5.2 Nutrition

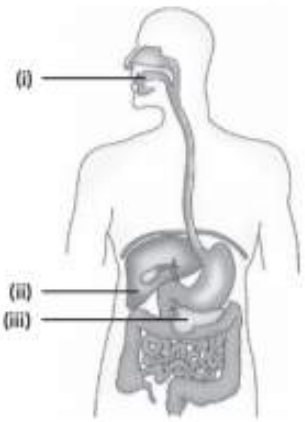
MCQ

1. Opening and closing of stomata is due to
   (a) high pressure of gases inside the cells
   (b) movement of water in and out of the guard cells
   (c) stimulus of light in the guard cells
   (d) diffusion of CO_2 in and out of the guard cells.
   (2023) R

2. **Assertion (A) :** The inner walls of the small intestine have finger like projections called villi which are rich in blood.
   Reason (R) : These villi have a large surface area to help the small intestine in completing the digestion of food.
   (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
   (b) Both (A) and (R) are true and (R) is not the correct explanation of (A).
   (c) (A) is true but (R) is false.
   (d) (A) is false but (R) is true. *(2023)* U

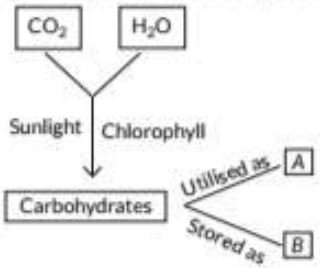
3. Water in the root enters due to
   (a) the function of the root to absorb water
   (b) difference in the concentration of ions between the root and the soil
   (c) excess water present in the soil
   (d) diffusion of water in the roots. *(2023)* U

4. In human alimentary canal, the specific enzyme/ juice secreted in locations (i), (ii) and (iii) are



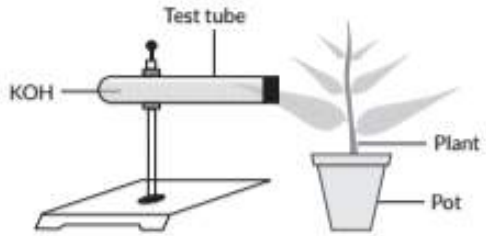
   (a) (i) Amylase (ii) Pepsin (iii) Bile
   (b) (i) Amylase (ii) Bile (iii) Trypsin
   (c) (i) Lipase (ii) Amylase (iii) Pepsin
   (d) (i) Trypsin (ii) Bile (iii) Amylase.
   (Term I, 2021-22) R

5. In the following flow chart showing autotrophic nutrition in green plants, A and B respectively are



   (a) oxygen and energy (b) starch and oxygen
   (c) energy and starch (d) oxygen and water.
   (Term I, 2021-22) Ap

6. **Read the following and answer the questions from 6(i) to 6(iv).**
   Take a healthy potted plant with elongated leaves. Select a leaf and insert about one half of this leaf in a test tube containing KOH and make it air tight. Place the set-up in sun for two hours. Take out the leaf from the test tube and dip it in boiling water for a few minutes. Put this leaf in a beaker with alcohol and boil it in a water bath. Wash the leaf with water and then dip the leaf in iodine solution for a few minutes. The portion of the leaf dipped in KOH solution will not show any change when dipped in iodine solution.



   (i) The function of KOH taken in the test tube is to absorb
   (a) released water vapours
   (b) released CO_2
   (c) released O_2
   (d) chlorophyll.

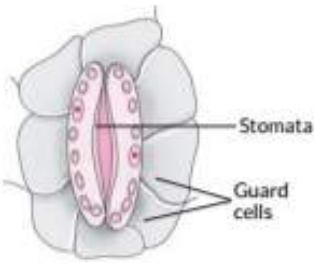
   (ii) On the basis of this activity, we may conclude that the factor for photosynthesis is
   (a) carbon dioxide (b) oxygen
   (c) chlorophyll (d) water vapour.

   (iii) The event that does not occur in photosynthesis is
   (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.

(iv) Iodine solution gives blue-black colour with
(a) starch (b) proteins
(c) glucose (d) fats.
(Term I, 2021-22) R

7. The correct statements with reference to single celled organisms are
(i) complex substances are not broken down into simpler substances
(ii) simple diffusion is sufficient to meet the requirement of exchange of gases
(iii) specialised tissues perform different functions in the organism
(iv) entire surface of the organism is in contact with the environment for taking in food.
(a) (i) and (iii) (b) (ii) and (iii)
(c) (ii) and (iv) (d) (i) and (iv).
(Term I, 2021-22)

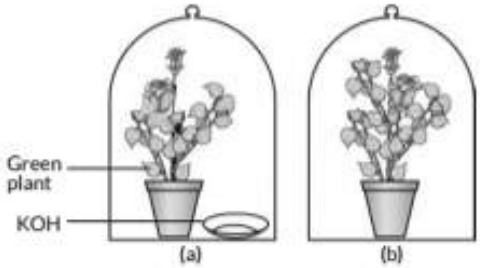
8. Which one of the following conditions is true for the state of stomata of a green leaf shown in the given diagram?



(a) Large amount of water flows into the guard cells.
(b) Gaseous exchange is occurring in large amount.
(c) Large amount of water flows out from the guard cells.
(d) Large amount of sugar collects in the guard cells.
(Term I, 2021-22)

9. **Assertion (A) :** Nitrogen is an essential element for plant growth and is taken up by plants in the form of inorganic nitrates or nitrites.
Reason (R) : The soil is the nearest and richest source of raw materials like nitrogen, phosphorus and other minerals for the plants.
(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. *(Term I, 2021-22)*

10. A student was asked to write a stepwise procedure to demonstrate that carbon dioxide is necessary for photosynthesis. He wrote the following steps. The wrongly worded step is



(a) both potted plants are kept in dark room for at least three days
(b) bottom of the bell jars is sealed to make them air tight
(c) both potted plants are kept in sunlight after the starch test
(d) a leaf from both the plants is taken to test the presence of starch. *(Term I, 2021-22)* Ap

11. The length of small intestine in a deer is more as compared to the length of small intestine of a tiger. The reason for this is
(a) mode of intake of food
(b) type of food consumed
(c) presence or absence of villi in intestines
(d) presence or absence of digestive enzymes.
(Term I, 2021-22)

12. Most of the digestion and absorption of the food takes place in the
(a) small intestine (b) liver
(c) stomach (d) large intestine.
(2020) R

VSA (1 mark)

13. Name an enzyme present in pancreatic juice.
(2019 C)

14. What causes movement of food inside the alimentary canal in human beings? *(2019 C)*

15. Mention the raw materials required for photosynthesis.
(NCERT, Board Term I, 2016)

16. State the location and function of gastric glands.
(Board Term I, 2014)

SA I (2 marks)

17. Two green plants are kept separately in oxygen free containers, one in the dark and other in sunlight. It was observed that plant kept in dark could not survive longer. Give reason for this observation.
(2023) U

18. List the events in proper sequence that takes place during the process of photosynthesis. *(2023)* R

19. Name the glands present in the wall of the stomach that release secretions for digestion of food. Write the three components of secretion that are released by these glands. *(Board Term I, 2014)*

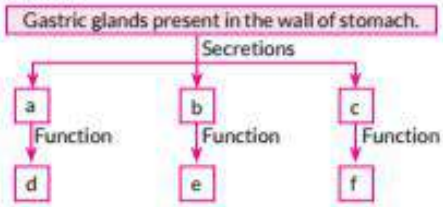
SA II (3 marks)

20. (i) How does *Paramecium* obtain its food?
    (ii) List the role of each of the following in our digestive system :
    (a) Hydrochloric acid
    (b) Trypsin
    (c) Muscular walls of stomach
    (d) Salivary amylase *(2023)* R

21. (a) With the help of an activity, explain the action of saliva on the food we eat.
    (b) Why is bile juice important in the process of digestion? *(2023)* U

22. In the human body the site of absorption of digested food is the small intestine. How is the process of absorption carried out and why is absorption of digested food necessary ? *(2020 C)*

23. Complete the following flow chart as per the given instructions.



(2020) Ap

24. (a) State the role played by the following in the process of digestion :
    (i) Enzyme trypsin
    (ii) Enzyme lipase
    (b) List two functions of finger-like projections present in the small intestine. *(2020)*

25. (a) Write the function of the following in the human alimentary canal :
    (i) Saliva
    (ii) HCl in stomach
    (iii) Bile juice
    (iv) Villi
    (b) Write one function each of the following enzymes :
    (i) Pepsin
    (ii) Lipase *(2019)*

26. Explain the significance of photosynthesis. Write the balanced chemical equation involved in the process. *(Board Term I, 2017)* Ap

27. Differentiate between autotrophs and heterotrophs and give one example of each. *(NCERT Exemplar, Board Term I, 2017)*

28. Explain with the help of neat and well labelled diagrams the different steps involved in nutrition in *Amoeba*. *(Board Term I, 2015)* Ev

LA (5 marks)

29. (a) Why is nutrition necessary for the human body?
    (b) What causes movement of food inside the alimentary canal?
    (c) Why is small intestine in herbivores longer than in carnivores?
    (d) What will happen if mucus is not secreted by the gastric glands? *(NCERT Exemplar, 2020)*

30. (a) State the form in which the following are stored:
    (i) Unused carbohydrates in plants.
    (ii) The energy derived from food in humans.
    (b) Describe the process of nutrition in *Amoeba* with the help of diagram. *(NCERT Exemplar, Board Term I, 2016)* U

5.3 Respiration

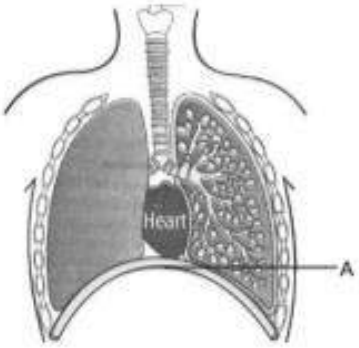
MCQ

31. As compared to terrestrial organisms, the rate of breathing in aquatic organism is
    (a) faster because they need more oxygen for their survival
    (b) faster because the amount of dissolved oxygen in water is fairly low
    (c) slower because the amount of dissolved oxygen in water is fairly low
    (d) slower because the capacity of water of dissolving atmospheric air is limited *(2023)* U

32. The sequence of anaerobic respiration in our muscle cells during heavy exercise is
    (a) Glucose $\xrightarrow{\text{Cytoplasm}}$ Pyruvate $\xrightarrow{\text{Muscle cells}}$ Lactic acid + Energy
    (b) Glucose $\xrightarrow{\text{Mitochondria}}$ Pyruvate $\xrightarrow{\text{Muscle cells}}$ Carbon dioxide + Water
    (c) Glucose $\xrightarrow{\text{Cytoplasm}}$ Pyruvate $\xrightarrow{\text{Muscle cells}}$ Ethanol + Carbon dioxide
    (d) Glucose $\xrightarrow{\text{Mitochondria}}$ Pyruvate $\xrightarrow{\text{Muscle cells}}$ Ethanol + Lactic acid. *(Term I, 2021-22)* R

33. The energy released during cellular respiration is used to synthesise
    (a) ribosomes (b) RBC
    (c) ATP (d) mitochondria.
    (Term I, 2021-22) R

34. Which of the following statements are correct in reference to the role of A (shown in the given diagram) during a breathing cycle in human beings?



(i) It helps to decrease the residual volume of air in lungs.
(ii) If flattens as we inhale.
(iii) It gets raised as we inhale.
(iv) It helps the chest cavity to become larger.
(a) (ii) and (iv) (b) (iii) and (iv)
(c) (i) and (ii) (d) (i), (ii) and (iv)
(Term I, 2021-22) Ev

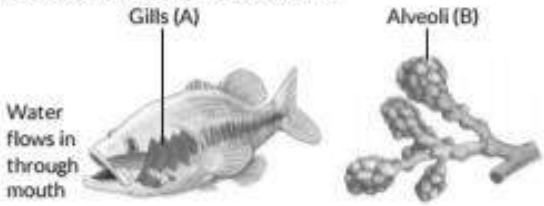
35. **Assertion (A)** : The rate of breathing in aquatic organisms is much slower than that seen in terrestrial organisms.
Reason (R) : The amount of oxygen dissolved in water is very low as compared to the amount of oxygen in air.
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(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. *(Term I, 2021-22)*

36. **Assertion (A)** : In human beings, when air is taken into the body through the nostrils and passed through the throat, the air passage does not collapse.
Reason (R) : Rings of cartilage present in the throat ensure that the air passage does not collapse.
(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. *(2021C)*

37. The function of the lining of mucus in the nasal passage of human beings is to
(a) increase the temperature of inhaled air
(b) move the air in and out
(c) filter the air that we breathe in
(d) absorb oxygen from the air. *(Term I, 2021-22)*

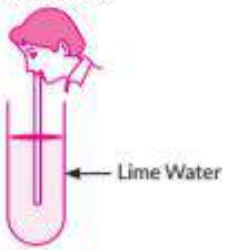
38. In living organisms during respiration which of the following products are not formed if oxygen is not available?
(a) Carbon dioxide + Water
(b) Carbon dioxide + Alcohol
(c) Lactic acid + Alcohol
(d) Carbon dioxide + Lactic Acid *(Term I, 2021-22)*

39. Respiratory structures of two different animals-a fish and a human being are shown.
Observe (A) and (B) and select one characteristic that holds true for both of them.



(a) Both are placed internally in the body of animal.
(b) Both have thin and moist surface for gaseous exchange.
(c) Both are poorly supplied with blood vessels to conserve energy.
(d) In both the blood returns to the heart after being oxygenated. *(Term I, 2021-22)* An

40. Observe the diagram of an activity given below. What does it help to conclude, when the person exhales into the test-tube?



(a) Percentage of carbon dioxide is more in inhaled air.
(b) Fermentation occurs in the presence of oxygen.
(c) Percentage of carbon dioxide is more in the exhaled air.
(d) Fermentation occurs in the presence of carbon dioxide. *(Term I, 2021-22)* An

41. Anaerobic process
(a) takes place in yeast during fermentation
(b) takes place in the presence of oxygen
(c) produces only energy in the muscles of human beings
(d) produces ethanol, oxygen and energy. *(2020)*

VSA (1 mark)

42. Diffusion is insufficient to meet the oxygen requirement of multicellular organisms like human. State reason. *(NCERT, Board Term I, 2017)*

SA I (2 marks)

43. Write two different ways in which glucose is oxidised to provide energy in human body. Write the products formed in each case. *(Delhi 2019)* U

SA II (3 marks)

44. (a) In the process of respiration, state the function of alveoli.
    (b) Rate of breathing in aquatic organisms is much faster than that in terrestrial organisms. Give reasons.
    (c) Complete the following pathway showing the breakdown of glucose.

Glucose (6-carbon molecules) $\xrightarrow{\text{in cytoplasm}}$ (i) $\xrightarrow{?}$ (3-carbon molecule + energy) $\xrightarrow{\text{Presence of } O_2 \text{ in mitochondria}}$

(ii) $\xrightarrow{?}$ $+H_2O$ + Energy

(2020) Ev

45. Explain the ways in which glucose is broken down in absence or shortage of oxygen. *(2019)*

46. Write three points of difference between breathing and respiration. *(Board Term I, 2016)*

47. Draw a flow chart to show the breakdown of glucose by various pathways.
(NCERT Exemplar, Board Term I, 2016) An

48. Write three points of difference between respiration in plants and respiration in animals.
(Board Term I, 2014)

LA (5 marks)

49. (a) Why is there a difference in the rate of breathing between aquatic organisms and terrestrial organisms? Explain.
    (b) Draw a diagram of human respiratory system and label – pharynx, trachea, lungs, diaphragm and alveolar sac on it. *(2020)* Ap

50. In the experimental set up to show that "CO_2 is given out during respiration", name the substance taken in the small test tube kept in the conical flask. State its function and the consequence of its use. *(2019)*

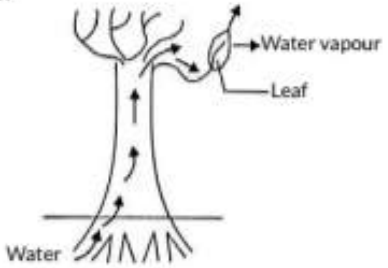
51. (a) State reasons for the following:
    (i) Herbivores need a longer small intestine while carnivores have shorter small intestine.
    (ii) The lungs are designed in human beings to maximise the area for exchange of gases.
    (b) The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms. *(NCERT Exemplar, Board Term I, 2016)*

52. Draw a flow chart showing the three different pathways involved in the breakdown of glucose in different organisms. Name the respiratory pigment present in human beings. State the function of rings of cartilage present in our throat.
(NCERT Exemplar, Board Term I, 2015)

5.4 Transportation

MCQ

53. Observe the following diagram and identify the process and its significance from the following options:



    (a) Evaporation : maintains water contents in leaf cells.
    (b) Transpiration : creates a suction force which pulls water inside the plant.
    (c) Excretion : helps in excreting out waste water from the plant.
    (d) Translocation : helps in transporting materials from one cell to another. *(2023)* U

54. The process in which loss of water in the form of vapours from the aerial parts of plants takes place is *X*, which helps in *Y*. Here, *X* and *Y* respectively are
    (a) transpiration and photosynthesis
    (b) transpiration and temperature regulation
    (c) translocation and movement of soluble products of photosynthesis in phloem
    (d) translocation and absorption of water and minerals from soil by roots. *(2023)* U

55. **Assertion (A)** : The walls of atria are thicker than those of the ventricles.
Reason (R) : Ventricles have to pump blood into various organs at high pressure.
    (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A)
    (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A)
    (c) Assertion (A) is true, but Reason (R) is false.
    (d) Assertion (A) is false, but Reason (R) is true.
(2023) U

56. **Study the following and answer any four questions from 56(i) to 56(v) :**
Visible movements only cannot be the defining characteristic of life. Molecular movements which are invisible to the naked eye are necessary for life. Viruses are said to be living as they also show molecular movements but only when they are inside a living cell. Living organisms are organised structures. They must keep repairing

and maintaining their structures. Maintenance of an organism is the collection of processes like nutrition, respiration, etc. In absence of any one of these, life would be difficult. To remain alive, chemical energy is needed by the living organism to perform vital process. It provides energy to (a) maintain life processes, (b) produce molecules for repair of worn out cells, and (c) for the growth of the body.

(i) Viruses show molecular movements when they are
(a) in crystalline form
(b) inside a dead material
(c) in air
(d) in the body of a living organism.

(ii) The process which involves intake of O_2 from outside and breaking down of nutrient molecules to produce energy is called
(a) excretion (b) nutrition
(c) respiration (d) reproduction.

(iii) Which one of the following statements is incorrect? Energy is needed by a living organism to
(a) maintain life processes
(b) grow
(c) repair worn out tissues of the body
(d) synthesise waste materials.

(iv) The type of nutrition found in green plants is
(a) autotrophic (b) heterotrophic
(c) parasitic (d) holozoic.

(v) The function of the circulatory system of human beings is to transport
(a) food (b) oxygen
(c) waste material (d) all of the above.
(2021 C)

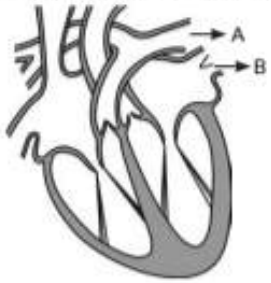
57. The separation of the right side and the left side of heart is useful to
(a) keep oxygenated blood from mixing with deoxygenated blood
(b) allow a slow supply of oxygen in the body
(c) supply energy to animals with low energy needs
(d) often change their body temperature.
(Term I, 2021-22) An

58. In spring, sugar stored in root or stem tissue of plants is transported to the buds for
(a) the energy needs of the buds to grow
(b) temperature regulation
(c) balancing the storage in different organs
(d) diffusion process. *(Term I, 2021-22)*

59. Upward movement of water in tall trees is due to
(a) translocation (b) excretion
(c) photosynthesis (d) transpiration.
(Term I, 2021-22)

60. Thin walled blood vessels are called
(a) aorta (b) capillaries
(c) arteries (d) vena cava.
(Term I, 2021-22)

61. Consider the following statements in connection with the functions of the blood vessels marked A and B in the diagram of a human heart as shown.



(i) Blood vessel A – It carries carbon dioxide rich blood to the lungs.
(ii) Blood vessel B – It carries oxygen rich blood from the lungs.
(iii) Blood vessel B – Left atrium relaxes as it receives blood from this blood vessel.
(iv) Blood vessel A – Right atrium has thick muscular wall as it has to pump blood to this blood vessel.

The correct statements are
(a) (i) and (ii) only (b) (ii) and (iii) only
(c) (ii), (iii) and (iv) (d) (i), (ii) and (iii).
(Term I, 2021-22) Cr

62. Identify the two components of phloem tissue that help in transportation of food in plants.
(a) Phloem parenchyma and sieve tubes
(b) Sieve tubes and companion cells
(c) Phloem parenchyma and companion cells
(d) Phloem fibres and sieve tubes *(Term I, 2021-22)*

63. Which one of the following statements is correct about the human circulatory system?
(a) Blood transports only oxygen and not carbon dioxide.
(b) Human heart has five chambers.
(c) Valves ensure that the blood does not flow backwards.
(d) Both oxygen-rich and oxygen-deficient blood gets mixed in the heart. *(2020)*

VSA (1 mark)

64. Name the vein which brings blood to left atrium from the lungs. *(Board Term I, 2017)*

65. Define translocation in reference to plants.
(Board Term I, 2016)

SA I (2 marks)

66. What is the other name of 'tissue fluid'? Write its two functions. *(2023)* R

67. What will happen if:
(a) Xylem tissue in a plant is removed?
(b) We are injured and start bleeding? *(2023)* An

SA II (3 marks)

68. (i) What is double circulation?
(ii) Why is the separation of the right side and the left side of the heart useful? How does it help birds and mammals? *(2023)* R

69. (a) List in tabular form two differentiating features between xylem and phloem.
(b) Write two advantages of transpiration in plants. *(2019 C)*

70. Write three types of blood vessels. Give one important feature of each. *(Delhi 2019)*

71. (a) Write two water conducting tissues present in plants. How does water enter continuously into the root xylem?
(b) Explain why plants have low energy needs as compared to animals. *(AI 2019)*

72. List four functions of the human heart. Why is double circulation necessary in the human body? *(2019)*

73. Explain how the translocation of materials in phloem tissue in plants is achieved by utilising energy. *(NCERT, Board Term I, 2017)*

74. What do the following transport?
(i) Xylem
(ii) Phloem
(iii) Pulmonary vein
(iv) Vena cava
(v) Pulmonary artery
(vi) Aorta *(Board Term I, 2014)*

75. Explain giving any three reasons the significance of transpiration in plants. *(NCERT Exemplar, Board Term I, 2014)*

LA (5 marks)

76. (i) Plants absorb water from the soil. Explain how it is taken up and transported from the soil.
(ii) "When we are injured and start bleeding, it requires the loss of blood from the system to be minimised." What will happen if the blood loss is not stopped ? Is there anything the system would do on its own to prevent the loss ? *(2021 C)*

77. Give reasons:
(a) Ventricles have thicker muscular walls than atria.
(b) Transport system in plants is slow.
(c) Circulation of blood in aquatic vertebrates differs from that in terrestrial vertebrates.
(d) During the daytime, water and minerals travel faster through xylem as compared to the night.
(e) Veins have valves whereas arteries do not. *(2020)*

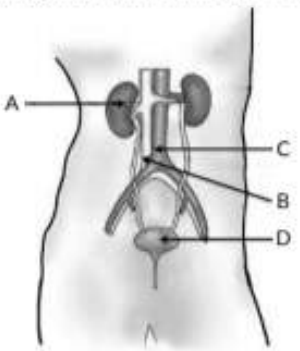
78. (a) "Blood circulation in fishes is different from the blood circulation in human beings". Justify the statement.
(b) Describe "blood circulation" in human beings. *(NCERT, 2020)* R

79. (a) Mention any two components of blood.
(b) Trace the movement of oxygenated blood in the body.
(c) Write the function of valves present in between atria and ventricles.
(d) Write one structural difference between the composition of artery and veins. *(2018)*

5.5 Excretion

MCQ

80. In the given diagram, A, B, C and D respectively are

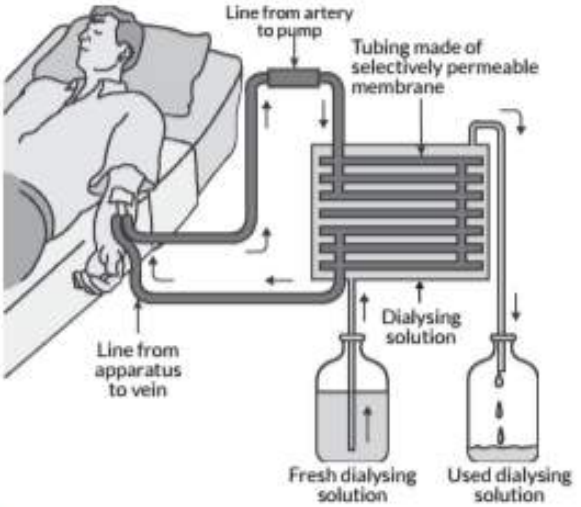


(a) A – Left kidney ; B – Aorta; C – Vena cava; D – Urethra
(b) A – Left kidney ; B – Vena cava; C – Aorta; D – Urinary bladder
(c) A – Right kidney ; B – Aorta; C – Ureter; D – Urethra
(d) A – Right kidney ; B – Vena cava; C – Aorta; D – Urinary bladder *(Term I, 2021-22)*

81. Which one among the following is not removed as a waste product from the body of a plant?
(a) Resins and gums (b) Urea
(c) Dry leaves (d) Excess water *(Term I, 2021-22)*

82. **Read the following and answer the questions from 82(i) to 82(iv).**
The figure shown below represents a common type of dialysis called as haemodialysis. It removes

waste products from the blood, such as excess salts, and urea which are insufficiently removed by the kidney in patients with kidney failure. During the procedure, the patient's blood is cleaned by filtration through a series of semi-permeable membranes before being returned to the blood of the patient. On the basis of this answer the following questions.



(i) The haemodialyser has semi-permeable lining of tubes which help
(a) to maintain osmotic pressure of blood
(b) to filter nitrogenous wastes from the dialysing solution
(c) in passing the waste products in the dialysing solution
(d) to pump purified blood back into the body of the patient.

(ii) Which one of the following is not a function of artificial kidney?
(a) To remove nitrogenous wastes from the blood.
(b) To remove excess fluids from the blood.
(c) To reabsorb essential nutrients from the blood.
(d) To filter and purify the blood.

(iii) The 'used dialysing' solution is rich in
(a) urea and excess salts (b) blood cells
(c) lymph (d) proteins.

(iv) Which part of the nephron in human kidney, serves the function of reabsorption of certain substances?
(a) Glomerulus (b) Bowman's Capsule
(c) Tubules (d) Collecting duct
(Term I, 2021-22)

SA I (2 marks)

83. Write one specific function of each of the following organs in relation with excretion in human beings :
(i) Renal Artery
(ii) Urethra
(iii) Glomerulus
(iv) Tubular part of nephron *(2023)* R

84. Explain in brief two ways by which leaves of a plant help in excretion. *(2023)* U

SA II (3 marks)

85. (a) Define the term excretion. Why should animals excrete waste matter?
(b) Name the main excretory organ of human beings and state the form in which the excretory matter is thrown out of the body? *(2019 C)*

86. Draw a diagram of human excretory system and label kidneys, ureters on it. *(Board Term I, 2017)*

OR

Draw a neat diagram of excretory system of human beings and label on it:
(i) Left kidney
(ii) Urinary bladder. *(Board Term I, 2016)*

87. Describe the structure and function of nephron with the help of diagram.
(NCERT Intext, Board Term I, 2014)

LA (5 marks)

88. (a) Describe the structure and function of the basic filtering unit of kidney.
(b) List two factors on which reabsorption of water from urine depends. *(2020)*

89. (a) Name the organs that form the excretory system in human beings.
(b) Describe in brief how urine is produced in human body. *(NCERT Exemplar, 2020)*

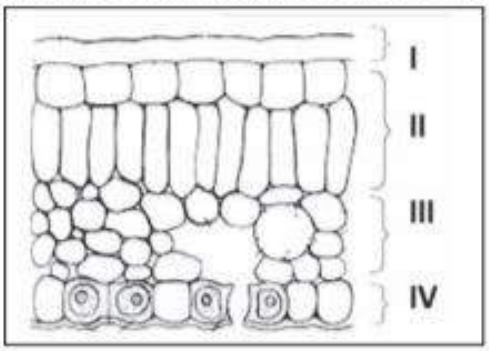
90. (a) Define excretion.
(b) Name the basic filtration unit present in the kidney.
(c) Draw excretory system in human beings and label the following organs of excretory system which perform following functions:
(i) form urine
(ii) is a long tube which collects urine from kidney
(iii) store urine until it is passed out. *(2018)*

91. (a) Draw a neat diagram of the human excretory system and label following parts:
(i) Urethra
(ii) Kidney
(iii) Ureter
(iv) Urinary bladder
(b) What are nephrons? How is a nephron involved in the filtration of blood and formation of urine?
(Board Term I, 2015)

5.2 Nutrition

MCQ

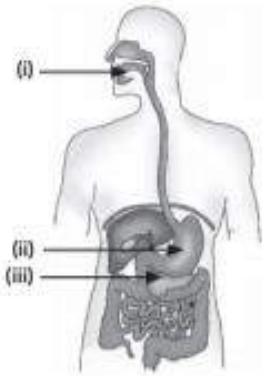
1. In the given transverse section of the leaf identify the layer of cells where maximum photosynthesis occurs.



(a) I, II (b) II, III
(c) III, IV (d) I, IV

(2022-23) An

2. Identify the option that indicates the correct enzyme that is secreted in location (i), (ii) and (iii).



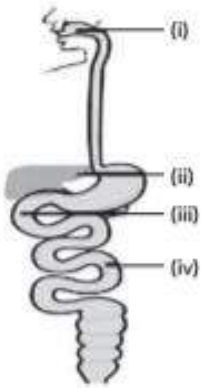
(a) (i)-lipase, (ii)-trypsin, (iii)-pepsin
(b) (i)-amylase, (ii)-pepsin, (iii)-trypsin
(c) (i)-trypsin, (ii)-amylase, (iii)-carboxylase
(d) (i)-permease, (ii)-carboxylase, (iii)-oxidase

(Term I, 2021-22) An

3. Opening and closing of stomatal pore depends on
(a) atmospheric temperature
(b) oxygen concentration around stomata
(c) carbon dioxide concentration around stomata
(d) water content in the guard cells.

(Term I, 2021-22)

4. Observe the diagram of human digestive system.



Match the labelling referred in column I and correlate with the function in column II.

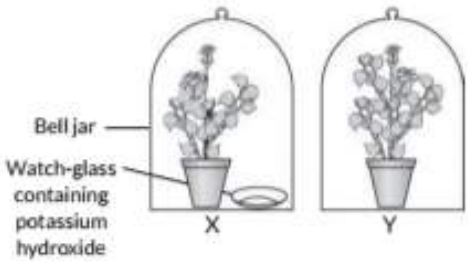
Column I	Column II
(i)	A. The length of this depends on food the organism eats.
(ii)	B. Initial phase of starch digestion
(iii)	C. Increases the efficiency of lipase enzyme action
(iv)	D. This is the site of the complete digestion of carbohydrates, proteins and fats.

(a) (i)- (A) ; (ii) – (B) ; (iii) – (C) ; (iv)-(D)
(b) (i)- (B) ; (ii) – (C) ; (iii) – (D) ; (iv)-(A)
(c) (i)- (B) ; (ii) – (D) ; (iii) – (C) ; (iv)-(A)
(d) (i)- (D) ; (ii) – (A) ; (iii) – (B) ; (iv)-(C)

(Term I, 2021-22) Ap

5. In which of the following groups of organisms, food material is broken down outside the body and then absorbed in?
(a) Mushroom, green plants, *Amoeba*
(b) Yeast, mushroom, bread mould
(c) *Paramecium, Amoeba, Cuscuta*
(d) *Cuscuta*, lice, tapeworm (Term I, 2021-22) U

6. **Read the following and answer the questions from 6(i) to 6(iv).**
The figure shown below represents an activity to prove the requirements for photosynthesis. During this activity, two healthy potted plants were kept in the dark for 72 hours. After 72 hours, KOH is kept in the watch glass in setup X and not in setup Y. Both these setups are air tight and have been kept in light for 6 hours. Then, iodine test is performed with one leaf from each of the two plants X and Y.



(i) This experimental set up is used to prove essentiality of which of the following requirements of photosynthesis?
(a) Chlorophyll (b) Oxygen
(c) Carbon dioxide (d) Sunlight

(ii) The function of KOH is to absorb
(a) oxygen
(b) carbon dioxide
(c) moisture
(d) sunlight.

(iii) Which of the following statements shows the correct results of Iodine Test performed on the leaf from plant X and Y respectively?
(a) Blue - black colour would be obtained on the leaf of plant X and no change in colour on leaf of plant Y.
(b) Blue - black colour would be obtained on the leaf of plant Y and no change in colour on leaf of plant X.
(c) Red colour would be obtained on the leaf of plant X and brown colour on the leaf of plant Y.
(d) Red colour would be obtained on the leaf of plant Y and brown colour on the leaf of plant X.

(iv) Which of the following steps can be followed for making the apparatus air tight?
(i) Placing the plants on glass plate
(ii) Using a suction pump
(iii) Applying vaseline to seal the bottom of jar
(iv) Creating vacuum
(a) (i) and (ii) (b) (ii) and (iii)
(c) (i) and (iii) (d) (ii) and (iv)

(Term I, 2021-22)

VSA (1 mark)

7. State the role of pancreas in digestion of food. *(2020-21)*

8. How is the wall of small intestine adapted for performing the function of absorption of food? *(2020-21)* U

9. Out of a goat and a tiger, which one will have a longer small intestine? Justify your answer. *(2020-21)* U

SA I (2 marks)

10. Patients whose gall bladder are removed are recommended to eat less oily food. Why? *(2022-23)*

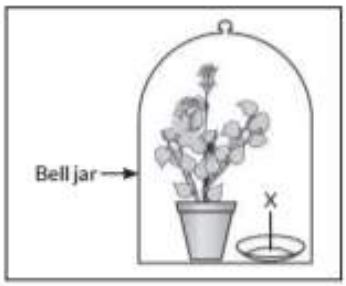
11. Bile juice does not have any digestive enzyme but still plays a significant role in the process of digestion. Justify the statement. *(2020-21)*

12. State the events occurring during the process of photosynthesis. Is it essential that these steps take place one after the other immediately? *(2020-21)*

5.3 Respiration

MCQ

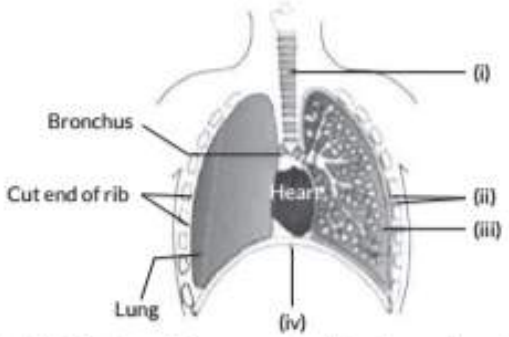
13. Observe the experimental setup shown below. Name the chemical indicated as 'X' that can absorb the gas which is evolved as a byproduct of respiration.



(a) NaOH (b) KOH
(c) $Ca(OH)_2$ (d) K_2CO_3

(2022-23) An

14. Carefully study the diagram of the human respiratory system with labels (i), (ii), (iii) and (iv). Select the option which gives correct identification and main function and /or characteristic.



(a) (i) Trachea: It is supported by bony rings for conducting inspired air.
(b) (ii) Ribs: When we breathe out, ribs are lifted
(c) (iii) Alveoli: Thin-walled sac like structures for exchange of gases.
(d) (iv) Diaphragm: It is pulled up when we breathe in. *(Term I, 2021-22)*

15. **Read the following and answer any four questions from 15(i) to 15(v).**
All living cells require energy for various activities.

This energy is available by the breakdown of simple carbohydrates either using oxygen or without using oxygen.

(i) Energy in the case of higher plants and animals is obtained by

(a) breathing (b) tissue respiration
(c) organ respiration (d) digestion of food.

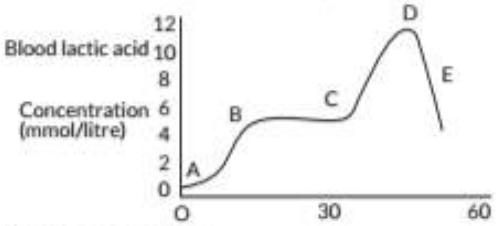
(ii) The graph below represents the blood lactic acid concentration of an athlete during a race of 400 m and shows a peak at point D.

Respiration in athletics

The blood of an athlete was tested before, during and after a 400 m race.

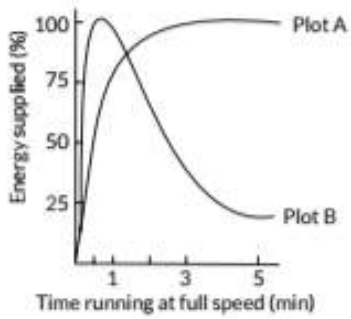
Lactic acid production has occurred in the athlete while running in the 400 m race.

Which of the following processes explains this event?



(a) Aerobic respiration
(b) Anaerobic respiration
(c) Fermentation
(d) Breathing An

(iii) Study the graph below that represents the amount of energy supplied with respect to the time while an athlete is running at full speed.



Choose the correct combination of plots and justification provided in the following table.

	Plot A	Plot B	Justification
(a)	Aerobic	Anaerobic	Amount of energy is low and inconsistent in aerobic and high in anaerobic
(b)	Aerobic	Anaerobic	Amount of energy is high and consistent in aerobic and low in anaerobic
(c)	Anaerobic	Aerobic	Amount of energy is high and consistent in aerobic and low in anaerobic.
(d)	Anaerobic	Aerobic	Amount of energy is high and inconsistent in anaerobic and low in aerobic.

(iv) The characteristic processes observed in anaerobic respiration are

(i) presence of oxygen
(ii) release of carbon dioxide
(iii) release of energy
(iv) release of lactic acid.

(a) (i) and (ii) only (b) (i), (ii) and (iii) only
(c) (ii), (iii) and (iv) only (d) (iv) only

(v) Study the table below and select the row that has the incorrect information.

		Aerobic	Anaerobic
(a)	Location	Cytoplasm	Mitochondria
(b)	End Product	CO_2 and H_2O	Ethanol and CO_2
(c)	Amount of ATP	High	Low
(d)	Oxygen	Needed	Not needed

(2020-21)

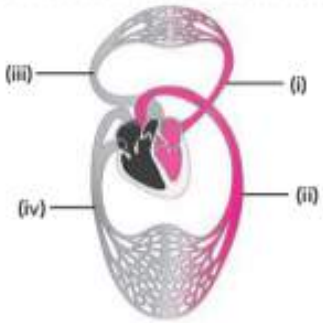
5.4 Transportation

MCQ

16. **Assertion (A)** : Amphibians can tolerate mixing of oxygenated and deoxygenated blood.
Reason (R) : Amphibians are animals with two chambered heart.

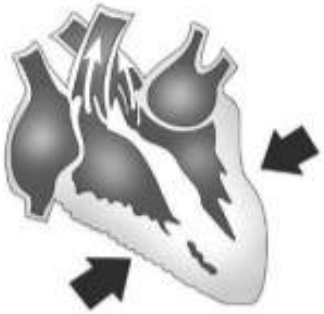
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true. (2022-23)

17. The figure given below shows a schematic plan of blood circulation in humans with labels (i) to (iv). Identify the correct label with its functions.



(a) (i) Pulmonary vein - takes impure blood from body part.
(b) (ii) Pulmonary artery - takes blood from lung to heart.
(c) (iii) Aorta - takes blood from heart to body parts.
(d) (iv) Vena cava - takes blood from body parts to right auricle. *(Term I, 2021-22)* An

18. Identify the phase of circulation which is represented in the diagram of heart given below. Arrows indicate contraction of the chambers shown.



(a) Blood transferred to the right ventricle and left ventricle simultaneously.
(b) Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously.
(c) Blood transferred to the right auricle and left auricle simultaneously.
(d) Blood is received from lungs after oxygenation and is received from various organs of the body.
(Term I, 2021-22) Ap

19. **Assertion (A) :** Resins and gums are stored in old xylem tissue in plants.
Reason (R): Resins and gums facilitate transport of water molecules.
(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. *(Term I, 2021-22)*

20. In which of the following groups of organisms, blood flows through the heart only once during one cycle of passage through the body?
(a) Rabbit, parrot, turtle
(b) Frog, crocodile, pigeon
(c) Whale, *Labeo*, penguin
(d) Shark, dog fish, sting ray *(Term I, 2021-22)* U

VSA (1 mark)

21. Veins are thin walled and have valves. Justify.
(2020-21)

SA I (2 marks)

22. The leaves of a plant were covered with aluminium foil, how would it affect the physiology of the plant?
(2022-23) An

23. How is lymph an important fluid involved in transportation? If lymphatic vessels get blocked, how would it affect the human body? Elaborate.
(2022-23) U

24. In birds and mammals, the left and right side of the heart are separated. Give reasons. *(2020-21)*

5.5 Excretion

MCQ

25. What is common between extensive network of blood vessels around walls of alveoli and in glomerulus of nephron?
(a) Thick walled arteries richly supplied with blood.
(b) Thin walled veins poorly supplied with blood.
(c) Thick walled capillaries poorly supplied with blood.
(d) Thin walled capillaries richly supplied with blood. *(Term I, 2021-22)*

26. Plants use completely different process for excretion as compared to animals. Which one of the following processes is not followed by plants for excretion?
(a) They can get rid of excess water by transpiration.
(b) They selectively filter toxic substances through their leaves.
(c) Waste products are stored as resins and gums in old xylem.
(d) They excrete waste substances into the soil around them. *(Term I, 2021-22)*

27. In a person the tubule part of the nephron is not functioning at all. What will its effect be on urine formation?
(a) The urine will not be formed .
(b) Quality and quantity of urine is unaffected.
(c) Urine is more concentrated.
(d) Urine is more diluted. *(Term I, 2021-22)*

SA I (2 marks)

28. Name the substances other than water, that are reabsorbed during urine formation. What are the two parameters that decide the amount of water that is reabsorbed in the kidney? *(2022-23)* Ev

SA II (3 marks)

29. Explain where and how urine is produced?
(2020-21)