6

Life Processes

In the Chapter

- Movement of various types can be considered as an indication of life.
- The maintenance of life requires processes such as nutrition, respiration, transport of materials within the body and excretion of waste products.
- Autotrophic nutrition includes the intake of simple inorganic materials from the environment and using an external energy source such as the Sun to synthesise complex high-energy organic material.
- Heterotrophic nutrition includes the intake of complex material prepared by other organisms.
- In human beings, the food eaten is broken down by various steps along the alimentary canal and the digested food is absorbed in the small intestine to be sent to all cells in the body.
- During the process of respiration, complex organic compounds like glucose are broken down to provide energy in the form of ATP. ATP is used to produce energy for other reactions in the cell.
- Respiration may be aerobic or anaerobic. Aerobic respiration makes more energy available to the organism.
- In human beings, the transport of materials like oxygen, carbon dioxide, food and excretory products is a function of the circulatory system. The circulatory system is composed of the heart, blood and blood vessels.
- In highly differentiated plants, transport of water, minerals, food and other materials is a function of the vascular tissue which consists of xylem and phloem.
- In human beings, excretory products in the form of soluble nitrogen compounds are removed by the nephrons in the kidneys.
- Plants use a variety of techniques to get rid of waste material. For instance, waste material may be stored in the cell-vacuoles or as gum and resin, removed in the falling leaves, or excreted into the surrounding

Intext Exercises

Page No. 95

1. Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like humans?

Ans. In multicellular organisms, all the cells are not in direct contact with surrounding environment. So, simple diffusion will not meet the oxygen requirement of all the cells.

2. What criteria do we use to decide whether something is alive?

Ans. Living organisms must keep repairing and maintaining their structures. All these structures are composed of molecules. They must be capable of moving molecules around, all the time. Thus, molecular (invisible) movement is necessary to identify whether something is alive.

3. What are outside raw materials used for by an organism?

Ans. (i) Food as a source of supplying energy and materials.
(ii) Oxygen for the breakdown of the food to obtained energy.

4. What processes would you consider essential for maintaining life?

Ans. There are various life processes which are essential for maintaining life. Some of them are :
(i) Nutrition (ii) Respiration
(iii) Excretion (iv) Transportation

Page No. 101

1. What are the differences between autotrophic nutrition and heterotrophic nutrition?

Ans. **Autotrophic nutrition :** When the organism like green plants prepare their own food by CO_2 and water in presence of chlorophyll and sunlight, they are called autotrophs. The process is called photosynthesis.

Heterotrophic nutrition : When organisms do not prepare their own food but depend on others for their food, they are called heterotrophs, e.g., fungi and human beings.

2. Where do plants get each of the raw materials required for photosynthesis?

Ans. (i) **Carbon dioxide :** Plants get CO_2 from atmosphere through stomata.
(ii) **Water :** Plants absorb water from soil through roots and transport to leaves.

3. What is the role of the acid in our stomach?

Ans. (i) It makes an acidic medium to the stomach which is necessary for activation of pepsin enzyme.
(ii) It kills the germs present in the food.

4. What is the function of digestive enzymes?

Ans. The food materials are very complex in nature. Digestive enzymes help to break these complex molecules into smaller molecules so that they can be absorbed by the walls of small intestine.

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

Ans. Small intestine is designed to provide more and more area for absorption of digested food and transfer it into the blood for circulation throughout the body. The inner lining of small intestine has a large number of finger like projections called villi. These villi provide a large surface area for absorption of food.

Page No. 105

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

Ans. The organisms that live in water use oxygen dissolved in surrounding water. Since air dissolved in water has fairly low concentration of oxygen, the aquatic organisms has much faster rate of breathing.

Terrestrial organisms take oxygen from the oxygen rich atmosphere through respiratory organs. So, they have much less breathing rate than aquatic organism.

2. What are the different ways in which glucose is oxidised to provide energy in various organisms?

Ans. There are three different ways in which glucose is oxidised to provide energy in various organisms as follows :
(i) breakdown of pyruvate in lack of oxygen i.e., in our muscle cells.
(ii) the breakdown of pyruvate in absence of oxygen in yeast.
(iii) breakdown of glycose in presence of oxygen in mitochondrial cells.

3. How is oxygen and carbon dioxide transported in human beings?

Ans. **(a) Transport of oxygen :** The respiratory pigments (haemoglobin) present in the red blood cells takes up the oxygen from the air to the lungs. They carry the oxygen to tissues which are deficient in oxygen.

(b) Transport of carbon dioxide : Carbon dioxide is more soluble in water. Hence, it is mostly transported from body tissues in the dissolved form in our blood plasma to lungs where it diffuses from blood to air in the lungs and then expelled out through nostrils.

4. How are the lungs designed in human beings to maximise the area for exchange of gases?

Ans. Lungs have balloon-like structures known as alveoli. These balloons can expand and relax according to the amount of gases necessary for respiration.

Page No. 110

1. What are the components of the transport system in human beings? What are the functions of these components?

Ans. Transport system in human being consists of heart, blood and blood vessels.

(i) Heart : Heart is a pumping organ to push and pull blood around the body. It receives the deoxygenated blood from various parts of the body and pumps oxygenated blood throughout the body.

(ii) Blood : It is a fluid connective tissue. It consists of (a) plasma, (b) RBC, (c) WBC and (d) blood platelets. Plasma transports food, CO_2 and nitrogenous wastes in dissolved form. RBC transports respiratory gases and hormones. WBC protects the body from infections and platelets prevent the loss of blood at the time of injury by forming blood clots.

(iii) Blood vessels : There is a network of vessels. They help in the circulation of blood throughout the body.

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

Ans. It is necessary to separate the oxygenated and deoxygenated blood to maintain efficient supply of oxygen into the body. This system is essential in animals that have high energy need. Mammals and birds require constant supply of oxygen to obtain energy.

3. What are the components of the transport system in highly organised plants?

Ans. The main components of transport system in plants are : (i) Xylem, (ii) Phloem.

4. How are water and minerals transported in plants?

Ans. Water and minerals are transported through xylem cells from soil to the leaves.

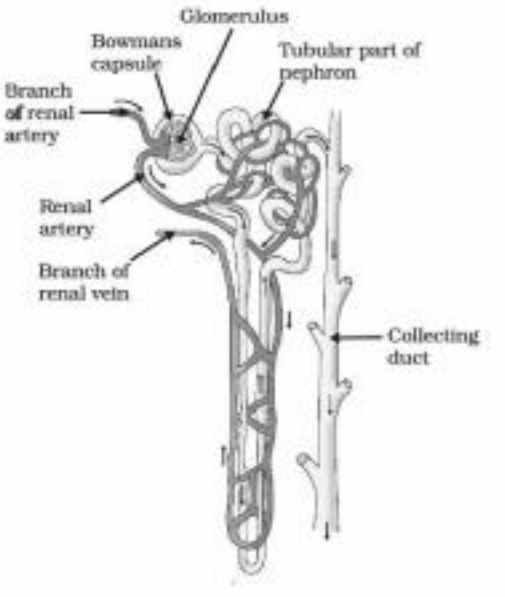
5. How is food transported in plants?

Ans. The prepared food is transported in the plants through phloem to the storage organs of roots, fruits, seeds and growing parts.

Page No. 112

1. Describe the structure and functioning of nephrons.

Ans. **Structure of Nephron :** Nephron is the filtration unit of kidney. It consists of a tubule which is connected with collected duct at one end and a cup-shaped structure at the other end.



This cup-shaped structure is called **Bowman's capsule.** Every Bowman's capsule contains a cluster of capillaries, called **glomerulus,** within the cup-shaped structure. The blood enters into glomerulus through **afferent arteriole** of renal artery and leaves it through **efferent arteriole.**

Functioning of nephron :

(i) Filtration : Filtration of blood takes places in Bowman's capsule from the capillaries of glomerulus. The filtrate passes into the tubular part of the nephron. This filtrate contains glucose, amino acids, urea, uric acid, salts and a major amount of water.

(ii) Reabsorption : As the filtrate flows along the tubule useful substances like glucose, amino acids, water and salts are selectively reabsorbed into the blood by capillaries surrounding the nephron tubule.

The amount of water reabsorbed depends on the need of the body and also on the amount of wastes to be excreted.

(iii) Urine : The filtrate which remains after reabsorption is known as **urine.** Urine contains dissolved nitrogenous waste. i.e., urea and uric acid, excess salts and water.

Urine is collected from nephrons by the collecting duct to carry it to the ureter.

2. What are the methods used by plants to get rid of excretory products?

Ans. Plants get rid of excretory products through photosynthesis, falling all leaves, transpiration, storing waste products in cellular vacuoles or dead cells. Other waste products are stored as gums and resins or excreted into the surrounding soil.

3. How is the amount of urine produced regulated?

Ans. A collecting duct collects urine from many nephrons. Finally all collecting ducts drain urine into a space known as reval peluis in the kidney, from where it passes out into the ureter and then to urinary bladder where it is stored till excreted out of the body. This amount of water excreted depends on the amount of water re-absorbed.

Exercise

1. The kidneys in human beings are a part of the system for

(a) nutrition. **(b) respiration.**
(c) excretion. **(d) transportation.**

Ans. (c) excretion.

2. The xylem in plants are responsible for

(a) transport of water.
(b) transport of food.
(c) transport of amino acids.
(d) transport of oxygen.

Ans. (a) transport of water.

3. The autotrophic mode of nutrition requires

(a) carbon dioxide and water.
(b) chlorophyll. **(c) sunlight.**
(d) all of the above.

Ans. (d) all of the above.

4. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in

(a) cytoplasm. **(b) mitochondria.**
(c) chloroplast. **(d) nucleus.**

Ans. (b) mitochondria.

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

Ans. Fats are found in the intestine in the form of large globules which makes it more difficult for enzymes to act on them. Bile salts break down them into smaller globules increasing the efficiency of enzyme action. The pancreas also secretes lipase that helps in breaking down emulsified fats. This process of fat digestion occurs in small intestine.

6. What is the role of saliva in the digestion of food?

Ans. (i) The saliva contains salivary amylase enzyme which breaks down starch to sugars like maltose.

(ii) The saliva moistens the food which helps in chewing and breaking down the big pieces of food into smaller one.

7. What are the necessary conditions for autotrophic nutrition and what are its byproducts?

Ans. The sunlight, carbon-dioxide, chlorophyll, soil, water and temperature are the necessary conditions for autotrophic nutrition and its byproducts are hydrogen, oxygen, carbohydrates.

8. What are the differences between aerobic and anaerobic respiration? Name some organisms that use the anaerobic mode of respiration.

Ans. (i) Aerobic respiration

The break down of glocuse completely into water and CO_2 using oxygen is known as aerobic respiration. It takes place in mitochondria in the presence of oxygen.

(ii) Anaerobic respiration

The break down of pyruvate into ethanol and CO_2 in the absence of air is known as anaerobic respiration. It occurs in yeasts and bacteria.

9. How are the alveoli designed to maximise the exchange of gases?

Ans. (i) The alveoli are thin walled and richly supplied with a network of blood vessels to facilitate exchange of gases between blood and the air filled in alveoli.

(ii) Alveolu have balloon-like structures which provide maximum surface area for the exchange gases.

10. What would be the consequences of a deficiency of haemoglobin in our bodies?

Ans. The average haemoglobin content of blood, irrespective of sex, is 14.5 g per 100 mL. If haemoglobin content reduces in blood, its oxygen carrying capacity decreases. So the person shows symptomes of deficient oxygen like breathlessness, often one of the first indications of ion deficiency is anaemia.

11. Describe double circulation in human beings. Why is it necessary?

Ans. All mammals including man have a double circulation. One circulation is between heart and lungs known as the pulmonary circulation and the other is between the heart and the rest of the body known as the systematic circulation.

It is essential because in one circulation it does not fulfil the purpose of oxygenating the blood and transporting it to rest of the body.

12. What are the differences between the transport of materials in xylem and phloem?

Ans. Xylem transports mineral and water obtained from the soil to all parks of the plant whereas phloem transports the products of photosynthesis to all parts of plant.

13. Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.

Ans. Comparison between alveoli and nephron :

Alveoli

1. Alveoli have thin walled balloon-like structure. Surface is fine and delicate.
2. Alveoli are supplied with extensive network of thin walled blood vessels, i.e., capillaries

for exchange of gases.

3.Alveoli increase surface area for diffusion of CO_2 from blood of air and O_2 from air to blood.

Nephron

1.Nephrons have thin walled, cup-shaped structure attached with thin walled tubule.

2.Bowman's capaule is supplied with a cluster of capillaries, called glomerulus for filtration. A network of blood vessels is present around the tubular part of nephron for reabsorption of useful substances and water.

3 Nephrons also increase surface area for filtration of blood and reabsorption of useful substances and water from filtrate leaving behind urine.

Additional Questions

1. (i) Name the process which help in transfer of food substances in the body of multicellular organism.
(i) Name the process by which metabolic wastes are removed.
(iii) What; are the different modes of nutrition?

Ans. (i) Transportation.
(ii) Excretion.
(iii) Nutrition is of two types 1. Autotrophic nutrition. 2. Heterotrophic nutrition.

2. Is it true that no life could exist on earth in the absence of photosynthesis?

Ans. Yes, it is true. As all animal life is dependent upon green plants all living organisms will become extinct.

3. What does a granum consist of?

Ans. A granum consists of disc-shaped membranous sacs called as thylakoids. The thylakoids are seen in piles.

4. What is a thylakoid?

Ans. Thylakoids are disc-shaped membranous sacs present on each granum of the chloroplast. These are arranged like the stacks of coins.

5. Name the two stages in photosynthesis.

Ans. 1. Light phase. Dependent on light.
2. Dark phase. Not dependent on light.

6. Name the following:
(i) The process in which energy is released by the oxidation and decomposition of organic substance in all the living cells.
(ii) Respiration in the presence of free oxygen.
(iii) Respiration in the absence of free oxygen.
(iv) A kind of anaerobic respiration in which organic substances are degraded to lactic acid.
(v) The process in which sugars form alcohol with the help of yeast.

Ans. (i) Respiration (ii) Aerobic respiration
(iii) Anaerobic respiration (iv) Lactic acid fermentation
(v) Alcoholic fermentation.

7. Name the following:
(i) The process involving inhaling of oxygen rich fresh air and exkaukubg of carbon dioxide rich foul air.
(ii) The exchange of gases between the blood and the air at the respiratory mace.
(iii) The exchange of gases between the tissue cells and the blood.

(iv) A muscular structure that separates the thoracic cavity and abdominal cavity.
(v) The covering of the lungs.
(vi) A respiratory tube supported by cartilaginous rings.

Ans. (i) Breathing (ii) External respiration
(iii) Internal respiration (iv) Diaphragm
(v) Pleura (vi) Trachea.

8. Name the following:
(i) Thin walled air sacs of the lungs.
(ii) The respiratory pigment in man.
(iii) A gas present in large proportion in the expired air.

Ans. (i) Alveoli
(ii) Haemoglobin
(iii) Carbon dioxide

9. How many alveoli are present in human lung? What is the total surface area?

Ans. About 750 million alveoli with a total surface area about 80 square metres.

10. After a vigorous exercise, you may experience cramps in your leg muscles. Why does this happen?

Ans. Muscle cramps are due to muscle fatigue. It is caused by accumulation of lactic acid.

11. Name the respiratory organs of:
(i) fish (ii) mosquito (iii) earthworm (iv) dog.

Ans. (i) Gills (ii) Trachea (iii) Body wall (iv) Lungs.

12. Mention two ways in which the roots hairs are suited for absorption of water from soil.

Ans. (i) Large surface area.
(ii) Cell membrane enclosing cell sap to facilitate endosmosis.

13. Name two substances which enter the root through the root hairs.

Ans. (i) Water (ii) Soluble minerals from soil.

14. What process in plants is known as transpiration ?

Ans. Loss of water in the form of vapours from aerial parts of plant is known as transpiration.

15. Name the term for transport of food from leaves to other parts of the plants.

Ans. Translocation of food.

16. What is translocation ?

Ans. The long distance transport of the organic food from a source to a sink is known as translocation.

17. Name the following:
(i) A process by which the unwanted nitrogenous wastes are eliminated from the body.
(ii) Major excretory organs of man.
(iii) The structural and functional units of kidney.
(iv) A tuft of blood capillaries found in the Bowman's capsule of nephron.

Ans. (i) Excretion (ii) Kidneys
(iii) Nephrons (iv) Glomerulus

18. Name the following:
(i) The structure that brings urine from the kidney to the urinary bladder.
(ii) Thin membranous sac serving as the reservoir of urine.
(iii) Any two organic constituents of normal human urine.
(iv) The chief nitrogenous waste product in the human urine and the organ

which produces it.

(v) Name two excretory products formed by the liver.

Ans. (i) Ureter (ii) Urinary bladder
(iii) Urea, creatinine (iv) Urea, liver
(v) Bile pigments (Bilirobin, Biliverdin), urea.

19. Mention two substances which are selectively reabsorbed as nephric filtrate flows along the tubular part of thin unit.

Ans. Glucose and Amino acids.

20. Give one reason why multicellular organisms require special organs for exchange of gases between their body and their environment.

Ans. All the cells of multicellular organism are not in direct contact with the surrounding environment.

21. Name the process in plants where water is lost as vapours.

Ans. Transpiration.

22. 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 ?

Ans. Green dot like structures are the chloroplasts (a type of plastid). The green colour is due to the presence of green pigment called chlorophyll.

23. What is 'translocation' in plants?

Ans. Transport of food or soluble products of photosynthesis occurring in phloem in both directions is known as 'translocation' in plants.

24. What is the function of Chlorophyll ?

Ans. Chlorophyll pigments are photoreceptor that help in trapping the energy of light for photosynthesis.

25. What is an enzyme? Name two factors that influence the action of enzymes.

Ans. Enzymes are proteinaceous substances, which either initiate or accelerate metabolic reaction without undergoing any change in themselves. Thus proteins are also called Biocatalysts.
Factors that influence action of enzyme
Temperature and - pH (degree of acidity and alkalinity).

26. What are functions of tongue?

Ans. Functions of tongue :
(i) It helps in mastication of food.
(ii) It bears taste buds and helps in the sensation of taste of food.
(iii) It takes part in the modification of sound production.
(iv) It acts as brush and cleans the teeth.
(v) It aids in swallowing of food.

27. Write a note on salivary glands and saliva.

Ans. Salivary glands. There are three pairs of salivary glands which open into oral cavity. The glands are (i) Sublingual glands below tongue (ii) Submandibular glands below lower jaw and (iii) Parotid gland situated below and in front of ears. The salivary glands secrete a digestive juice called saliva which lubricates food and help in partial digestion of starch.
Saliva. Saliva of man is viscous, colourless, cloudy liquid secretion of salivary glands. Saliva contains 98.5 to 99% of water and rest a dense residue. It contains enzymes such as amylase ptyalin.

28. Give an account of stomach of man.

Ans. Stomach of man. It is a sac-like structure situated in the upper part of abdominal cavity below the diaphragm. Large part of this sac is situated left of the median line. At the

junction of stomach and duodenum is a pyloric constriction having pyloric sphincter which checks the backward flow of food from intestine to stomach.

29. State the functions of stomach.

Ans. 1. Storage of food.
2. Mechanical breakdown of food.
3. Partial digestion of food.

30. Give an account of small intestine.

Ans. Small intestine. It is the longest part of alimentary canal. It is thin walled and highly coiled tubular structure. It is about 3-3.5 metres long and 'occupies most part of abdominal cavity. It is coiled upon itself.

The inner wall of small intestine is thrown into many finger like processes called villi. These villi increase the surface area for absorption.

31. Human body throws many waste materials out of the body. Write the names of wastes thrown out during egestion, excretion, perspiration and exhalation.

Ans.

(a) Egestion	:	Undigested food material
(b)Excretion	:	Urine
(c)Perspiration	:	Sweat
(d) Exhalation	:	Carbon dioxide.

32. Write short note on micturition or urination.

Ans. Urination or micturition

The urine is transported to the urinary bladder by peristaltic movements of ureter. The bladder progressively is filled with urine. Periodically, the urine is emptied to the exterior through the urethra by conscious action. The muscles of bladder wall contract. The passing out of urine is called micturition.

33. What would happen if you do not drink water for 24 hours in a hot summer month?

Ans. During summer, water is constantly eliminated as sweat. The salts are also eliminated along with water. If water is not taken for 24 hours in a hot summer month, it will lead to the dehydration of the body. The shortage of water also causes hyponetremia and hypocalcaemia. One feels mental tiredness.

34. What changes take place as blood enters the kidney tubule?

Ans. As the blood enters kidney tubules, it is filtered in the glomerulus. The nephric filtrate thus enters the body of tubule, the useful substances diffuse back into kidney and the waste salts along with excess water reaches the collecting tubule.

35. Why does human body urinate more in winter than in summer?

Ans. During winter, metabolism is much higher and more of excretory products are formed. They are to be eliminated. Moreover, water is lost by perspiration during summer but in winter, urination is the only way of passing excess water outside.

36. What is osmoregulation? How does it take place in humans?

Ans. Osmoregulation. It is the process of regulating ion concentration and water contents of body. It is related to habitat of an organism.

Regulation. It is regulated by a hormone namely Antidiuretic hormone (ADH) or vasopressin secreted by hypothalamus released through posterior lobe of pituitary. ADH affects the permeability of cells of nephron for absorption of water according to the available water in the body.

37. Name the blood vessel entering the kidney and the one leaving it. Give three differences in the composition of blood in the two blood vessels.

Ans. Renal artery enters the kidney and the Renal vein leaves the kidney.

Differences in the composition of blood of the two vessels. The blood of renal artery contains (a) oxygen, (b) urea, (c) waste salts and (d) excess of water. The blood of renal vein contains CO_2. The urea, waste salts and excess of water get filtered in the kidney and are absent in renal vein.

Multiple Choice Questions

1. Gastric juice contains :

(a) Trypsinogen (b) Pepsinogen
(c) Chymotrypsinogen (d) None of the above.

Ans. (b) Pepsinogen

2. Emulsification of fat is carried out by :

(a) Bile pigments (b) Bile salts
(c) HCI (d) Pancreatic juice.

Ans. (b) Bile salts

3. Pancreas produces :

(a) Three digestive enzymes and one hormone
(b) Three types of digestive juices and two hormones
(c) Two digestive enzymes and one hormone
(d) Three digestive enzymes and no hormone.

Ans. (b) Three types of digestive juices and two hormones

4. Pepsin differs from trypsin in that it digests :

(a) Proteins in alkaline medium in stomach
(b) Proteins in acid medium in duodenum
(c) Proteins in acid medium in stomach
(d) Proteins in alkaline medium in duodenum.

Ans. (c) Proteins in acid medium in stomach

5. The end product of carbohydrate digestion is :

(a) Maltose (b) Sucrose
(c) Glucose (d) Lactose.

Ans. (c) Glucose

6. The functional units of the lungs are :

(a) trachea (c) bronchioles
(b) bronchi (d) alveoli.

Ans. (d) alveoli

7. Which is end product of glycolysis?

(a) Pyruvic acid (b) Acetyl Co A
(c) Lactic acid (d) Citric acid.

Ans. (a) Pyruvic acid

8. The carbon dioxide is transported via blood to lungs mostly :

(a) in the form of carbonic acid only
(b) as carbaminohaemoglobin and as carbonic acid
(c) in combination with haemoglobin only
(d) dissolved in blood plasma.

Ans. (b) as carbaminohaemoglobin and as carbonic acid

9. The largest amount of CO_2 is transported by the blood as :

(a) CO_2 in the plasma
(b) Bicarbonate ion in the erythrocytes

(c) Carbaminohaemoglobin
(d) Bicarbonate ion in the plasma.

Ans. (d) Bicarbonate ion in the plasma.

10. The atria-ventricular node is situated :
(a) near the bicuspid valve
(b) in between the atrium
(c) at the base of interauricular septum
(d) in the interventricular septum.

Ans. (c) at the base of interauricular septum

11. The main function of lymphocytes is :
(a) to destroy poisonous substances present in the body
(b) to clot the blood at the site of a wound
(c) to carry oxygen to different parts of the body
(d) to destroy bacteria.

Ans. (d) to destroy bacteria.

12. The circulatory system of grasshopper is :
(a) closed (b) lacunar
(c) simple (d) complex

Ans. (b) lacunar

13. Translocation of inorganic solutes occurs through:
(a) phloem (b) xylem
(c) pith (d) parenchyma

Ans. (a) phloem

14. Which of the tissue is more important for translocation of sucrose ?
(a) Xylem (b) Phloem
(c) Both above (d) None the above.

Ans. (b) Phloem

15. Urine leaves the kidney by way of :
(a) Urethra (b) Collecting duct
(c) Ureter (d) Renal vein.

Ans. (c) Ureter

16. Filtration in the nephron is brought about by :
(a) Active transport (b) Passive diffusion
(c) Secretion (d) Osmotic gradient.

Ans. (d) Osmotic gradient.

17. In micturition :
(a) urethra contracts (b) urethra relaxes
(c) ureters contract (d)ureters relax.

Ans. (b) urethra relaxes

18. Functional unit in a kidney is :
(a) Nephron (b) Nephritis
(c) Neuron (d) Loop of Henle.

Ans. (a) Nephron

19. Number of nephrons in each human kidney is :
(a) 1000 (b) 1 hundred thousand
(c) 1 million (d) 10 million.

Ans. (c) 1 million

20. Which of the following statement(s) is/are true about heart?
(i) Left atrium receives oxygenaed blood from different parts of body while right atrium receives deoxygenaed 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).
Ans. (c) (ii) and (iv)

21. What prevents back flow 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 heart

22. 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

23. 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.
Ans. (d) Pisces only.

24. 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.

25. The filtration units of kidneys are called :
(a) ureter
(b) urethra

(c) neurons
(d) nephrons.

Ans. (d) nephrons.

26. Oxygen liberated during photosynthesis comes from:
(a) water
(b) chlorophyll
(c) carbon dioxide
(d) glucose.

Ans. (a) water

27. The blood leaving the tissues becomes richer in:
(a) carbon dioxide
(b) water
(c) haemoglobin
(d) oxygen.

Ans. (a) carbon dioxide

28. 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.

29. The internal (cellular) energy reserve in autotrophs is :
(a) glycogen
(b) protein
(c) starch
(d) fatty acid

Ans. (c) starch