

SNS ACADEMY

revision

10th Standard

Date : 29-Nov-23

Reg.No. :

Science

Time : 02:00:00 Hrs

Total Marks : 70

5 x 1 = 5

1) Xylem tissue forms a continuous system of water conducting channel reaching all parts of the plant. At the roots, cells in contact with the soil actively take up ions. This creates a difference in the concentration of these ions between the root and the soil. This creates the steady movement of water into the root. However, this pressure by itself is unlikely to be enough to move water over the heights that we commonly see in plants. Plants use another strategy to move water over the heights.

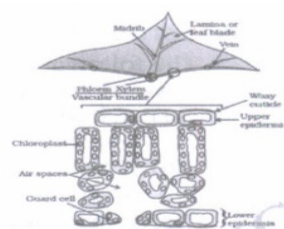
Answer the following questions based on the above information

- Name the process responsible for the absorption of water from roots to leaves.
- Name the major driving force in the movement of water in the xylem, during day time.
- Name the cells which are responsible for the transportation of ions in the plant.
- State one factor which rises water up in a plant.

Answer : (a) Transpiration stream

- Root pressure
- Root cells
- Root pressure

2) The leaf is the main photosynthetic organ in a plant. It controls gas exchange in plants, controls the amount of water loss in plants. Upper epidermis cells contain no chloroplasts - which is not true for the guard cells. They form layers on the upper and lower surfaces of the leaf. Their function is to prevent water from getting out and stopping unwanted substances/ organisms getting in. The palisade mesophyll layer is where most of the photosynthesis occurs in the leaf. The palisade cells contain a lot of chloroplasts to help them perform this photosynthesis. Lower epidermis is the bottom layer of the leaf, and is one cell thick. They may not contain a cuticle within the lower epidermis, there are some holes found in leaves called stomata. These holes allow gases to diffuse in and out of the leaves. The stomata are formed by two highly specialized epidermis cells, called guard cells. Guard cells are the only epidermis cells that contain chloroplasts.



Answer the following questions based on the above information

- Mention two functions of lower epidermis.
- Where are chloroplasts present in the leaf?
- What are the functions of xylem and phloem in a leaf?
- List one structural and one functional difference between upper and lower epidermis.

Answer : (a) (i) To allow transpiration

(ii) Allow gas exchange

(b) Guard cells and palisade cells

(c) **Xylem:** transports water and minerals to leaf cells.

Phloem: translocates dissolved food prepared by photosynthesis by palisade cells.

(d) **Structural difference:** Upper epidermis has cuticle and does not have stomata or has fewer stomata. Lower may not have cuticle and has more stomata.

Functional difference: Upper epidermis is more for protection while lower is for gas exchange/transpiration.

3) The recent study has shown an alarming rise of rickets commonly seen in the children. Doctors say that the lack of outdoor activities and more time on indoor computer activities has led to the increase in this disease. Moreover the diet also plays an important role, the children nowadays are not eating healthy and balanced diet. The intake of carbohydrates and fats is more as they eat more of chips, fast food, cold drink etc.

Answer the following questions based on the above information

- (a) The deficiency of which vitamin leads to the cause of rickets disease?
- (b) Why do Doctors advise children to play outdoors games?
- (c) Why is fast food not a preferable diet for children?
- (d) What is the symptom for rickets?

Answer : (a) Vitamin D

- (b) The exposure to sunlight helps in the formation of vitamin D by our body.
- (c) Fast food has more of sugar and carbohydrates that leads to obesity and diabetes at very young age.
- (d) Bent legs.

4) A student investigated the number of stomata pores on the upper and lower surface of a leaf. Stomata are tiny pores present on the surface of leaves. Massive amounts of gaseous exchange takes place in the leaves through these pores for the purpose of photosynthesis. But it is important to note here that exchange of gases occurs across the surface of stems, roots and leaves as well. The guard cells swell when water flows into them. Causing the stomatal pore to open.

Answer the following questions based on the above information

- (a) Name the cells which help in the opening of the stomata pores
- (b) How will the slide of upper surface of leaf differ from the lower surface of leaf?
- (c) Do guard cells have nucleus in them?
- (d) Which physical factor controls the opening and closing of stomatal pore?

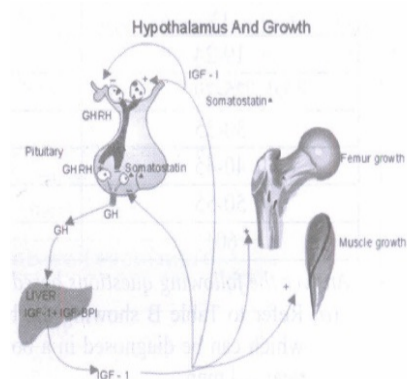
Answer : (a) Guard cells

- (b) The upper surface will have less number of stomata pores.
- (c) Yes
- (d) Turgor pressure.

5) Human Growth hormone is a powerful substance produced in the body. Its primary role is the growth of bodily tissues and is often at its highest peak younger in age while we are growing rapidly and begins to slowly decrease as we grow older. It also, helps with the regulation of our metabolisms, which are essentially all the reactions that occur within the human body. Two of the biggest factors that play a role in the release of this hormone are sleep and exercise.

Sleep: Generally, our growth hormone release is highest during the first part of the night, which is why getting to bed at a decent time for a good night's rest is so important. When we cut our sleep short, we blunt the effect of growth hormone, thus also limiting our recovery and muscle growth ability.

Exercise: Exercise is probably the largest contributor to growth hormone release. Exercise appears as though it effects the growth hormone release through numerous different mechanisms. Different types of exercises have different impact however.



Answer the following questions based on the above information

- (a) What are the target sites of human growth hormone?
- (b) If the production of this hormone is not sufficient during childhood, which condition may result? What is the takeaway from above passage?
- (c) How does sleep affect the release of this hormone?
- (d) How does exercise affect the growth hormones?

Answer : (a) Muscles, bones, Growing tissues

(b) Dwarfism. Takeaway from above passage-Getting good sleep and exercising helps in proper growth of the body during childhood.

(c) Getting to bed at correct time for a good night's rest helps growth hormone production which enhances muscles growth ability.

(d) Exercise releases growth hormone which in turn regulates our metabolisms. Exercise affects the growth hormone release through numerous different mechanisms.

5 x 3 = 15

6) Write the functions of the following in the digestive process:

(i) Bile

(ii) Bicarbonate secreted by the duodenum

(iii) Pancreatic amylase

Answer : (i) Bile is helpful in the emulsification of fats i.e., the breaking down of large fat droplets into smaller fat globules, which the pancreatic enzymes can act upon.

(ii) The pancreatic juice contains enzymes that require an alkaline medium to act. The bicarbonate secreted by the duodenum provides this alkaline medium.

(iii) The function of pancreatic amylase is to convert complex carbohydrates into glucose, which is absorbed in the blood.

7) Give reasons for the following:

(i) The glottis is guarded by epiglottis

(ii) The lung alveoli are covered with blood capillaries.

(iii) The wall of trachea is supported by cartilage rings.

Answer : (i) The glottis is guarded by epiglottis because it prevents the entry of food in wind pipe. If the food enters wind pipe, then it chokes it, leading to the death of the person.

(ii) The lung alveoli are covered with blood vessels because the oxygen that we inhale dissolves in the blood, present in these blood capillaries only, as it reaches the lungs.

(iii) The wall of trachea is supported by cartilage rings because these rings prevent the air passage from collapsing.

8) How 'respiration' different from 'breathing'? Explain the processes of 'aerobic' respiration and 'anaerobic' respiration.

Answer : Breathing is the process by which oxygen is taken in (inhalation) and carbon dioxide is released out (exhalation). Respiration involves the oxidation of the food we eat to release energy.

Carbon dioxide produced as a result of this is released out during exhalation.

Aerobic respiration: During aerobic respiration, the oxidation of food takes place in the presence of oxygen. Aerobic respiration can be summarised by the given equation:



Anaerobic respiration: During anaerobic respiration, food is broken down in the absence of oxygen. It is also known as fermentation and is more common in microorganisms such as yeast.

Sometimes pyruvate gets converted into lactic acid in muscles by the process of anaerobic respiration.



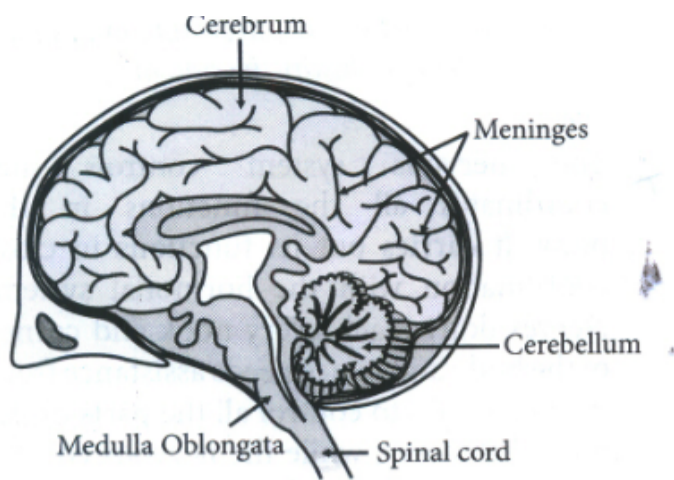
9) Draw a diagram of human brain and label on it the following of its parts:

(i) Cerebrum

(ii) Meninges

(iii) Medulla Oblongata

(iv) Cerebellum



Answer :

10) What are hormones? State one function of each of the following hormone

- (i) Thyroxin
- (ii) Insulin.

Answer : Hormones are chemicals released by endocrine gland.

- (i) Thyroxine helps in the metabolism of carbohydrates, proteins and fats.
- (ii) Insulin helps in regulating sugar level in the blood.

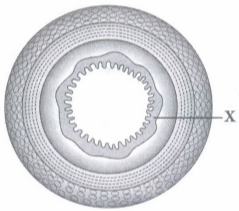
10 x 4 = 40

11) The small intestine is the longest part of the alimentary canal. It is a narrow tube of about 6 metres which lies coiled in the abdomen. The length of small intestine varies in different animals depending on the type of food they eat.

- (i) Humans are not able to digest cellulose whereas they are able to digest starch due to

- (a) absence of enzyme cellulase**
- (b) alkaline pH in small intestine**
- (c) presence of villi**
- (d) acidic pH in stomach**

- (ii) What will happen if the lining X shown in the figure of transverse section of gut is smooth instead of having such foldings?



- (a) Surface area of absorption will be enhanced**
- (b) Surface area of absorption will be reduced**
- (c) Alkaline pH will be changed into acidic pH**
- (d) None of these**

- (iii) Butter cannot be digested in the stomach as lipase and bile are (a) released in small intestine

- (a) released in small intestine**
- (b) inactive in stomach**
- (c) released in large intestine**
- (d) absorbed in the stomach.**

- (iv) Which of the following is a correct statement?

- (a) Herbivores have shorter small intestine as they eat grasses**
- (b) Carnivores have larger small intestine as they eat meat**
- (c) Herbivores have larger small intestine as they eat grasses**
- (d) None of these**

- (v) Various types of movements are generated by the _____ layer of the small intestine.

- (a) serosa**
- (b) muscularis**
- (c) mucosa**
- (d) submucosa**

Answer : (i) (a): In human, cellulose is indigestible as it cannot be broken into smaller molecules due to absence of cellulase enzyme.

(ii) (b): Finger-like projections that come out from mucosa of intestine form villi. Cells lining the villi produce numerous microscopic projections called microvilli giving a brush border appearance which increase the surface area for absorption enormously. Villi has a good supply of capillaries and a large lymph vessel for absorption of nutrients. If the inner lining of the small intestine will be smooth, the surface for absorption will be reduced.

(iii) (a)

(iv) (c)

(v) (b)

12) Water is very important chemical, required as solvent, in many biological processes. It is needed as raw material in photosynthesis, as a main substance from which plants evolve oxygen and provide hydrogen for the synthesis of carbohydrates. It helps in translocation of chemical substances and minerals and in this manner maintains internal transportation. Osmosis is a special type of transport of water molecules that occurs through semipermeable membrane. Osmosis is movement of solvent from the region of higher diffusion pressure to the lower diffusion pressure across a semipermeable membrane. It is of two types - endosmosis and exosmosis. Endosmosis is the osmotic entry of water into a cell, organ or system. Exosmosis is the osmotic withdrawal of water from a cell, organ or system.

(i) A flowering plant is planted in an earthen pot and irrigated. Urea is added in high amounts to make the plant grow faster, but after sometime the plant died. This may be due to

(a) exosmosis (b) endosmosis (c) water logging (d) suffocation

(a) exosmosis (b) endosmosis (c) logging (d) suffocation

(ii) A slice of sugar beet placed in concentrated salt solution would

(a) show no change

(b) loose water and become flaccid initially

(c) absorb small quantity of water

(d) become swollen

(iii) The process of diffusion is involved in

(a) respiration (b) photosynthesis (c) transpiration (d) all of these.

(iv) The plant cell cytoplasm is surrounded by both cell wall and cell membrane. The specificity of transport of substances is mostly across the cell membrane, because

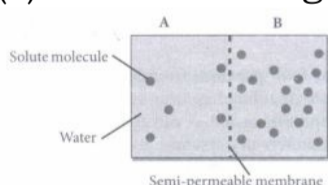
(a) cell membrane is impermeable

(b) cell membrane is selectively permeable

(c) cell membrane is fully permeable

(d) cell wall is impermeable.

(v) Based on the given figure which of the following statements is incorrect?



(a) Movement of solvent molecules will take place from chamber A to B.

(b) Movement of solute will take place from A to B.

(c) Presence of a semi-permeable membrane is a prerequisite for this process to occur.

(d) The direction and rate of osmosis depends on both the pressure gradient and concentration gradient

Answer : (i) (a): Urea solution is more concentrated than the sap present in plant cells, so plant cells lose water to the soil through the process of exosmosis. Loss of water caused plant to die.

(ii) (b)

(iii) (d): Diffusion keeps the cell walls of the internal plant tissues moist. It is a means of spreading of ions and other substances through protoplast. Transpiration or loss of water in vapour form is a diffusion process. Exchange of gases during photosynthesis and respiration between the plant interior and outside air also occurs through diffusion.

(iv) (b)

(v) (b)

13) Our body needs to remove the wastes that build up from cell activities and from digestion. If these wastes are not removed, then our cells can stop working and we can get very sick. The organs of our excretory system help to release wastes from our body. The excretory system consists of a pair of kidney, a pair of ureters, a urinary bladder and a urethra. Each kidney is made up of nearly one million complex tubular structures called nephrons. The formation of urine involves various processes that takes place in the different parts of the nephron. Each nephron consists of a cup-shaped upper end called Bowman's capsule containing a bunch of capillaries called glomerulus. Bowman's capsule leads to tubular structure-proximal convoluted tubule, loop of Henle and distal convoluted tubule which ultimately joins the collecting tubule.

(i) The following substances are the excretory products in animals. Choose the least toxic form.

(a) Urea (b) Uric acid (c) Ammonia (d) CO₂

(ii) The outline of principal events of urination is given below in random manner.

(I) Stretch receptors on the wall of urinary bladder send signals to the CNS.

(II) The bladder fills with urine and becomes distended.

(III) Micturition

(IV) CNS passes on motor messages to initiate the contraction of smooth muscles of bladder and simultaneous relaxation of urethral sphincter.

The correct sequence of the events is

(a) (I) → (II) → (III) → (IV) (c) (II) → (I) → (IV) → (III)

(b) (IV) → (III) → (II) → (I) (d) (III) → (II) → (I) → (IV)

(iii) A person who is not taking food or beverages will have _____ in urine.

(a) little (b) less (c) excess (d) little

glucose urea urea fat

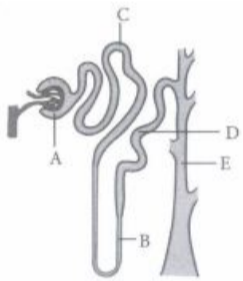
(iv) Glomerular filtrate is first collected by

(a) distal convoluted (b) proximal convoluted

tubule tubule

(c) Bowman's capsule (d) loop of Henle

(v) The given figure represents a single nephron from a mammalian kidney. Identify the labelled parts, match them with the options (i-iv) and select the correct answer.



(I) The site of ultrafiltration

(II) Collect the urine and make it more concentrated

(III) The main site for the reabsorption of glucose and amino acids

(IV) Largely responsible for the maintenance of blood pH

(a) (I)-A, (II)-E, (III)-C, (IV)-D (b) (I)-A, (II)-B, (III)-C, (IV)-D

(c) (I)-B, (II)-A, (III)-C, (IV)-E (d) (I)-E, (II)-B, (III)-D, (IV)-A

Answer : (i) (b): Nitrogenous waste substances such as ammonia, urea or uric acid are produced during protein metabolism. Ammonia is the most toxic, followed by urea and uric acid. Uric acid is least toxic.

(ii) (c)

(iii) (b): Urea is a nitrogenous waste formed as a result of metabolism of various food/beverages in the body and is excreted in the urine. So, if a person is not taking food/beverages he will have less urea in his urine.

(iv) (c)

(v) (a): Malpighian corpuscle (A) is the site of ultrafiltration. A considerable amount of water is reabsorbed in the collecting duct (E) under the influence of ADH. Proximal convoluted tubule (C) is the main site for the reabsorption of glucose and amino acids. In distal convoluted tubule (D), both hydrogen ions and ammonium ions are secreted, thus it maintains blood pH.

14) All living cells need nutrients, O₂ and other essential substances. Also, the waste and harmful substances need to be removed continuously for healthy functioning of cells. So, a well developed transport system is mandatory for living organisms. Complex organisms have special fluids within their bodies to transport such materials. Blood is the most commonly used body fluid by most of the higher

organisms. Lymph also helps in the transport of certain substances.

(i) Which of the following does not exhibit phagocytic activity?

- (a) (b) (c) (d)

Monocytes Neutrophils Basophil Macrophage

(ii) Amount of blood corpuscles is changed in dengue fever. One of the common symptoms observed in people infected with dengue fever is

- (a) **Significant decrease in RBC count** (b) **Significant decrease in WBC count**
(c) **significant decrease in platelets count** (d) **significant increase in platelets count.**

(iii) Why are WBCs called soldiers of the body?

- (a) **They are capable of squeezing out of blood capillaries.**
(b) **They are manufactured in bone marrow.**
(c) **They fight against disease causing germs.**
(d) **They have granular cytoplasm with lobed nucleus.**

(iv) Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body

- (a) (b) (c) (d)

Erythrocytes Neutrophils Leucocytes Thrombocytes

(v) Which of the following is the correct feature of lymph?

- (a) **It is similar to the plasma of blood, but is colourless and contains less proteins.**
(b) **It is similar to the WBCs of blood, but is colourless and contain more proteins.**
(c) **It is similar to the RBCs of blood and red in colour.**
(d) **It contains more fats**

Answer : (i) (c): Basophiles release heparin, serotonin and histamine. They are like mast cells of connective tissue and are not phagocytic in nature.

(ii) (c)

(iii) (c) : WBCs manufacture antibodies, which fight against disease causing germs and are responsible for immunity, thus called soldiers of the body.

(iv) (d)

(v) (a): Lymph is a colourless fluid, which contains blood plasma along with leucocytes and have fewer proteins.

15) The green plants make their food, through photosynthesis and are therefore called autotrophs. All other organisms depend upon green plants for food and are referred to as heterotrophs. Green plants carry out photosynthesis by using light energy of sun. The first phase of reactions are directly light driven therefore called light reactions. The second phase of reactions are not directly light driven but are dependent on the products of light reactions and are called dark reactions.

(i) Which of the following is produced during the light phase of photosynthesis?

- (a) (b) (c) (d) **Both (a)**

ATP NADPH Carbohydrate and (b)

(ii) In the overall process of photosynthesis, the number of sugar molecules produced is

- (a) **12** (b) **6** (c) **4** (d) **1**

(iii) A plant is provided with ideal conditions for photosynthesis and supplied with isotope $^{14}\text{CO}_2$. When the products of the process are analysed carefully, what would be the nature of products?

- (a) **Both glucose and oxygen are normal.**
(b) **Both glucose and oxygen are labelled.**
(c) **Only glucose is labelled and oxygen is normal.**
(d) **Only oxygen is labelled and glucose is normal.**

(iv) Refer to the given diagrammatic representation of an electron micrograph of a section of chloroplast and answer the question .



Select the option which correctly depicts the functions of parts X, Y and Z.

- X Y Z**

(a) Dark reaction	Light reaction	Carbohydrate synthesis
(b) Light reaction	Carbohydrate synthesis	Carbohydrate storage
(c) Light reaction	Carbohydrate storage	Carbohydrate synthesis
(d) Carbohydrate synthesis	Carbohydrate storage	Cytoplasmic inheritance

(v) Following table summarises the differences between light and dark reactions.

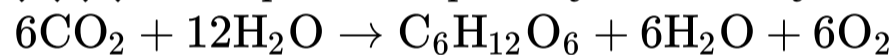
Light reactions	Dark reactions
(I) These are also called biosynthetic phase	These are also called photochemical phase.
(II) These reactions occur over thylakoids.	These reactions occur in stroma of chloroplasts
(III) These produce assimilatory power i.e NADPH and ATP	These consume NADPH and ATP
(IV) These are directly dependent upon light	They depend upon the products synthesised during light reactions

Which of the following is correct group of differences?

- (a) (I), (II) and (III)** **(b) (II), (III) and (IV)**
(c) (II) and (III) **(d) (I) and (IV)**

Answer : (i) (d):In light reaction of photosynthesis assimilatory power is produced, i.e., energy rich ATP molecules and reduced coenzyme NADPH.

(ii) (d): The equation of photosynthesis may be represented as



No. of $\text{C}_6\text{H}_{12}\text{O}_6$ (sugar) molecules produced = 1

(iii) (c)

(iv) (b): Light reactions (or photochemical phase) of photosynthesis mainly occur on the grana thylakoids. Dark reactions (or biosynthetic phase) which involve synthesis of carbohydrates by CO_2 fixation, occur in the stroma (or matrix) of chloroplasts. The chloroplast matrix of higher plants stores starch temporarily in the form of starch granules.

(v) (b): Light reactions are also called photochemical phase whereas dark reactions are also called biochemical phase.

16) Respiration is an energy releasing enzymatically controlled process which involves a stepwise oxidative breakdown of food substances inside living cells. The oxidative breakdown of respiratory substrates with the help of atmospheric oxygen is aerobic respiration. Glucose is completely broken down into CO_2 and H_2O by this process of oxidation and large amount of energy is produced.

(i) Site of Krebs' cycle is

- (a) peroxisome** **(b) cytoplasm** **(c) mitochondria** **(d) none of these.**

(ii) The pathway of respiration common in all living organisms is X; it occurs in the Y and the products formed are two molecules of Z.

Identify X, Y and Z in the above paragraph and select the correct answer.

- | | | |
|-------------------------|----------------------|---------------------|
| X | Y | Z |
| (a) glycolysis | mitochondrion | pyruvic acid |
| (b) glycolysis | cytoplasm | pyruvic acid |
| (c) Krebs' cycle | cytoplasm | acetyl CoA |
| (d) Krebs' cycle | mitochondrion | acetyl CoA |

(iii) Number of oxygen molecules utilised in glycolysis is _____.

- (a) 0** **(b) 2** **(c) 4** **(d) 6**

(iv) How many ATP molecules could maximally be generated from one molecule of glucose, if the complete oxidation of one molecule of glucose to CO_2 and H_2O yields 686 kcal and the useful chemical energy available in the high energy phosphate bond of one molecule of ATP is 12 kcal?

(a) 1 (b) 2 (c) 30 (d) 57

(v) The end product of aerobic respiration is

(a) NADH (b) oxygen (c) ADP (d) $\text{CO}_2 + \text{ATP} + \text{H}_2\text{O}$

Answer : (i) Krebs' cycle takes place in mitochondrial matrix.

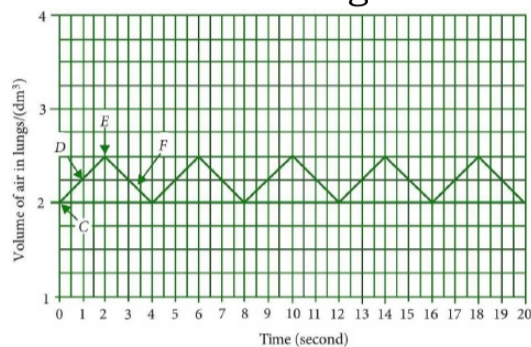
(ii) (b)

(iii) (a) : Glycolysis does not utilise any oxygen as it is an anaerobic process.

(iv) (d)

(v) (d): In aerobic respiration, glucose is completely broken down to CO_2 and H_2O with the production of a large amount of energy (ATP).

17) During inhalation, the diaphragm is contracted which increases the volume of the lung cavity. During exhalation, the diaphragm is relaxed which decreases the volume of the lung cavity. The given graph is related to the changes in the volume of lungs of a person at a rest over a period of 20 seconds



(i) How many breaths per minute is the person taking when at rest?

(a) 15 (b) 15 (c) 17 (d) 20

(ii) Which two points in the graph (C, D, E or F), shows inspiration and expiration?

(a) D, E (b) D, F (c) C, D (d) E, F

(iii) Which of the following muscles help during inhalation?

(a) External intercostal muscles (b) Internal intercostal muscles

(c) Both (a) and (b) (d) None of these

(iv) During vigorous exercise, the rate of breathing of normal man is

(a) 20 to 25 times per minute (b) 50 to 90 times per minute

(c) 100 to 150 times per minute (d) 40 to 70 times per minute.

(v) Which is the correct sequence of air passage during inhalation?

(a) Nostrils → larynx → pharynx → trachea → lungs

(b) Nasal passage → trachea → pharynx → larynx → alveoli

(c) Larynx → nostrils → pharynx → lungs

(d) Nostrils → pharynx → larynx → trachea → alveoli

Answer : (i) (b) 15

It is clear from the given graph that the person is taking 5 breaths per 20 sec, so in 1 minute (60 sec) he will take 15 breaths ($5/20 \times 60$)

(ii) (b) D, F

Point 'D' shows increase in the volume of lungs, thus at this point, inspiration is taking place while point 'F' shows decrease in the volume of lungs, thus at this point, expiration is taking place.

(iii) (c) Both (a) and (b)

External and internal intercostals muscles are specialised set of muscles that help during inhalation.

(iv) (a) 20 to 25 times per minute

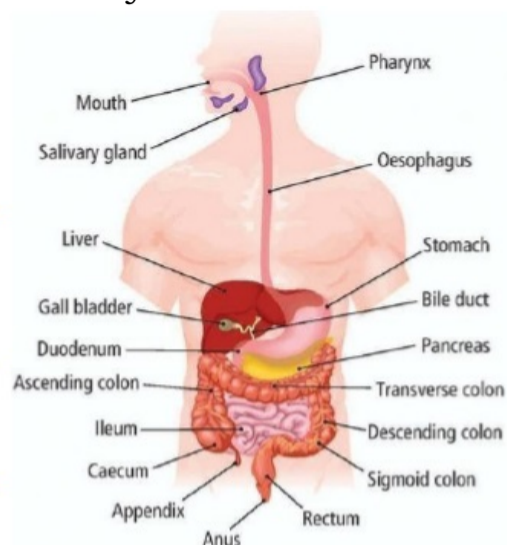
The rate of breathing increases during vigorous exercise. This is because the body needs more energy which can be released only if greater amounts of oxygen reach the cells. For this purpose, the rate of breathing increases. (This will increase the supply of oxygen to the cells).

(v) (d) Nostrils → pharynx → larynx → trachea → alveoli

18) In human being, the holozoic nutrition takes place in five steps:

1. Ingestion - The process of taking food inside the body is called ingestion.

2. Digestion - In digestion the ingested food is converted into simple form with the help of digestive enzymes.
3. Absorption - In this stage the food digested in second step is absorbed into the cells of body.
4. Assimilation - Assimilation is the process of utilizing the food absorbed in third step by various cells of the body.
5. Egestion - Egestion is the final step of holozoic nutrition in which the undigested food is removed from the body.



(i) Which is the correct sequence of parts in human alimentary canal?

- (a) Mouth → Stomach → Small intestine → Oesophagus → Large intestine
- (b) Mouth → Oesophagus → Stomach → Large intestine → Small intestine
- (c) Mouth → Stomach → Oesophagus → Small intestine → Large intestine
- (d) Mouth → Oesophagus → Stomach → Small intestine → Large intestine

(ii) If salivary amylase is lacking in the saliva, which of in the mouth cavity will be affected?

- (a) Proteins breaking down into amino acids
- (b) Starch breaking down into sugars
- (c) Fats breaking down into fatty acids and glycerol
- (d) Absorption of vitamins

(iii) The inner lining of stomach is protected by one of the following from hydrochloric acid, choose the correct one.

- (a) Pepsin
- (b) Mucus
- (c) Salivary amylase
- (d) Bile

(iv) Which part of alimentary canal receives bile from the liver?

- (a) Stomach
- (b) Small intestine
- (c) Large intestine
- (d) Oesophagus

(v) Choose the function of the pancreatic juice from the following.

- (a) Trypsin digests proteins and lipase carbohydrates
- (b) Trypsin digests emulsified fats and lipase proteins
- (c) Trypsin and lipase digest fats
- (d) Trypsin digests proteins and lipase digests emulsified fats droplets.

Answer : (i) (d) Mouth → Oesophagus → Stomach → Sm

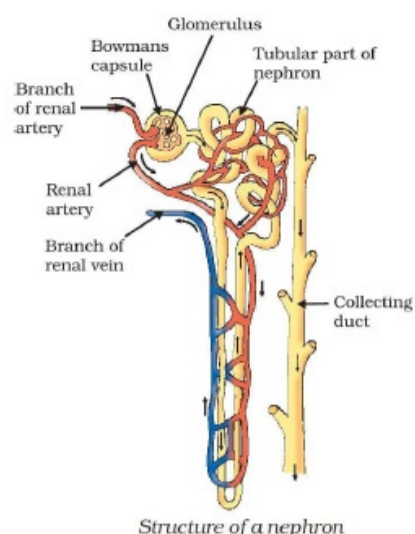
(ii) (b) Starch breaking down into sugars

(iii) (b) Mucus

(iv) (b) Small intestine

(v) (d) Trypsin digests proteins and lipase digests emulsified fats droplets.

19) Each capillary cluster in the kidney is associated with the cup- shaped end of a tube that collects the filtered urine (see adjoining figure). Each kidney has large numbers of these filtration units called nephrons packed close together. Some substances in the initial filtrate, such as glucose, amino acids, salts and a major amount of water, are selectively re-absorbed as the urine flows along the tube. The amount of water reabsorbed depends on how much excess water there is in the body, and on how much of dissolved waste there is to be excreted. The urine forming in each kidney eventually enters a long tube, the ureter, which connects the kidneys with the urinary bladder. Urine is stored in the urinary bladder until the pressure of the expanded bladder leads to the urge to pass it out through the urethra. The bladder is muscular, so it is under nervous control, as we have discussed elsewhere. As a result, we can usually control the urge to urinate.



Structure of a nephron

(i) Which of the following is the correct path taken by urine in our body ?

- (a) kidney → ureter → urethra → bladder
- (b) kidney → bladder → urethra → ureter
- (c) kidney → ureter → bladder → urethra
- (d) bladder → kidney → ureter → urethra

(ii) The excretory unit in the human excretory system is called :

- (a) nephron
- (b) neuron
- (c) nephridia
- (d) kidneyon

(iii) The substance which is not reabsorbed into the blood capillaries surrounding the tubule of a nephron is mainly

- (a) glucose
- (b) amino acid
- (c) urea
- (d) water

(iv) The procedure of cleaning the blood of a person by using a kidney machine is known as :

- (a) ketolysis
- (b) hydrolysis
- (c) dialysis
- (d) photolysis

(v) The kidneys in human beings are a part of the system for

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

Answer : (i) (c) kidney → ureter → bladder → urethra

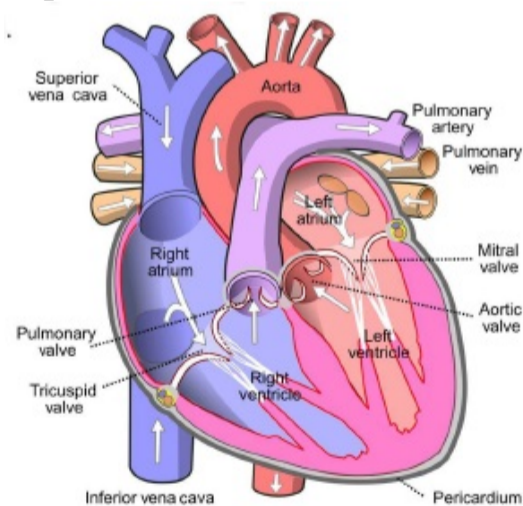
(ii) (a) nephron

(iii) (c) urea

(iv) (c) dialysis

(v) (c) excretion.

20) The human heart is a muscular organ made up of cardiac muscles. It is a four- chambered organ to prevent intermixing of oxygenated and de-oxygenated blood. A thick wall muscle called septum that separates the two sides left and right of the heart. Look at the picture.



(i) The upper two chambers and lower two chambers are called :

- (a) Ventricles and auricles respectively
- (b) Auricles and ventricles respectively
- (c) Ventricles and valves respectively
- (d) Arteries and veins respectively

(ii) The artery which carries de-oxygenated blood from the heart into lungs is called :

- (a) Pulmonary artery
- (b) Hepatic artery
- (c) Renal artery
- (d) All arteries

(iii) Pulmonary vein brings :

- (a) oxygenated blood from the lungs to the heart
- (b) de-oxygenated blood from the heart to the lungs

- (c) oxygenated blood from the heart to the lungs
- (d) de-oxygenated blood from the lungs to the heart

(iv) Tricuspid valve is found between :

- (a) right auricle and right ventricle
- (b) left auricle and left ventricle
- (c) right auricle and left ventricle
- (d) left auricle and right ventricle

(v) The de-oxygenated blood from the body organs first enters :

- (a) into right atrium of the heart through vena cava.
- (b) into left atrium of the heart through vena cava.
- (c) into right ventricle of the heart through vena cava.
- (d) into right atrium of the heart through aorta.

Answer : (i) (b) Auricles and ventricles respectively

(ii) (a) Pulmonary artery

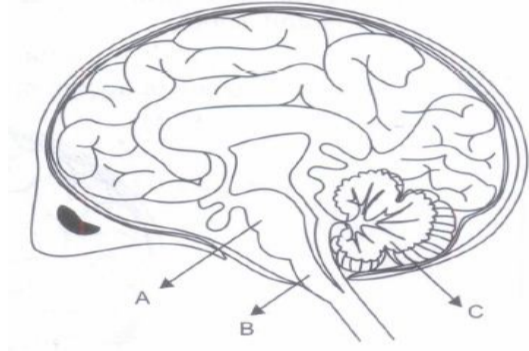
(iii) (a) oxygenated blood from the lungs to the heart

(iv) (a) right auricle and right ventricle

(v) (a) into right atrium of the heart through vena cava.

2 x 5 = 10

- 21) (a) What are plant hormones? Give one example each of a plant hormone that (i) promotes growth (ii) inhibits growth
- (b) Names the parts labelled A, B and C in the diagram given below. Write one function of each part.



Answer : (a) The chemical substances produced by plants for the coordination of plant body is called plant hormone.

(i) Promotes growth-Auxin