CLASS X MOST IMPORTANT QUESTIONS
CHAPTER – 6 LIFE PROCESSES

MULTIPLE CHOICE QUESTIONS

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

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

2. During cellular respiration one molecule of glucose is first broken down into two molecules of

(a) Acetic acid (b) Pyruvic acid (c) Lactic acid (d) None of the above

3. Which of the following statements about the autotrophs is incorrect?

(a) They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll

(b) They store carbohydrates in the form of starch

(c) They convert carbon dioxide and water into carbohydrates in the absence of sunlight

(d) They constitute the first trophic level in food chains

4. 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 emulsified fats

5. Choose the correct path of urine in our body

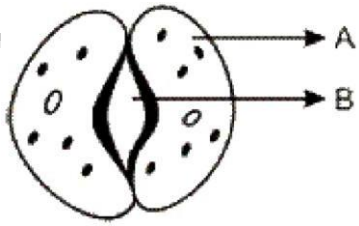
(a) kidney →ureter →urethra →urinary bladder

(b) kidney →urinary bladder →urethra →ureter

(c) kidney →ureters →urinary bladder →urethra

(d) urinary bladder →kidney →ureter →urethra

6.The parts shown as A and B in the given diagram are



The parts shown as A and B in the given diagram are

(a) A is epidermal cell, B is stomatal pore (b) A is guard cell, B is stomatal pore

(c) A is epidermal cell, B is guard cell (d) A is guard cells, B is epidermal cell

7. In normal expiration, the diaphragm is

(a) Arched (b) Flattened (c) Perforated (d) None of these

8. Villi present on the inner lining of the intestinal wall

(a) Secretes enzymes for digestion (b) Secretes hormones

(c) Decreases the surface area for absorption (d) Increases the surface area for absorption

9. The correct pathway of blood in circulatory system is

(a) atria → ventricles → arteries → veins

(b) ventricles → atria → veins → arteries

(c) ventricles → veins → arteries → atria

(d) veins → ventricles → atria → arteries

10. Respiration is a process in which

(a) Energy is stored in the form of ADP (b) Energy is released and stored in the form of ATP

(c) Energy is used up (d) Energy is not released at all.

11. Full form of ATP?

(a) Adenosine Triphosphate (b) Adenosine Tetraphosphate

(c) Adenine Triphosphate (d) Adinosine Tripolymer

12.The xylem in plants are responsible for

(a) transport of water. (b) transport of food.

(c) transport of amino acids. (d) transport of oxygen

13.Why blood is red?

(a) due to presence of oxygen (b) due to presence of haemoglobin

(c) due to presence of CO2 (d) due to presence of WBC

14.If kidney fails to reabsorb water, the tissues would

(a) remain unaffected (b) shrink to shrivel

(c) absorb water from blood (d) take more oxygen from blood

15.The autropic mode of nutrition requires

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

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

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

17. Chyme is____.

(a) Digestive enzyme secreted by stomach. (b) Hormone secreted by islets of Pancreas

(c) food which enters into intestine from stomach. (d) Part of bile juice which stores in gall bladder

18. Haemoglobin is a type of

(a) Carbohydrate (b) Skin Pigment (c) Vitamin (d) Respiratory Pigment

19.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

20.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

ASSERTION AND REASON QUESTIONS

Following questions 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.

Q.2.1 **Assertion (A):** Diffusion does not meet high energy requirements of multi-cellular organisms

Reason (R) : Diffusion is a fast process but occurs at the surface of the body.

Q.2.2 **Assertion (A)**: The purpose of making urine is to filter out undigested food from intestine

Reason (R): Kidneys filter the waste and produce urine,

Q.2.3 **Assertion (A)**: The inner lining of the small intestine has numerous finger-like projections called villi.

Reason (R) : The villi increase the surface area for absorption.

Q.2.4 **Assertion (A)** : Photosynthesis takes place in green parts of the plants.

Reason (R) : Photosynthesis always takes place in leaves.

Q.2.5 **Assertion (A)** : Ureters are the tubes which carry urine from kidneys to the bladder.

Reason (R): Urine is stored in the urethra.

CASE STUDY QUESTION

1. Read the following paragraph and answer the questions:

Rishi experienced muscular cramps during the training session for his upcoming football match. Mr. Sen, his coach advised him on a schedule of some aerobic exercises to overcome his problem of muscularcramps. Rishi followed his coach's advice and did not face the problem of muscular cramps again during his match.

1.1. Which life process is depicted by the above passage?

(a) Respiration (b) Digestion (c) Nutrition (d) Excretion

1.2. Lack of oxygen in muscles often leads to cramps due to

(a) Conversion of pyruvate to ethanol (b) Conversion of glucose to pyruvate

(c) Conversion of pyruvate to glucose (d) Conversion of pyruvate to lactic acid

1.3. Lactic acid is produced by_____respiration in yeast.

(a) aerobic (b) anaerobic (c) oxidative (d) none of these

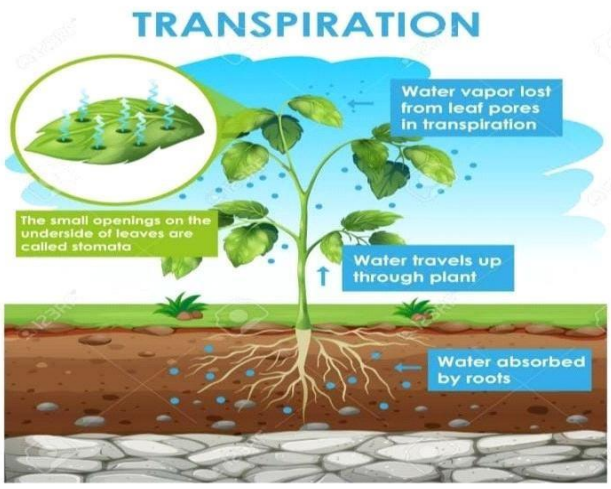
1.4. Why there is an increase in lactic acid concentration in the blood at the beginning of the exercise?

(a) Lack of oxygen (b) Excess of oxygen (c) Lack of carbon dioxide (d) Excess of carbon dioxide

1.5. What else can be done for quick relief from muscular cramps ?

(a) Massage (b) by applying heating pad or an ice pack (c) painkillers (d) all of these

2. TRANSPORT OF WATER AND MINERALS IN PLANTS



Plants absorb water and minerals by the roots. The roots have root hair. The root hair increase the surface area of the root for the absorption of water and mineral nutrients dissolved in water. The root hair is in contact with the water present between the soil particles. Plants have pipe-like vessels to transport water and nutrients from the soil. The vessels are made of special cells, forming the vascular tissue. A tissue is a group of cells that perform specialized function in an organism. The vascular tissue for the transport of water and nutrients in the plant is called the xylem.The xylem forms a continuous network of channels that connects roots to the leaves through the stem and branches and thus transports water to the entire plant. One thing is very interesting here that when gravity pulls every-thing downwards, then how the water can rise up against gravity. There are only two possibilities, either the water is being pushed from below or the water is being pulled from the top of the plant.Now the question is which force is strong. It is very similar to the principle behind the sipping of soft drink from a bottle with a straw.

2.1 Name the force responsible for upward pulling of water.

(a) Gravitational force (b) Magnetic force (c) Muscular force (d) Suction pull

2.2 Group of cells that transport food in plants is called?

(a) xylem (b) phloem (c) tissue (d) all of these

2.3 The process in which water is lost as water vapour from the aerial parts of the plants through stomata is called

(a) evaporation (b) transpiration (c) translation (d) sucking

2.4 Plants wither when

(a) xylem stops (b) the epidermis is removed (c) cortex is removed (d) phloem stops

2.5 What type of water absorption takes place in plants by the process of more transpiration?

(a) Active absorption (b) Passive absorption (c) none of these (d) both A And b

3. BLOOD

Blood transport food and waste materials in our bodies. It consists of plasma as a fuid medium. A pumping organ is required to push the blood around.The blood fows through the chambers of the organ in a specific manner and direction. While flowing throughout the body, blood exert a pressure against the wall or a

vessel.

3.1. Which life process is depicted by the above passage?

(a) Respiration (b) Digestion (c) Transportation (d) Excretion

3.2. Name the blood pumping organ.

(a) Lungs (b) Heart (c) Kidney (d) Liver

3.3. Oxygenated blood from lungs enters left atrium through .....

(a) Vena cava (b) Pulmonary artery (c) Pulmonary vein (d) Aorta

3.4. Deoxygenated blood leaves through the right ventricle through .....

(a) Vena cava (b) Pulmonary artery (c) Pulmonary vein (d) Aorta

3.5. Which of the following statements is true about heart?

(i) It is a hollow muscular organ.

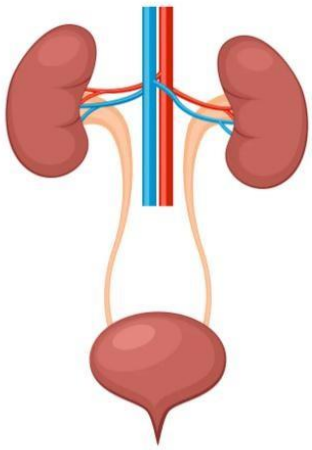
(ii) It is a four chambered having three atria and one ventricle.

(iii) It has different chambers to prevent the oxygen - rich blood from mixing with the blood containing carbon dioxide.

(iv) Arteries always carry blood away from the heart.

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

4. EXCRETION



Excretion is a necessary life process both in plants and animals. Plants use a variety of techniques to get rid of waste material. For example, waste material may stored in the cell vacuoles or as a gum and resin, removed in the falling leaves, or excreted into the surrounding soil.

4.1. Excretion is the removal of

(a) Glucose (b) Salts (c) Amino acids (d) Metabolic wastes

4.2. Many plant waste products are stored in cellular _____

(a) Enzymes (b) Vacuoles (c) Golgi bodies (d) Phloem

4.3. Plants excrete through .....

(a) soil (b) transpiration (c) dead leaves (d) All of the above

4.4. The main waste products in plants is

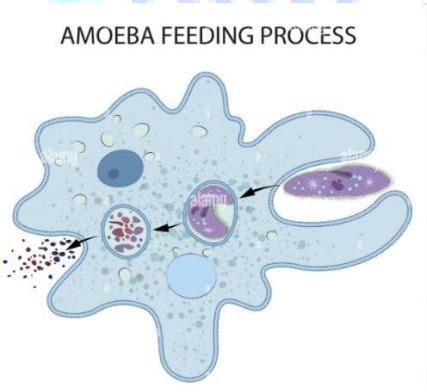
(a) Carbon dioxide (b) Water vapour (c) Oxygen (d) All of the above

4.5. Function of xylem tissue is

(a) Collection of food material (b) Conduction of absorbed water

(c) To take out water from cells (d) All of the above

5. NUTRITION IN AMOEBA



Amoeba is an animal having no fixed shape ingests food particles by formation of temporary finger-like projections. The food vacoule inside amoeba breaks down the food into small and soluble molecules.

The digested food is thrown out by the amoeba by the rupture of cell membrane and it goes on for the search of next food particle.

5.1. Which type of organism is Amoeba? ?

(a) Unicellular (b) Microscopic (c) Multicellular (d) Both a and b

5.2. What are the temporary projections made in amoeba called ?

(a) walking legs (b) limbs (c) Pseudopodia (d) None of the above

5.3. What type of nutrition is followed by amoeba?

(a) Parasitic (b) Holozoic (c) Saprotrophic (d) Autotrophic

5.4. The process of throwing out of undigested food in Amoeba is called

(a) Egestion (b) Digestion (c) Nutrition (d) None of the above

5.5. Give an example of organism which follows same mode of nutrition in amoeba.

(a) Vertebrates (b) Fungi (c) Tapeworm (d) Cuscata plants

ANSWER KEY

Q.NO.	1	2	3	4	5	6	7	8	9	10
ANS	B	B	C	D	B	B	A	D	A	B
Q.NO.	11	12	13	14	15	16	17	18	19	20
ANS	A	A	B	B	D	B	B	D	D	B
Q.NO.	1	2	3	4	5	1.1	1.2	1.3	1.4	1.5
ANS	C	D	A	C	C	A	D	B	A	D

Q.NO.	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5
ANS	D	B	B	A	B	C	B	C	B	D
Q.NO.	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5
ANS	D	B	D	B	B	D	C	B	A	A

VERY SHORT ANSWER QUESTIONS

Q.1. Name one accessory pigment and one essential pigment in photosynthetic plants.

Ans. Accessory pigment – Carotene/Xanthophyll

Essential pigment – Chlorophyll

Q.2. Give one reason why multicellular organisms require special organs for exchange of gases between their body and their environment.

Ans. In unicellular organisms the entire body of the organism is in contact with the environment hence exchange of materials can take place but, in multicellular organisms the entire body of the organism is not in contact with the environment and hence simple diffusion is not helpful.

Q.3. Name the intermediate and the end products of glucose breakdown in aerobic respiration.

Ans.

$$\text{Glucose} \rightarrow \text{Pyruvate} + \text{Energy} \xrightarrow[\text{of } O_2]{\text{In presence}} CO_2 + H_2O + \text{Energy}$$

Q.4. State two differences between arteries and veins.

Ans. Arteries: Arteries carry oxygenated blood, away from the heart except pulmonary artery. These are thick-walled, highly muscular except arteries of cranium and vertebral column.

Valves are absent. Blood in arteries moves with pressure.

Veins: Veins carry deoxygenated blood, towards the heart except pulmonary veins. These are thin-walled. Valves are present which provide unidirectional flow of blood. Blood in veins moves under very low pressure.

Q.5. (i) Write the balanced chemical equation for the process of photosynthesis,

(ii) When do the desert plants take up carbon dioxide and perform photosynthesis ?

Ans.(i) Photosynthesis can be represented using a chemical equation. The overall balanced equation is

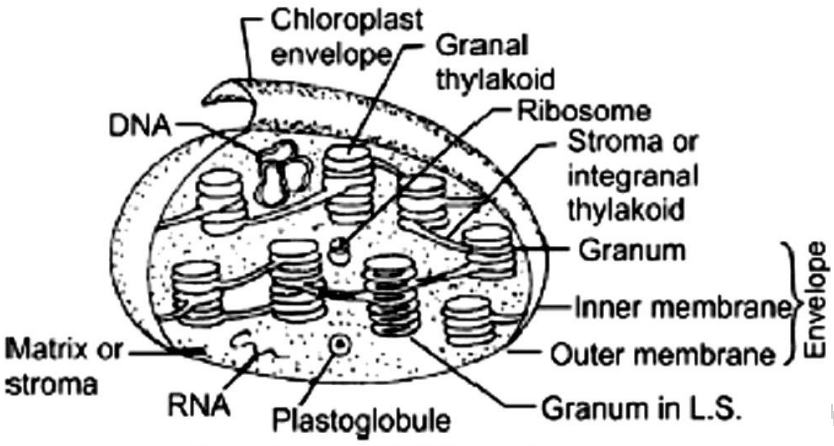
$$6CO_2 + 12H_2O \xrightarrow{\text{Sunlight energy}} C_6H_{12}O_6 + 6H_2O + 6O_2$$

(ii) Desert plants open up their stomata during night and take in CO2. Stomata remains close during the day time to prevent the loss of water by i transpiration. They store the CO2 in their cells until the sun comes out and they can carry on with photosynthesis during the day time.

SHORT ANSWER QUESTIONS

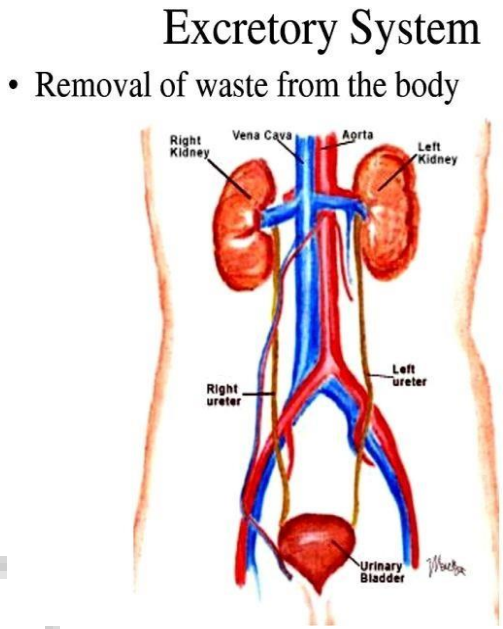
Q.1. Draw a neat labelled diagram of the structure of a chloroplast.

Ans:



Structure of Chloroplast

Q.2.. Draw a diagram of human excretory system and label kidneys, ureters on it.Ans.



Q.3. List three characteristics of lungs which make it an efficient respiratory surface.

Ans. These features which particularly make our lungs efficient for gas exchange.

i. **Thin:** the air sac walls are very thin so that gases can quickly diffuse through them. Oxygen is absorbed in to the blood and carbon dioxide is given out in to the lungs to be exhaled out.

ii. **Moist:** the air sacs are moist with mucus so that gases can dissolve before diffusing.

iii. **Large surface area:** The surface area for gases to diffuse through in human lungs is roughly the same as a tennis court. The alveoli help to increase the surface area for absorption of oxygen.

iv. **Good blood supply:** The air sacs or the alveoli have a large capillary network so that large volumes of gases can be exchanged. More the flow of blood more exchange.

Q4. (a) "The breathing cycle is rhythmic whereas exchange of gases is a continuousprocess".

Justify this statement.

(b) What happens if conducting tubes of circulatory system developsa leak? State in brief, how could this be avoided?

(c) How opening and closing of stomata takes place?

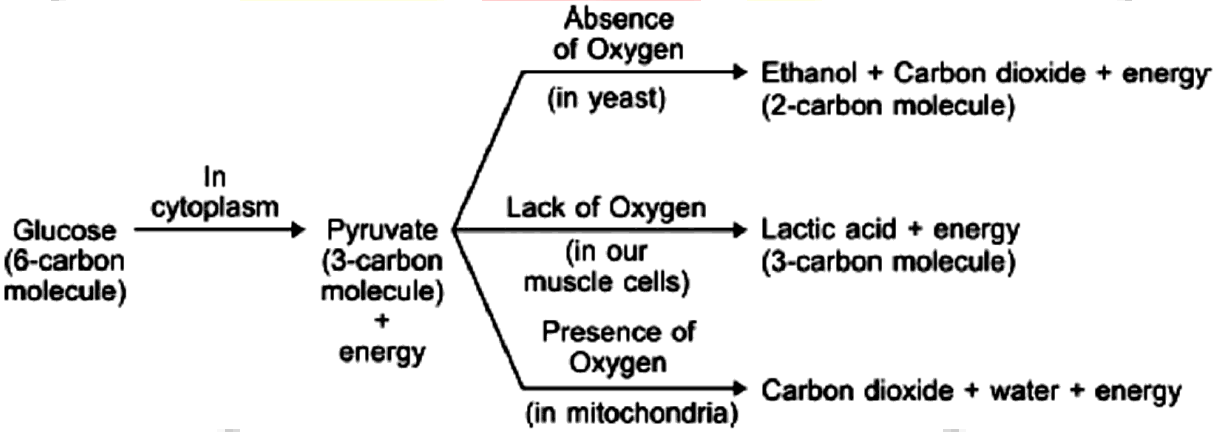
Ans.(a) The breathing cycle involves inhalation and exhalation of air due to alternate expansion and contraction of thoracic cavity. Thus it is a rhythmic process. But exchange of gases is a continuous process as it takes place between the blood and each and every cell, by diffusion.

(b) The circulatory system will become inefficient if it develops a leak. This could be avoided by maintaining a normal blood pressure.

(c) When water flows into the guard cells, the guard cells swell and the stomatal pore opens up. When water moves out the guard cells shrinks and the stomatal pore closes.

Q5. Explain the process of breakdown of glucose in a cell

Ans. The processes of breakdown of glucose in a cell are as follows:



LONG ANSWER QUESTIONS

Q.1. State the role of the following in human digestive system :

(I) Digestive enzymes (II) Hydrochloric acid (III) villi

Ans. Digestive enzymes – Foods need to be broken into their small or simpler molecules so that they can be absorbed into the bloodstream. However, the physical breakdown of food is not enough. Enzymes are hence needed for the chemical breakdown of food and speeding up the digestive

process. The products of digestion can hence be small enough to be absorbed.

Hydrochloric acid – Hydro chloric acid helps to kill the germs which might have entered in to the system through food. It creates acidic medium for the pepsin to act on food to breakdown proteins.

Villi – Villi are finger like projections in the small intestine. They help to increase the surface area for absorption of the digested food. Villi are richly supplied with blood vessel which help to absorb digested food in to the blood stream.

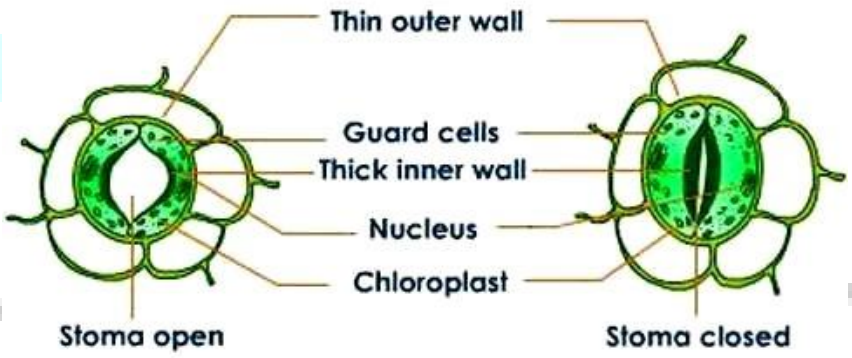
Q2. (a) Draw a diagram to show open stomatal pore and label on it:

(i) guard cells (ii) chloroplast

(b) State two functions of stomata.

(c) How do guard cells regulate the opening and closing of stomatal pore?

Ans.(a)



(b) Two functions of stomata are:

(i) Exchange of gases between the plant and the atmosphere takes place through stomata.

(ii)Transpiration in plants takes place through stomata.

(c) Opening and Closing of Stomatal Pore: The opening and closing of the pore is a function of the guard cells. The guard cells swell when water flows into them causing the stomatal pore to open. Similarly, the pore closes if the guard cells shrink. As large amount of water is lost

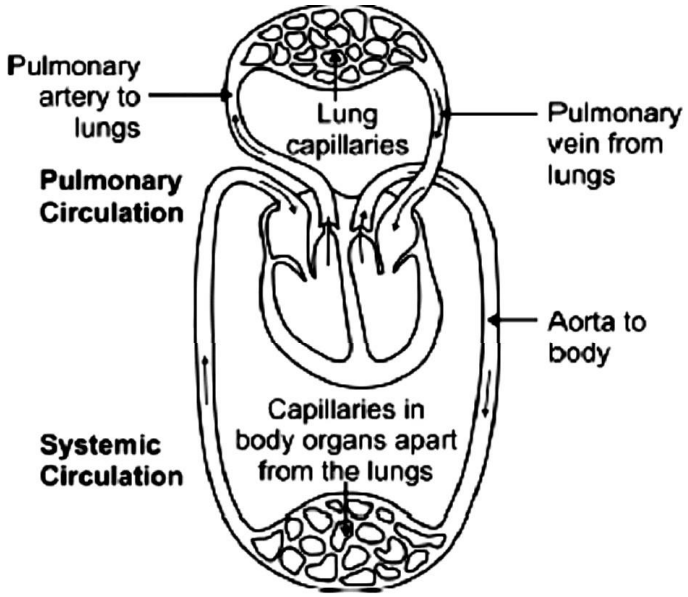
through these stomata, the plant closes these pores when it does not require carbon dioxidefor photosynthesis

Q.3.(a)Draw a schematic representation of transport and exchange of oxygen andcarbon 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?

Ans.(a) A schematic representation of transportation and exchange of oxygen and carbon dioxide during transportation of blood in human beings



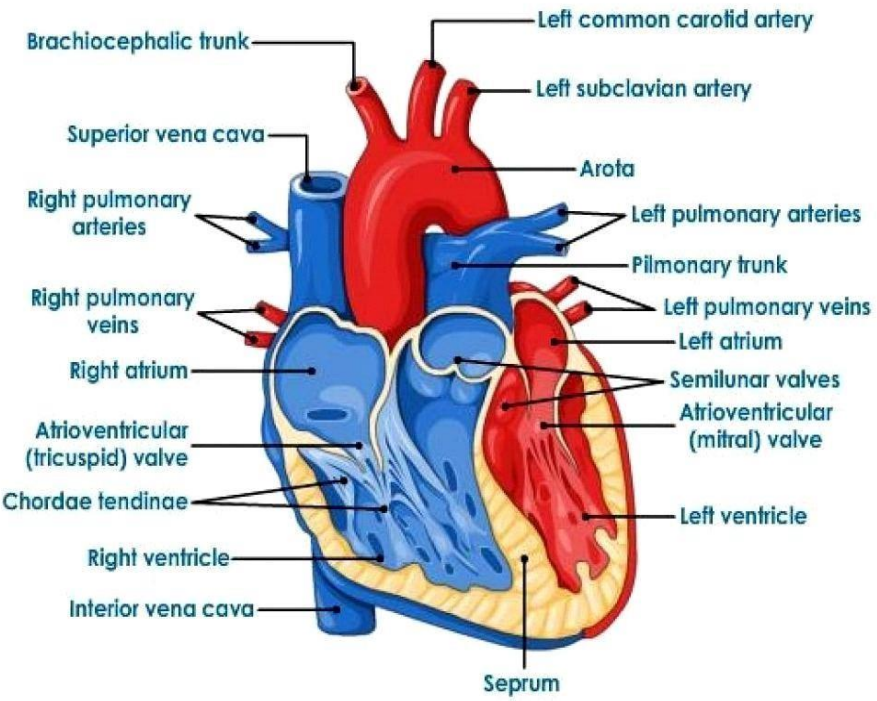
A schematic representation of transport and exchange of oxygen and carbon dioxide during transportation of blood in human beings

(b) It is necessary to separate oxygenated and deoxygenated blood in mammals and birds because they need high energy and large amount of oxygen. The separation of oxygenated and deoxygenated blood provides high oxygen supply to the organs.

Q.4**.** (a) Draw a sectional view of the human heart and label on it – Aorta, Right ventricleand Pulmonary veins.

(b) State the functions of the following components of transport system: (i)blood (ii)lymph

Ans:



(b) The functions of blood and lymph are as follows:

Blood

Oxygen is transported by the blood to the tissues of the body for the breakdown of digested food.

Carbon dioxide is transported to the lungs by the blood plasma.

The digested and absorbed nutrients are transported by blood to the tissues.Nitrogenous wastes are transported to the kidneys.

It regulates the body temperature and maintains the pH of the body tissues.

It transports various hormones from one region to another and bring about the coordination.It maintains water balance to constant level.

The lymphocytes produce antibodies against the invading antigens and protect from diseases.

It helps in rapid healing of wounds by forming a clot at the site of injury.

Lymph

It cleans the cellular environment.

It returns proteins and tissue fluids to the blood (drainage)

It provides a pathway for the absorption of fats and fat-soluble vitamins into the bloodstream.

It defends the body against disease.

Q.5.(a) Explain how does the exchange of gases occur in plants across the surface of stems, rootsand leaves.

(b) How are water and minerals transported in plants?

Ans.(a) In plants, there are tiny pores called stomata on leaves and lenticels in stem which facilitate the exchange of gases. CO_2 is taken in and O_2 given out (during photosynthesis) and vice- versa during respiration.

(b) Mechanism of Transport of Water and Minerals in a Plant

The vessels and tracheids of roots, stems and leaves in xylem tissue are interconnected to forma continuous system of water-conducting channels reaching all parts of theplant. The cells of the roots in contact with the soil actively take up ions which creates a difference in the ion concentration between the root and the soil.Thus, there is steady movement of water into root xylem from the soil, creating a column of water that is pushed upwards. Plant uses another strategy to move water in the xylem upwards to the highest points of the plant body. The water which is lost through the stomata is replaced by water from the xylem vessels in the leaf. Evaporation of water molecules from the cells of a leaf creates a suction which pulls waterfrom the xylem cells of roots. This loss of water is transpiration which helps in the absorption and upward movement of water and minerals dissolved in it from roots to the leaves. Transpiration becomes the major driving force in movement of water in the xylem during the day when the stomata are open. This mechanism is also known as cohesion of water theory or transpiration pull.