Year 2024

Multiple Choice Questions [1 Marks]

1) A stomata closes when : **[(31/1/1); (31/1/2); (31/3/3)]**
(i) it needs carbon dioxide for photosynthesis.
(ii) it does not need carbon dioxide for photosynthesis.
(iii) water flows out of the guard cells.
(iv) water flows into the guard cells.
The correct reason(s) in this process is/are :
(a) (i) only
(b) (i) and (iii)
(c) (ii) and (iii)
(d) (ii) and (iv)

2) Which of the following statement(s) is (are) true about human heart? **[(31/2/1); (31/2/2); (31/2/3)]**
(a) Right atrium receives oxygenated blood from lungs through pulmonary artery.
(b) Left atrium transfers oxygenated blood to left ventricle which sends it to various parts of the body.
(c) Right atrium receives deoxygenated blood through vena cava from upper and lower body.
(d) Left atrium transfers oxygenated blood to aorta which sends it to different parts of the body.
(a) a (b) a and d (c) b and c (d) b and d

3) In human respiratory system, when a person breathes in, the position of ribs and diaphragm will be : **[(31/2/1); (31/2/2); (31/2/3)]**
(a) lifted ribs and curve/dome shaped diaphragm.
(b) lifted ribs and flattened diaphragm.
(c) relaxed ribs and flattened diaphragm.
(d) relaxed ribs and curve/dome shaped diaphragm.

4) Which of the following statement (s) is (are) true about human heart ? **[(31/3/1); (31/3/2); (31/3/3)]**
(a) Right atrium receives oxygenated blood from lungs through pulmonary artery.
(b) Left atrium transfers oxygenated blood to left ventricle which sends it to various parts of the body.
(c) Right atrium receives deoxygenated blood from different parts of the body through vena cava.
(d) Left atrium transfers oxygenated blood to aorta which sends it to different parts of the body.
(a) b only (b) a and d (c) b and c (d) b and d

5) In human beings, when the process of digestion is completed, the (i) proteins, (ii) carbohydrates, and (iii) fats are respectively finally converted into : **[(31/4/1); (31/4/2); (31/4/3)]**
(a) (i) Amino acids, (ii) glucose and (iii) fatty acids
(b) (i) Amino acids, (ii) glucose, (iii) fatty acids and glycerol
(c) (i) Glucose, (ii) fatty acids and glycerol, (iii) amino acids
(d) (i) Sugars, (ii) amino acids, (iii) fatty acids and glycerol

6) The process in which transport of soluble products of photosynthesis takes place in plants is known as : **[(31/5/1); (31/5/2); (31/5/3)]**
(a) Transpiration (b) Evaporation (c) Conduction (d) Translocation

Assertion and Reasoning [1 Mark]

These consist of two statements — Assertion (A) and Reason(R). Answer these questions selecting the appropriate option given below:
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(c) (A) is true, but (R) is false.
(d) (A) is false, but (R) is true.

1) Assertion (A): The rate of breathing in aquatic organisms is much faster than in terrestrial organisms.
Reason (R): The amount of oxygen dissolved in water is very high as compared to the amount of oxygen in air. **[(31/1/1); (31/1/2); (31/1/3)]**
2) Assertion (A) : Producers are capable of using light energy from the sun to make food available in an ecosystem.
Reason (R) : All food chains in an ecosystem start with a producer. **[(31/3/3)]**
3) Assertion (A) : In the human heart ventricles have thicker muscular walls than atria.
Reason (R) : Ventricles have to pump the blood into various organs. **[(31/4/1); (31/4/3)]**
4) Assertion (A) : Most of the plants close their stomata at night.
Reason (R) : Closing of stomata helps to conserve water as large amount of water evaporates from the leaves. **[(31/4/2)]**

Very Short Answer Type Questions [2 Marks]

1) State one role of each of the following in human digestive system : **[(31/1/1)]**
(i) Hydrochloric acid
(ii) Vili
(iii) Anal Sphincter
(iv) Lipase
2) Mention the pathway of urine in our body starting from the organ of its formation to its excretion. What will happen if the tubular part of the nephron does not work properly? **[(31/1/2)]**
3) (i) Give reason why herbivorous animals have longer, small intestine than carnivorous animals ?
(ii) Although 'Pepsin' and 'Trypsin' are both protein digesting enzymes yet they differ from each other. Justify this statement by giving one difference between them. **[(31/1/3)]**
4) Photosynthesis takes place in the leaves and the food prepared by it reaches other parts of the plants. Name the process involved and explain it. **[(31/2/1)]**
5) Two test tubes A and B are taken, each containing one mL of starch solution. Add 1 mL of saliva to test tube 'A' only and leave both the test tubes undisturbed for a few minutes. Now add a few drops of dilute iodine solution to both the test tubes.
(a) Which one of the two test tubes shows change in colour? Write the changed colour observed in this test tube.
(b) What can we conclude from this activity ? **[(31/2/2)]**
6) Name the blood vessel which brings blood to the kidneys. Why is nephron called a basic filtration unit of kidney ? Write the role of tubular part of nephron in urine formation. **[(31/2/3)]**
7) We need to water the soil in plants on a regular basis. But it ultimately reaches the leaves of the plant. Explain how this takes place. **[(31/4/1); (31/4/2); (31/4/3)]**
8) Name the type of nutrition exhibited by Amoeba. Explain how food is taken in and digested by this organism. **[(31/4/1); (31/4/2); (31/4/3)]**
9) Sometimes while running, the athletes suffer from muscle cramps. Why ? How is the respiration in this case different from aerobic respiration ? **[(31/5/1); (31/5/2); (31/5/3)]**

10) Write the other name given to lymph. State its two functions. **[(31/5/1); (31/5/2); (31/5/3)]**

Short Answer Type Questions [3 Marks]

1) (i) Why is respiratory pigment needed in multicellular organisms with large body size ?
(ii) Give reasons for the following :
(a) Rings of cartilage are present in the throat.
(b) Lungs always contain a residual volume of air.
(c) The diaphragm flattens and ribs are lifted up when we breathe in.
(d) Walls of alveoli contain an extensive network of blood vessels. **[(31/1/1)]**

2) In the context of the statement "chlorophyll is necessary for photosynthesis" answer the following questions :
(i) What are variegated leaves? Give an example.
(ii) When leaf is boiled in alcohol, what happens to the colour of the leaf and the colour of the solution ?
(iii) In what form is the carbohydrate produced, stored in the plant? Why is chlorophyll necessary for photosynthesis ? **[(31/1/2)]**

3) (i) Which organisms have a three-chambered heart ? Why do they have three-chambered hearts ?
(ii) List two functions of lymph. **[(31/1/3)]**

4) (a) Give reasons for the following :
(i) Alveoli in lungs are richly supplied with blood capillaries.
(ii) Respiratory pigment in the blood takes up oxygen and not carbon dioxide.
(iii) During anaerobic respiration, a 3-carbon molecule is formed as an end product instead of CO_2 in human beings. **[(31/2/1); (31/2/2); (31/2/3)]**

5) (i) Name the movements that occur all along the gut in human digestive system. How do they help in digestion ?
(ii) Where is bile juice stored in human body ? List two roles of bile juice. **[(31/2/1); (31/2/2); (31/2/3)]**

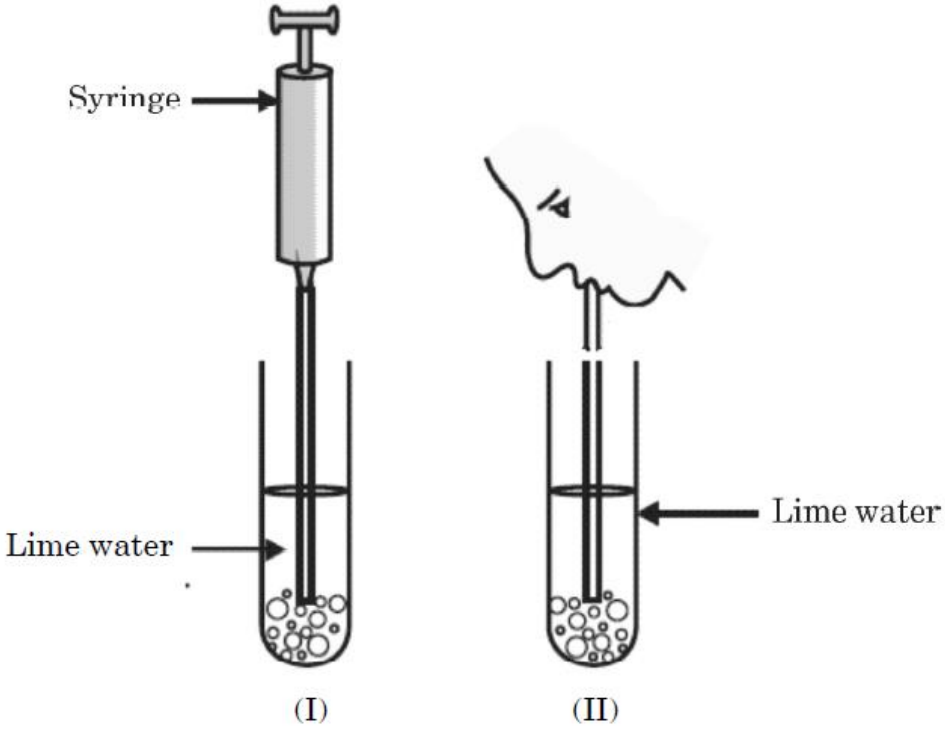
6) We water the soil but it reaches the topmost leaves of the plants. Explain in brief the process involved. **[(31/3/1); ; (31/3/3)]**

7) Write the main difference between aerobic and anaerobic respiration. State the pathway which is common for both. Write the overall chemical equation of aerobic respiration and mention the site where this process occurs inside the cells. **[(31/3/2)]**

Long Answer Type Questions [5 Marks]

1) Design an experiment to demonstrate that carbon dioxide is essential for photosynthesis. Write the observation and conclusion of the experiment. **[(31/5/1); (31/5/2); (31/5/3)]**

2) (i)



In the experimental set-up shown above in diagram (I) atmospheric air is being passed into lime water with a syringe while in diagram (II) air is being exhaled into lime water. The time taken for the lime water to turn milky in both the test tubes is different. Give reason.

(ii) Draw the diagram of an open stomatal pore and label (I) Guard cells, and (II) Chloroplast on it. Mention two functions performed by stomata. **[(31/5/1); (31/5/2); (31/5/3)]**

Case Study

1) Human digestive system is a tube running from mouth to anus. Its main function is to breakdown complex molecules present in the food which cannot be absorbed as such into smaller molecules. These molecules are absorbed across the walls of the tube and the absorbed food reaches each and every cell of the body where it is utilised for obtaining energy.

(a) Name the glands present in the buccal cavity and write the components of food on which the secretion of these glands act upon.

(b) Two organs have a sphincter muscle at their exit. Name them.

(c) What will happen if:

(i) mucus is not secreted by the gastric glands.

(ii) Villi are absent in the small intestine.

OR

(c) "Bile juice does not contain any enzyme, yet it has important roles in digestion." Justify the statement. **[(31/3/1); (31/3/2); (31/3/3)]**

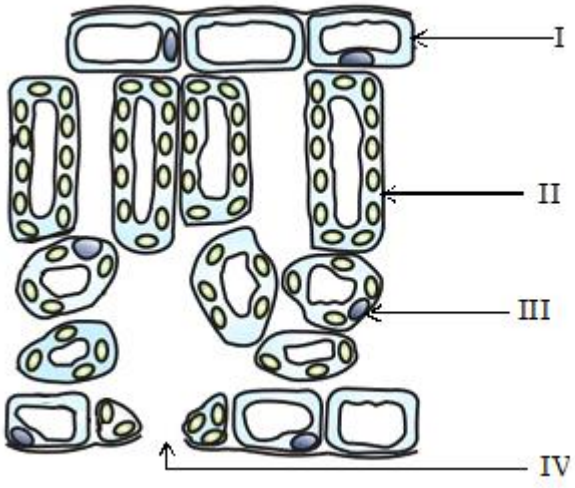
2) Kidneys are vital organs for survival. Several factors like infections, injury or restricted blood flow to kidneys reduce the activity of kidneys. This leads to accumulation of poisonous wastes in the

body, which can even lead to death. In case of kidney failure, an artificial kidney can be used. An artificial kidney is a device to remove waste products from the blood through dialysis.
(a) (i) Name the artery that brings oxygenated blood to the kidney.
(ii) Name the cluster the thin-walled blood capillaries present in
(b) In human excretory system name the organ which stores urine. Is this organ under hormonal control or nervous control ?
(c) (i) List two major steps involved in the formation of urine and state in brief their functions.
OR
(c) (ii) In which part of the nephron does selective reabsorption take place ? List the factors which the amount of water reabsorbed depends on. **[(31/4/1); (31/4/2); (31/4/3)]**

Year 2023

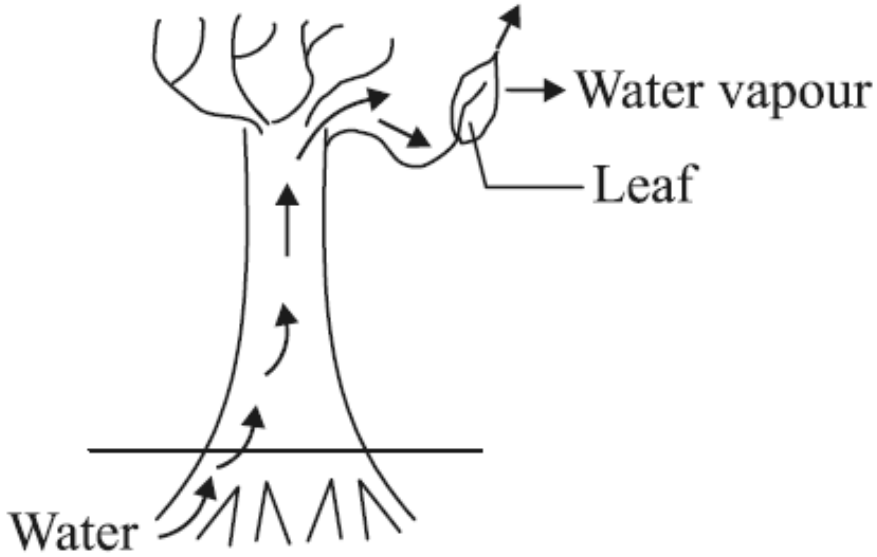
Objective questions [1 Marks]

1) An organism which breaks down the food material outside the body and then absorbs it is
(a)a plant parasite, Cuscuta (b) an animal parasite, Tapeworm (c)a bacteria, Rhizobium (d) a fungi, Rhizopus **[(31/1/1); (31/1/2); (31/1/3)]**
2) Consider the following statements about small intestine and select the one which is NOT correct: **[(31/1/1); (31/1/2); (31/1/3)]**
(a)The length of the small intestine in animals differs as it depends on the type of food they eat.
(b)The small intestine is the site of complete digestion of food.
(c)The small intestine receives secretions from liver and pancreas.
(d)The villi of the small intestine absorb water from the unabsorbed food before it gets removed from the body via the anus.
3) Sphincter muscles are present at the exit of: [**(31/2/1); (31/2/2); (31/2/3)]**
(a)Stomach and small intestine
(b)Stomach and anus
(c)Small intestine and large intestine
(d)Oesophagus and stomach
4) Inthefollowingdiagram,identifythecellsthroughwhichmassiveamountsofgaseousexchangetakesplaceforphotosynthesis: [**(31/2/1); (31/2/2); (31/2/3)**]



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

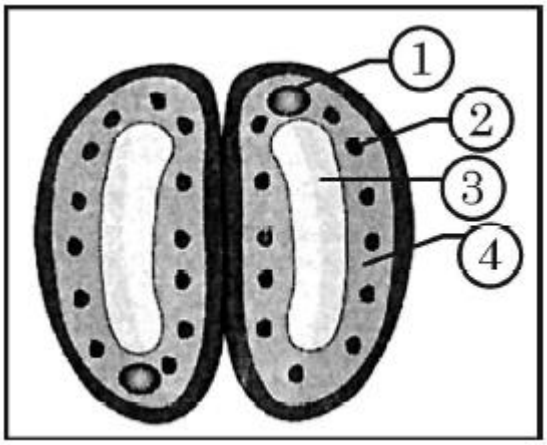
5) Duringvigorousexercise,theoccurrenceofcrampsintheoutermusclesofanathleteisduetotheconversionofpyruvateto: [**(31/2/1); (31/2/2); (31/2/3)]**
   (a) Glucose (b) Ethanol (c)Lactic acid (d) Lactose
6) Opening and closing of stomata is due to : **[(31/4/1); (31/4/3)]**
   (a) High pressure of gases inside 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.
7) One of the events that does not occur during photosynthesis is :**[(31/4/2)]**
   (a) Chlorophyll absorbs solar energy.
   (b) Carbon dioxide is released during the process.
   (c) Oxygen is released during the process.
   (d) Carbon dioxide is absorbed during the process.
8) Observe the following diagram and identify the process and itssignificance from the following options **[(31/4/1); [(31/4/2)]]**



   (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.
9) As compared to terrestrial organisms, the rate of breathing in aquatic organisms is :**[(31/5/1) ; (31/5/2); (31/5/3)]**
   (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.
10) 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 :**[(31/5/1);(31/5/2);(31/5/3)]**
   (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.

11) 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.

12) Inthe given diagram of a closed stomata : (1), (2), (8) and (4) respectively are



[(31/6/1); (31/6/3)]

(a) nucleus, chloroplast, guard cell, vacuole
(b) nucleus, chloroplast,, vacuole, guard cell
(c) chloroplast, nucleus, vacuole, guard cell
(d) vacuole, guard cell, nucleus, chloroplast

13) Given below are two columns, Column I shows enzymes secreted by the glands in the alimentary canal of human beings and Column II indicates the components of food on which enzymes act. Choose the options showing correct matching

	Column I	Column II
	(Enzymes)	(Component)
(a)	Pepsin	Starch
(b)	Trypsin	Proteins
(c)	Lipase	Proteins
(d)	Amylase	Emulsified fat

Assertion and Reasoning [1 Mark]

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

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

1) Assertion (A): Blood clotting prevents excessive loss of blood. **[(31/1/1)]**
Reason (R): Blood clotting is due to blood plasma and white blood cells present in the blood.

2) Assertion(A):Theanaerobicrespirationwhichtakesplaceinyeast,hasoneoftheendproductsasan acid.**[(31/1/2)]**
Reason (R): During anaerobic respiration, there is incomplete breakdown of glucose

3) Assertion(A):Left atrium receives oxygenated blood from pulmonary vein. **[(31/1/3)]**

Reason(R):Right atrium transfers deoxygenated blood to the right ventricle, which pumps it to the lungs for oxygenation.

4) Assertion (A) : The inner walls of the small intestine have finger like projections called villi which are rich in blood.**[(31/4/1); (31/4/2); (31/4/3)]**
5) Reason (R) : These villi have a large surface area to help the small intestine in completing the digestion of food.
6) Assertion (A) : The walls of atria are thicker than those of the ventricles.**[(31/5/1); (31/5/2); (31/5/3)]**
   Reason (R): Ventricles have to pump blood into various organs at high pressure.
7) Assertion (A) : Amoeba takes in food using finger like extensions of the cell surface. **[(31/6/1); (31/6/2)]**
   Reason (R) : In all unicellular organisms, the food is taken in by the entire cell surface.

Very Short Answer Type Questions [2 Marks]

1) Name the type of blood(oxygenated / deoxygenated) transported by each of the following mentioning the path(i.e. from one organ(which place) to another (which place)).**[(31/1/1)]**
   (i) Vena cava (ii) Pulmonary artery
2) With the help of a schematic flow chart, show the breakdown of glucose in a cell to provide energy **[(31/1/1)]**
   (i) in the presence of oxygen (ii) in lack of oxygen
3) Name the part of the human excretory system where nephrons are found. Write the structure and function of nephrons. [**(31/1/1); (31/1/2); (31/1/3)]**
4) (a)Why is it important to prevent oxygenated and deoxygenated blood from mixing in birds and mammals?
   (b) Which animals can tolerate some mixing of the oxygenated and deoxygenated blood streams? On what factor does the body temperature of these animals depend?**[(31/2/1)]**
5) What will happen if :
   (a) Xylem tissue in a plant is removed ?
   (b) We are injured and start bleeding ? **[(31/2/2)]**
6) Write one specific function each of the following organs in relation with excretion in human beings
   (i) Renal Artery
   (ii) Urethra
   (iii) Glomerulus
   (iv) Tubular part of nephron **[(31/4/1)]**
7) 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. **[(31/4/1); (31/4/2); (31/4/3)]**
8) Give two reasons, why bile juice is considered to be an important secretion of liver in the process of digestion ? **[(31/4/2)]**
9) What is the other name of 'tissue fluid' ? Write its two functions. **[(31/4/3)]**
10) (a) Why is it important to prevent oxygenated and deoxygenated blood from mixing in birds and mammals ?
    (b) Which animals can tolerate some mixing of the oxygenated and deoxygenated blood streams? On what factor does the body temperature of these animals depend ? **[(31/5/2)]**
11) Write one important function each of the following in the human respiratory system :
    (a) Rings of Cartilage
    (b) Alveoli

(c) Haemoglobin
(d) Lining of mucus **[(31/5/2)]**

12) List the events in proper sequence that take place during the process of photosynthesis. **[(31/5/1); (31/5/2); (31/5/3)]**
13) Explain in brief two ways by which leaves of a plant help in excretion. **[(31/5/1); (31/5/2); (31/5/3)]**
14) In the process of digestion of food in human beings, two protein-digesting enzymes are secreted. Name the enzymes along with the glands that secrete them.**[(31/5/1)]**
15) What will happen if : **[(31/5/3)]**
(a) Xylem tissue in a plant is removed ?
(b) We are injured and start bleeding ?
16) Give the name of the enzyme present in the fluid in our mouth cavity. State the gland which produces it. What would happen to the digestion process if this gland stops secreting this enzyme ? **[(31/6/1); (31/6/2); (31/6/3)]**

Short Answer Type Questions [3 Marks]

1) (i) State the role of ATP in cellular respiration.
(ii) What ensures sufficient exchange of gases in plants?
(iii) State the conditions on which the direction of diffusion of gases in plant depend upon.
[(31/1/1); (31/1/2); (31/1/3)]
2) (i) What is the internal energy reserve in plants and animals?
(ii) How desert plants perform photosynthesis if their stomata remain closed during the day?
[(31/1/1); (31/1/2); (31/1/3)]
3) (i) What is the first step in the breakdown of glucose during aerobic and anaerobic respiration? Where does it take place?
(ii) ATP is called the energy currency of the cell. Why?
(iii) What is meant by residual volume of air in a breathing cycle? **[(31/2/1); (31/2/2)]**
4) Write in sequence the steps for experimental verification of the fact that "sunlight is essential for photosynthesis". **[(31/2/1); (31/2/2)]**
5) (i) What is meant by excretion ?
(ii) Name the organ that connects the kidneys with the urinary bladder. State its function.
(iii) List two factors on which the amount of water reabsorbed depends. [(31/2/3)]
6) (i) In the human respiratory system, name the following :
(I) Part where air is filtered by fine hairs and mucus lining
(II) Part which separates chest cavity from abdominal cavity
(III) Balloon like structures where exchange of gases takes place
(IV) The two large air passages that lead from trachea to the lungs
(ii) List any two characteristics of lungs which make it an efficient respiratory surface. [(31/2/3)]
7) (i) How does Paramecium obtain its food ? **[(31/4/1); (31/4/2); (31/4/3)]**
(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
8) (i) What is double circulation ? **[(31/4/1); (31/4/2); (31/4/3)]**
(ii) Why is the separation of the right side and the left side of the heart useful ? How does it help birds and mammals?
9) (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? **[(31/5/1); (31/5/2); (31/5/3)]**
10) Explain the process of transport of oxygenated and deoxygenated blood in a human body. **[(31/6/1); (31/6/2); (31/6/3)]**

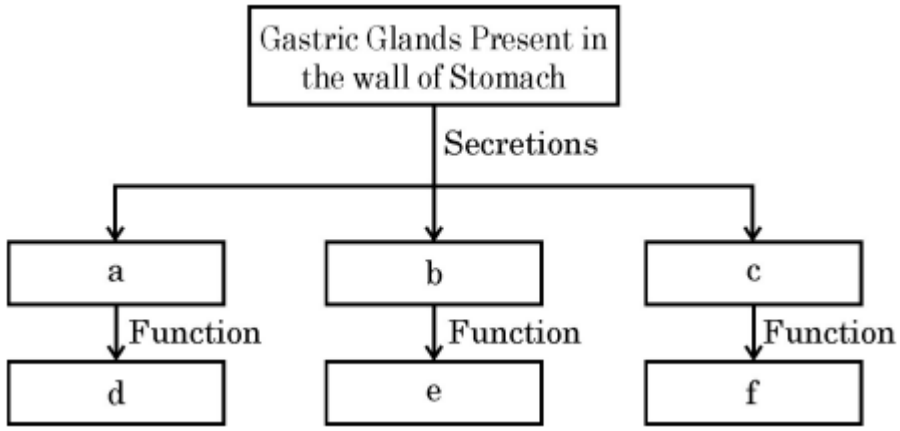
Year 2020

Objective questions [1 Marks]

1) 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.**[(31/4/1); (31/4/2); (31/4/3)]**
2) 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. **[(31/4/1)]**
3) Most of the digestion and absorption of the food takes place in the
   (A) small intestine. (B) liver. (C) stomach. (D) large intestine. **[(31/4/1)]**
4) In the excretory system of human beings, some substances in the initial filtrate such as glucose, amino acids, salts and water are selectively reabsorbed in
   (A) Urethra (B) Nephron (C) Ureter (D) Urinary bladder **[(31/4/2)]**
5) Pseudopodia are
   (A) small hair-like structures present on unicellular organisms.
   (B) false feet developed in some unicellular organisms.
   (C) long, tube-like structures coming out of the mouth.
   (D) suckers which are attached to the walls of the intestines. **[(31/4/2)]**
6) 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. **[(31/4/3)]**
7) Most of the digestion and absorption of the food takes place in the
   (a) small intestine. (b) liver. (c) stomach. (d) large intestine. **[(31/4/3)]**

Short Answer Type Questions [3 Marks]

1) Complete the following flow chart as per the given instructions :



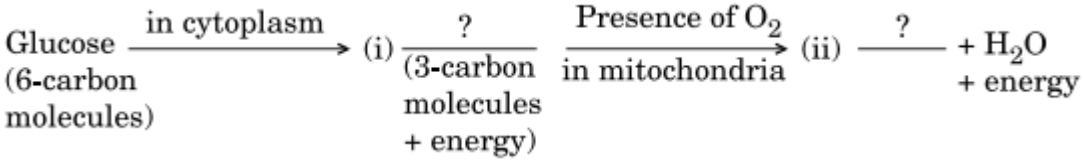
[(31/2/1); (31/2/2); (31/2/3)]

2) (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.
[(31/3/1); (31/3/2); (31/3/3)]

3) (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 :



[(31/5/1); (31/5/2); (31/5/3)]

Long Answer Type Questions [5 Marks]

1) (a) Why is there a difference in the rate of breathing between aquaticorganisms and terrestrial organisms? Explain.
(b) Draw a diagram of human respiratory system and label — pharynx, trachea, lungs, diaphragm and alveolar sac on it. **[(31/1/1); (31/1/2)]**
2) (a) Name the organs that form the excretory system in human beings.
(b) Describe in brief how urine is produced in human body. **[(31/1/1); (31/1/2)]**
3) (a) A gas is released during photosynthesis. Name the gas and also state the way by which gas is evolved.
(b) What are stomata? What governs the opening and closing of stomata?**[(31/1/3)]**
4) (a) Draw a diagram of human alimentary canal and label-gall bladder, pancreas, liver and small intestine on it.
(b) Give two reasons to explain why absorption of digested food occurs mainly in small intestine. **[(31/1/3)]**
5) (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? **[(31/2/1)]**
6) (a) "Blood circulation in fishes is different from the blood circulation in human beings." Justify the statement.
(b) Describe "blood circulation" in human beings. **[(31/2/2)]**
7) (a) Draw a diagram of human excretory system and label on it the following parts:
(i) Kidney
(ii) Ureter
(iii) Urinary bladder
(iv) Urethra
(b) Write one main function each of the labelled parts. **[(31/2/3)]**
8) (a) Write the correct sequence of steps followed during journey of oxygen rich blood from lungs to various organs of human body.
(b) What happens when the system of blood vessels develop a leak?**[(31/3/1); (31/3/3)]**
9) (a) How do leaves of plants help in excretion? Explain briefly.
(b) Describe the structure and function of a nephron. **[(31/3/2); (31/3/3)]**
10) (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?**[(31/4/1); (31/4/2); (31/4/3)]**

11) 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. **[(31/5/1); (31/5/3)]**

12) Design an activity to show that chlorophyll is essential for photosynthesis. **[31/5/2)]**

Year 2019

Very Short Answer Type Questions [2 Mark]

1) Write two different ways in which glucose is oxidized to provide energy in human body. Write the products formed in each case.**[(31/1/1)]**
2) How is O_2 and CO_2 transported in human beings?**[(31/1/2)]**
3) List two different functions performed by pancreas in our body.**[(31/1/3)]**

Short Answer Type Questions [3 Mark]

1) Write three types of blood vessels. Give one important feature of each.**[(31/1/1)]**
2) Define the term transpiration. Design an experiment to demonstrate this process.**[(31/1/2)]**
3) What is photosynthesis? Explain its mechanism.**[(31/1/3)]**
4) List in tabular form three distinguishing features between autotrophic nutrition and heterotrophic nutrition.**[(31/2/1); (31/2/3)]**
5) What is transpiration? List its two functions. **[(31/2/1); (31/2/2); (31/2/3)]**
6) (a) What is translocation? Why is it essential for plants?
(b) Where do the substances in plants reach as a result of translocation?**[(31/2/1); (31/2/2); (31/2/3)]**
7) List two types of the transport system in human beings and write the functions of any one of these.**[(31/2/2)]**
8) List four functions of the human heart. Why is double circulation necessary in the human body?**[(31/3/1); (31/3/2)]**
9) Explain the ways in which glucose is broken down in absence or shortage of oxygen.**[(31/3/1); (31/3/2); (31/3/3)]**
10) What is haemoglobin? State the consequences of deficiency of haemoglobin in our bodies.**[(31/3/3)]**
11) (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**[(31/4/1); (31/4/2)]**
12) Draw a diagram of human excretory system and label the following :
(i) Urinary bladder
(ii) Left kidney

(iii) Left ureter **[(31/4/3)]**

13) (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.**[(31/5/1); (31/5/3)]**

14) List in tabular form three differences between blood and lymph.**[(31/5/2)]**

Practical Skill Question

1) 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. **[(31/1/1);(31/1/2); (31/1/3)]**
2) A student has set up an apparatus to show that ''CO_2 is released during respiration''. After about 1 hour he observes no change in the water level in the delivery tube. Write two possible reasons for the failure of the experiment.**[(31/3/1); (31/3/2); (31/3/3)]**
3) In the experiment of preparing a temporary mount of a leaf peel to observe stomata, we use two liquids other than water. Name these two liquids and state when and why these liquids are used. **[(31/3/1); (31/3/2); (31/3/3)]**
4) In the experiment ''To prepare a temporary mount of a leaf peel to show stomata'', glycerine and safranin are used. When and why are these two liquids used? Explain.**[(31/5/1); (31/5/2); (31/5/3)]**
5) List four precautions in proper sequence which we observe while preparing a temporary mount of a leaf peel. **[(31/3/1); (31/3/2); (31/3/3)]**
6) In the experimental set-up to show that ''the germinating seeds give out carbon dioxide'', answer the following questions:
(i) Why do we keep the conical flask airtight ?
(ii) Name the substance kept in the small test tube inside the conical flask. Write its role.
(iii) Why does water rise in the delivery tube? **[(31/4/1); (31/4/2); (31/4/3)]**

Year 2018

Long Answer Type Questions [5 Marks]

1) (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.**[All India]**
2) (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.**[All India]**
3) (a) Why do fishes die when taken out of water ?
(b) Leaves of a healthy potted plant were coated with Vaseline. Will this plant remain healthy for long ? Give reason to justify your answer.
(c) If a plant is releasing CO_2 and taking in O_2 during the day, does it mean that there is no photosynthesis occurring ? Give reason for your answer.**[For Blind Student]**

Year 2015

Very Short Answer Type Questions [2 Marks]

1) What are enzymes? Name any one enzyme of our digestive system and write its function. Answer.
2) (i) Write the balanced chemical equation for the process of photosynthesis ?
   (ii) When do the desert plants take up carbon dioxide and perform photosynthesis?

Short Answer Type Questions [3 Marks]

1) In single celled organisms diffusion is sufficient to meet all their requirements of food, exchange of gases or removal of wastes but it is not in case of multicellular organisms. Explain the reason for this difference.
2) Draw a diagram of human excretory system and label kidneys, ureters on it.
3) State the role of the following in human digestive system :
   (i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi

Long Answer Type Questions [5 Marks]

1) (a)Explain how does the exchange of gases occur in plants across the surface of stems, roots and leaves.
   (b) How are water and minerals transported in plants?

Year 2014

Very Short Answer Type Questions [1 Mark]

1) Mention the raw materials required for photosynthesis.

Very Short Answer Type Questions [2 Marks]

1) Why do herbivores have longer, small intestine than carnivores?
2) Write correct sequence of four steps of method for the preparation of temporary mount of a stained leaf peel.

Short Answer Type Questions [3 Marks]

1) In mammals and birds why is it necessary to separate oxygenated and de-oxygenated blood ?
2) Draw a neat diagram of excretory system of human beings and label on it:(i) Left kidney (ii) Urinary bladder
3) Draw a diagram of human respiratory system and label on it:(i) Diaphragm (ii) Larynx
4) (a) Name the site of exchange of material between the blood and surrounding cells.
   (b) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide in human body.

Year 2013

Very Short Answer Type Question [1 Mark]

1) What would be the consequences of deficiency of hemoglobin in your body?

Short Answer Type Questions [3 Marks]

1) List three characteristics of lungs which make it an efficient respiratory surface.
2) (a) What is the role of HCl in our stomach?
3) (b) What is emulsification of fats?
4) (c) Which protein digesting enzyme is present in pancreatic juice ?
5) List in tabular form three differences between arteries and veins.

Long Answer Type Questions [5 Marks]

1) Draw a diagram of human excretory system and label renal artery and urethra.
2) State in brief the function of :
   a. renal artery
   b. kidney
   c. Ureter
   d. urinary bladder
3) (a) Draw a diagram of excretory system in human beings and label the following parts: Aorta, kidney, urinary bladder and urethra.
   (b) How is urine produced and eliminated?

Year 2012

Very Short Answer Type Questions [2 Marks]

1) Why do the walls of the trachea not collapse when there is less air in it? **[CBSE (CCE)]**

Short Answer Type Questions [3 Marks]

2) In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion. **[CBSE (CCE)]**
3) List the three kinds of blood vessels of human circulatory system and write ¦ their functions in tabular form. **[CBSE (CCE)]**

Long Answer Type Questions [5 Marks]

1) (a) Draw a diagram to show open stomatal pore and label on it:
   (i) guard cells (ii) chloroplast
   (b) State two functions of stomata.
   (c) How do guard cells regulate the opening and closing of stomatal pore? **[CBSE (CCE)]**
2) (a) Draw a diagram of human respiratory system and label the following:
   (i) part where air is filtered by fine hair and mucus
   (ii) part which terminates in balloon – like structures
   (iii) balloon – like structures where exchange of gases takes place. (iv) part which separates chest cavity from abdominal cavity.
   (b) Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms? **[CBSE (CCE)]**

3) Draw a neat diagram of excretory system of human beings and label the following:
(i) Kidney
(ii) Ureter
(iii) Urinary Bladder
(iv) Urethra **[CBSE (CCE)]**

Year 2011

Very Short Answer Type Questions [2 Marks]

1) What are the final products after digestion of carbohydrates and proteins? **[CBSE (CCE)]**
2) What is saliva? State its role in the digestion of food. **[CBSE (CCE)]**
3) Explain the process of nutrition in Amoeba. **[CBSE (CCE)]**
4) State two differences between arteries and veins. **[CBSE (CCE)]**
5) How are the alveoli designed to maximise the exchange of gases? **[CBSE (CCE)]**
6) Name two excretory products other than O_2 and CO_2 in plants. **[CBSE (CCE)]**

Short Answer Type Questions [3 Marks]

1) (a) "The breathing cycle is rhythmic whereas exchange of gases is a continuous process". Justify this statement.
(b) What happens if conducting tubes of circulatory system develops a leak? State in brief, how could this be avoided?
(c) How opening and closing of stomata takes place? **[CBSE (CCE)]**
2) Draw a diagram of the front view of human heart and label any six parts including at least two, that are concerned with arterial blood supply to the heart muscles. **[CBSE (CCE)]**

Long Answer Type Questions [5 Marks]

1) (a) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide during transportation of blood in human beings and label on it:
Lung capillaries, Pulmonary artery to lungs, Aorta to body, Pulmonary veins from lungs.
(b) What is the advantage of separate channels in mammals and birds for oxygenated and deoxygenated blood? **[CBSE (CCE)]**
2) (a) Draw a diagram depicting Human Alimentary Canal and label on it: Gall bladder, Liver and Pancreas.
(b) State the roles of Liver and Pancreas.
(c) Name the organ which performs the following functions in humans:
(i) Absorption of digested food
(ii) Absorption of water. **[CBSE (CCE)]**
3) (a) Draw a sectional view of the human heart and label on it – Aorta, Right ventricle and Pulmonary veins.
(b) State the functions of the following components of transport system:
(i) Blood (ii) Lymph **[CBSE (CCE)]**
4) (a) Draw a labelled diagram of the respiratory system of human beings with diaphragm at the end of expiration.
(b) List four conditions required for efficient gas exchange in an organism. **[CBSE (CCE)]**
5) (a) Draw a diagram to show the nutrition in Amoeba and label the parts used for this purpose. Mention any other purpose served by this part other than nutrition.

(b) Name the glands associated with digestion of starch in human digestive tract and mention their role.
(c) How is required pH maintained in the stomach and small intestine? **[CBSE (CCE)]**

6) (a) Draw a labelled diagram of stomata. List two functions of stomata.
(b) What are the raw materials used during photosynthesis? Write chemical equation for photosynthesis. **[CBSE (CCE)]**
7) (a) Leaves of a healthy potted plant were coated with vaseline to block the stomata. Will this plant remain healthy for long? State three reasons for your answer.
(b) State any two differences between autotrophic nutrition and heterotrophic nutrition. **[CBSE (CCE)]**

Year 2010

Very Short Answer Type Questions [1 Mark]

1) 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? **[Delhi]**
2) State the basic difference between the process of respiration and photosynthesis. **[Foreign]**
3) Name the intermediate and the end products of glucose breakdown in aerobic respiration.**[Foreign]**
4) State any one difference between autotrophic and heterotrophic modes of nutrition. **[All India]**
5) Give one reason why multicellular organisms require special organs for exchange of gases between their body and their environment. **[All India]**
6) Name the process in plants where water is lost as water vapour. **[All India]**
7) What is 'translocation' in plants? **[All India]**
8) In the experiment "Light is essential for photosynthesis", why does the uncovered part of the leaf turn blue-black after putting iodine solution? **[Foreign]**
9) Name the component of blood that helps in the formation of blood clot in the event of a cut. **[Foreign]**
10) Mention how organisms like bread moulds and mushrooms obtain their food. **[Foreign]**
11) Name the intermediate and the end products of glucose breakdown in aerobic respiration. **[Foreign]**

Short Answer Type Questions [3 Marks]

1) Describe in brief the function of kidneys, ureters, urinary bladder and urethra.
2) Explain the process of breakdown of glucose in a cell
(i) In the presence of oxygen
(ii) In the absence of oxygen.

Long Answer Type Questions [5 Marks]

1) (a) List the three events that occur during the process of photosynthesis. Explain the role of stomata in this process.
(b) Describe an experiment to show that "sunlight is essential for photosynthesis." **[Delhi]**
2) Explain the process of digestion of food in mouth, stomach and small intestine in human body.**[Delhi]**
3) Draw a neat and labelled diagram of human respiratory system. Explain in brief the role of lungs in the exchange of gases. **[Foreign]**
4) Draw a neat and labelled diagram of human excretory system.

Describe in brief the function of kidneys, ureters, urinary bladder and urethra. **[Foreign]**

Year 2009

Very Short Answer Type Questions [1 Marks]

1) Where does digestion of fat take place in our body? **[All India]**
2) What will happen to a plant if its xylem is removed? **[Delhi]**
3) What is the mode of nutrition in human beings? **[All India]**

Long Answer Type Questions [5 Marks]

1) (a) What is meant by breathing? What happens to the rate of breathing during vigorous exercise and why?
   (b) Define translocation with respect to transport in plants. Why is it essential for plants? Where in plants are the following synthesised?
   (i) Sugar
   (ii) Hormone **[Delhi (C)]**
2) (a) Draw a sectional view of the human heart and label on it Aorta, Pulmonary arteries, Vena cava, Left ventricle.
   (b) Why is double circulation of blood necessary in human beings? **[All India]**
3) (a) Draw the structure of a nephron and label the following on it: Glomerulus, Bowman's capsule, Renal artery, Collecting duct.
   (b) What happens to glucose that enters the nephron along with filtrate? **[All India]**
4) (a) Draw a diagram of the human respiratory system and label on it Alveolar Sac, Bronchioles, Larynx and Trachea.
   (b) How are the lungs designed in human beings to maximise thearea of exchange of gases ? **[Foreign]**
5) (a) Draw a schematic representation of transport and exchange ofoxygen and carbon dioxide during transportation of blood inhuman beings and label on it :
   Lung capillaries, Pulmonary artery to lungs, Aorta to body, Pulmonary veins from lungs.
   (b) What is the advantage of separate channels in mammals and birds for oxygenated and deoxygenated blood ? **[Foreign]**
6) (a) Draw a diagram of human alimentary canal and label on it :
   Oesophagus, Gallbladder, Liver and Pancreas.
   (b) Explain the statement, 'Bile does not contain any enzyme but it is essential for digestion. **[Delhi]**
7) (a) Draw a diagram of excretory system in human beings and label on it :
   Aorta, vena cava, urinary bladder, urethra.
   (b) List two vital functions of the kidney. **[Delhi]**

Year 2008

Very Short Answer Type Questions [1 Marks]

1) How do autotrophs obtain CO_2 and N_2 to make their food? **[All India]**
2) Name the tissue which transports soluble products of photosynthesis in a plant. **[Delhi]**
3) State the function of digestive enzymes. **[All India (C)]**
4) Name two ways in which glucose is oxidized to provide energy in various organism. **[All India (C)]**
5) Where do plants get each of the raw material required for photosynthesis? **[All India (C)]**

6) What process in plant is known as transpiration? **[Delhi]**
7) Name the tissue which transports water and minerals in a plant. **[Delhi]**
8) Which pancreatic enzyme is effective in digesting proteins? **[Foreign]**
9) Which enzymes present in saliva brakes down starch? **[Foreign]**
10) What is the role of acid in our stomach? **[Foreign]**

Very Short Answer Type Questions [2 Marks]

1) How are fats digested in our body? Where does this process take place? **[Foreign]**
2) Write one function each of the following components of the transport system in human beings :
   (a) Blood vessels
   (b) Blood platelets
   (c) Lymph
   (d) Heart **[All India]**

Short Answer Type Questions [3 Marks]

1) How are oxygen and. carbon dioxide transported in human beings? How are lungs designed to maximise the area for exchange of gases?
2) What is double circulation in human beings? Why is it necessary? **[Delhi (C)]**
3) Write any three differences between Aerobic and Anaerobic respiration. **[All India]**
4) (a) Name two different ways in which glucose is oxidised to provide energy in various organisms.
   (b) Write any two differences between the two ways of oxidation of glucose in organisms. **[All India]**