, b, c, d, e, and f.



- (ii) Write two points of difference between pulmonary artery and pulmonary vein.

3. (i) Draw a diagram of human alimentary canal and label the following parts:
  - (a) largest gland.
  - (b) Gland that secretes digestive enzymes and hormone.
  - (c) Part where HCl is produced.
  - (d) Part where digested food is absorbed.
 (ii) What are villi? Explain their function in the digestive system.
  
4. What are the components of the transport system in human beings? What are the functions of these components?
  
5. (i) Draw diagram of human alimentary canal and label the following:
  1. Part in which starch digestion starts
  2. Part in which bile is stored
  3. Part in which nutrients are absorbed
  4. Part in which water is absorbed.
 (ii) Mention the role of hydrochloric acid in stomach,  
 (iii) What function is served by
  1. Gastric sphincter
  2. Anal sphincter.
  
6. (i) Draw the diagram of human heart and label the following parts which
  1. Receives deoxygenated blood from vena cava
  2. Sends deoxygenated blood to lungs through pulmonary artery
  3. Receives oxygenated blood from lungs and
  4. Sends oxygenated blood to all parts of the body through aorta.
 (ii) What are the components of blood?  
 (iii) Name the respiratory pigment in human beings and discuss its role.
  
7. List and describe in brief any five functions of blood.
  
8. (i) Draw a neat diagram of human respiratory system and label the following parts:  
 Rings of cartilage, Lung, Bronchi, Alveolar sac.  
 (ii) Name any two parasitic plants and two parasitic animals.
  
9. (i) Draw a diagram of an excretory unit of human kidney and label the following:  
 Bowman's capsule, Glomerulus, collecting duct, Renal artery.

- (ii) Write the important function of structural and functional unit of kidney.
  - (iii) Write any one function of an artificial kidney
10. Draw the diagram of sectional view of human heart and on it name and label the following parts:
- (i) The chamber of the heart that pumps out deoxygenated blood.
  - (ii) The blood vessel that carries away oxygenated blood from the heart.
  - (iii) The blood vessel that receives deoxygenated blood from the lower part of our body.
11. In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion.
12. Why and how does water enter continuously into the root xylem of plants?
13. What are differences between aerobic and anaerobic respiration? Name some organisms that use anaerobic mode of respiration?
14. Discuss the major steps involved in process of nutrition in human beings.
15. Explain the process of nutrition in *Amoeba*.
16. Describe the structure and functioning of nephron.
17. (i) Draw a diagram to show open stomatal pore and label on it:
- (a) guard cells
  - (b) chloroplast
  - (c) State two functions of stomata.
- (ii) How do guard cells regulate the opening and closing of stomatal pore?
18. Explain and draw the well labelled diagram of human respiratory system.
19. What are the various modes of excretion in plants?
20. (i) Explain with the help of diagram, how amoeba takes its nutrition.
- (ii) Assume that you are a veterinary surgeon and you had removed a good length of the small intestine of a bear that was suffering from an intestinal tumour. Now, would you suggest a plant based or a meat-based diet for the bear after its recovery? Give reason for your answer.
  - (iii) Do you think plant-based food should be preferred over non-vegetarian food?

21. (i) Draw a diagram depicting Human Alimentary Canal and label on it: Gall bladder, Liver and Pancreas.  
(ii) State the roles of Liver and Pancreas.  
(iii) Name the organ which performs the following functions in humans:  
(a) Absorption of digested food  
(b) Absorption of water.
22. (i) The upward movement of water normally requires a pump in our houses, but in tall trees water rises up without any external support. Explain the mechanism.  
(ii) State three points of difference between the transport of materials in xylem and phloem tissues.
23. Mention the location of four major glands associated with digestive system of humans and explain function of each.
24. (i) Explain the process of digestion of proteins in the stomach and small intestine.  
(ii) How is small intestine designed to absorb digested food.
25. What is lymph? How is composition of lymph different from blood plasma? What is the direction of its flow?  
List two functions of lymphatic system.
26. (i) List two differences between 'holozoic nutrition' and 'saprophytic nutrition. Give two examples each of these two types of nutrition.  
(ii) State the roles of liver and pancreas.  
(iii) Name the organ which performs the following functions in humans:
1. Absorption of digested food
  2. Absorption of water.
- (iv) Explain the statement, "Bile does not contain any enzyme but it is essential for digestion."
27. (i) Draw a schematic representation of transport and exchange of  $O_2$  and  $CO_2$  in human body.  
(ii) Draw a schematic representation of movement of water in plants during transpiration and explain it.  
(iii) Explain transport of food and other substances in plants.  
(iv) Diffusion will not be sufficient to provide raw materials in leaves and energy in roots of plants. Therefore, a proper system of transportation is essential. Explain.

28. (i) How many times the blood goes through the heart during one cycle in fish and why?

(ii) List the respiratory pigment present in our body. Where is it present?

(iii) Why are valves present in heart and veins?

29. (i) Draw a diagram of human respiratory system and label

1. Part where air is filtered by fine hair and mucus
2. Part which terminates in balloon-like structures
3. Balloon-like structures where exchange of gases takes place
4. Part which separates chest cavity from abdominal cavity.

(ii) Draw a diagram of human excretory system and label the following

1. Part in which urine is produced
2. Part which stores the excretory products for expulsion from body.

30. (i) What is the mode of nutrition in

1. Fungi
2. Amarbel (*Cuscuta*)

(ii) Name the part of alimentary canal where:

1. Food is completely digested
2. Secrete juice that has trypsin
3. Secrete bile
4. Absorbs water from unabsorbed food

(iii) Mention the names of any two secretions by the gastric glands and state one role played by each in our body.