

OPEN STUDENT FOUNDATION

CHAPTER:5

STD 10 : SCIENCE IMPORTANT QUESTION DAY 5

Date : 23/02/24

Section A

- Write the answer of the following questions. [Each carries 1 Mark] [20]
- In plants, food is stored in the form of
 - In yeast, pyruvate is converted into at the end of fermentation process.
 - is the respiratory pigment in human beings.
 - In mouth converts complex molecule of starch into sugar.
 - Fishes have chambers to their hearts.
 - Chlorophyll is seen in Mitochondria.
 - Terrestrial animals use dissolved oxygen.
 - Root pressure is less in plants at night.
 - Lymph contains large amount of protein.
 - In chemical reactions, carbon source and oxygen are used for obtaining energy.
 - Statement P - Arteries are the vessels which carry blood away from the heart to various organs of the body.
Statement Q - Arteries have thick, elastic walls,
Statement R - Arteries have valves that ensure that blood flows only in one direction.
(A) Statement P is correct. (B) Statements Q and R are correct.
(C) Statements P and R are correct. (D) Statements P and Q are correct.
 - Which of the following sequence is correct during photosynthesis ?
(i) Absorption of light energy.
(ii) Conversion of light energy into chemical energy and decomposition of water.
(iii) Formation of carbohydrate by reduction of CO_2 .
(A) (i), (iii), (ii) (B) (i), (ii), (iii) (C) (ii), (i), (iii) (D) (ii), (iii), (i)
 - Capillaries present in organs join together, empties impure blood into
(A) vein (B) arterioles (C) artery (D) heart
 - In muscle tissue, if level of oxygen decreases in cells then pyruvate converts into
(A) Lactic acid (B) Acetic acid (C) Citric acid (D) Sulphuric acid
 - The need of carbon and energy of autotrophs are satisfied by
(A) respiration (B) photosynthesis (C) digestion (D) excretion
 - Give location and function : Sphincter muscle
 - What is meant by life processes in living organisms ?
 - Give importance of nitrogen in plants.
 - What are enzymes ?
 - During respiration first of all 3-C compound is formed from Glucose ? Where does this process occur ?

Section B

- Write the answer of the following questions. [Each carries 2 Marks] [20]
- Give two points of Differences : Aquatic organisms and Terrestrial organisms.

22. Where the complete digestion of food takes place and which components are obtained as products ?
Give short explanation of digestion process.
23. Explain : To define the function / work life which can be seen with naked eye, it can not be called sufficient as a characteristic.
24. Explain : It is necessary for molecules to move.
25. Mention the requirement of energy for life of living organisms.
26. Give explanation : From where do plants obtain essential raw material for photosynthesis ?
27. Explain : What is Transpiration ? Explain its importance in plants.
28. Which methods are used in plants to get rid of excretory substances ?
29. Explain transportation of water in plants.
30. Give importance of blood platelets.

Section C

- Write the answer of the following questions. [Each carries 3 Marks] [12]
31. Explain : Chlorophyll is needed for photosynthesis.
 32. What is saliva ? Give its importance.
 33. What is the difference between aerobic and anaerobic respiration ? Give examples of living organisms who possess anaerobic respiration.
 34. Draw the structure of a Nephron and explain the process of Urine formation ?

Section D

- Write the answer of the following questions. [Each carries 4 Marks] [8]
35. Explain human respiratory system with a diagram.
 36. Draw the schematic sectional view (diagram) of human heart and also describe the circulation of blood in heart.

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OPEN STUDENT FOUNDATION**CHAPTER:5****STD 10 : SCIENCE****Date : 23/02/24****IMPORTANT QUESTION DAY 5**

Section [A] : 1 Marks Questions

No	Ans	Chap	Sec	Que	Universal_Queld
1.	-	Chap 5	S4	3	QP23P11B1012_P1C5S4Q3
2.	-	Chap 5	S4	12	QP23P11B1012_P1C5S4Q12
3.	-	Chap 5	S4	14	QP23P11B1012_P1C5S4Q14
4.	-	Chap 5	S4	18	QP23P11B1012_P1C5S4Q18
5.	-	Chap 5	S4	20	QP23P11B1012_P1C5S4Q20
6.	-	Chap 5	S5	1	QP23P11B1012_P1C5S5Q1
7.	-	Chap 5	S5	12	QP23P11B1012_P1C5S5Q12
8.	-	Chap 5	S5	18	QP23P11B1012_P1C5S5Q18
9.	-	Chap 5	S5	16	QP23P11B1012_P1C5S5Q16
10.	-	Chap 5	S5	6	QP23P11B1012_P1C5S5Q6
11.	D	Chap 5	S6	69	QP23P11B1012_P1C5S6Q69
12.	B	Chap 5	S6	55	QP23P11B1012_P1C5S6Q55
13.	A	Chap 5	S6	43	QP23P11B1012_P1C5S6Q43
14.	A	Chap 5	S6	32	QP23P11B1012_P1C5S6Q32
15.	B	Chap 5	S6	11	QP23P11B1012_P1C5S6Q11
16.	-	Chap 5	S7	18	QP23P11B1012_P1C5S7Q18
17.	-	Chap 5	S7	1	QP23P11B1012_P1C5S7Q1
18.	-	Chap 5	S7	5	QP23P11B1012_P1C5S7Q5
19.	-	Chap 5	S7	6	QP23P11B1012_P1C5S7Q6
20.	-	Chap 5	S7	8	QP23P11B1012_P1C5S7Q8

Section [B] : 2 Marks Questions

No	Ans	Chap	Sec	Que	Universal_Queld
21.	-	Chap 5	S2	14	QP23P11B1012_P1C5S2Q14
22.	-	Chap 5	S2	2	QP23P11B1012_P1C5S2Q2
23.	-	Chap 5	S1	1R	QP23P11B1012_P1C5S1Q1R
24.	-	Chap 5	S1	2R	QP23P11B1012_P1C5S1Q2R
25.	-	Chap 5	S1	4R	QP23P11B1012_P1C5S1Q4R
26.	-	Chap 5	S1	11R	QP23P11B1012_P1C5S1Q11R
27.	-	Chap 5	S1	40R	QP23P11B1012_P1C5S1Q40R
28.	-	Chap 5	S1	45	QP23P11B1012_P1C5S1Q45
29.	-	Chap 5	S1	39	QP23P11B1012_P1C5S1Q39

30.	-	Chap 5	S1	36	QP23P11B1012_P1C5S1Q36
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Section [C] : 3 Marks Questions

No	Ans	Chap	Sec	Que	Universal_Queld
31.	-	Chap 5	S1	12R2	QP23P11B1012_P1C5S1Q12R2
32.	-	Chap 5	S1	19R	QP23P11B1012_P1C5S1Q19R
33.	-	Chap 5	S1	25R	QP23P11B1012_P1C5S1Q25R
34.	-	Chap 5	S1	44R	QP23P11B1012_P1C5S1Q44R

Section [D] : 4 Marks Questions

No	Ans	Chap	Sec	Que	Universal_Queld
35.	-	Chap 5	S1	30	QP23P11B1012_P1C5S1Q30
36.	-	Chap 5	S1	33R2	QP23P11B1012_P1C5S1Q33R2

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CHAPTER:5

STD 10 : SCIENCE IMPORTANT QUESTION DAY 5

Date : 23/02/24

Section A

● Write the answer of the following questions. [Each carries 1 Mark] [20]

1. In plants, food is stored in the form of
➡ Starch granules
2. In yeast, pyruvate is converted into at the end of fermentation process.
➡ Ethanol and carbon dioxide
3. is the respiratory pigment in human beings.
➡ Haemoglobin
4. In mouth converts complex molecule of starch into sugar.
➡ Trypsin
5. Fishes have chambers to their hearts.
➡ two
6. Chlorophyll is seen in Mitochondria.
➡ False
7. Terrestrial animals use dissolved oxygen.
➡ True
8. Root pressure is less in plants at night.
➡ False
9. Lymph contains large amount of protein.
➡ False
10. In chemical reactions, carbon source and oxygen are used for obtaining energy.
➡ True
11. Statement P - Arteries are the vessels which carry blood away from the heart to various organs of the body.
Statement Q - Arteries have thick, elastic walls,
Statement R - Arteries have valves that ensure that blood flows only in one direction.
(A) Statement P is correct. (B) Statements Q and R are correct.
(C) Statements P and R are correct. (D) Statements P and Q are correct.

Ans. (D) Statements P and Q are correct.

12. Which of the following sequence is correct during photosynthesis ?
(i) Absorption of light energy.
(ii) Conversion of light energy into chemical energy and decomposition of water.
(iii) Formation of carbohydrate by reduction of CO_2 .
(A) (i), (iii), (ii) (B) (i), (ii), (iii) (C) (ii), (i), (iii) (D) (ii), (iii), (i)

Ans. (B) (i), (ii), (iii)

13. Capillaries present in organs join together, empties impure blood into
(A) vein (B) arterioles (C) artery (D) heart

Ans. (A) vein

14. In muscle tissue, if level of oxygen decreases in cells then pyruvate converts into
- (A) Lactic acid (B) Acetic acid (C) Citric acid (D) Sulphuric acid

Ans. (A) Lactic acid

15. The need of carbon and energy of autotrophs are satisfied by
- (A) respiration (B) photosynthesis (C) digestion (D) excretion

Ans. (B) photosynthesis

16. Give location and function : Sphincter muscle

➡ Location : At the junction of stomach and small intestine

➡ Function : It is made up of sphincter muscle which pushes the food slowly slowly into small intestine.

17. What is meant by life processes in living organisms ?

➡ The processes which together perform maintenance job are life processes. There is a need for maintenance process when injury or breakdown occurs.

18. Give importance of nitrogen in plants.

➡ Nitrogen is important in protein synthesis and in synthesis of some compounds.

19. What are enzymes ?

➡ Organisms use complex substances to obtain energy. Biocatalyst which break down complex substances into simple substances are called enzymes.

20. During respiration first of all 3-C compound is formed from Glucose ? Where does this process occur ?

➡ Two molecules of 3-C pyruvate are formed. This process occurs in cytoplasm.

Section B

- Write the answer of the following questions. [Each carries 2 Marks]

[20]

21. Give two points of Differences : Aquatic organisms and Terrestrial organisms.

Aquatic organisms	Terrestrial organisms
(1) They live in water.	(1) They live on land.
(2) They use oxygen dissolved in water.	(2) They use atmospheric oxygen.
(3) Respiratory rate is very fast. e.g., Fish	(3) Respiratory rate is very slow. e.g., human beings.

22. Where the complete digestion of food takes place and which components are obtained as products ? Give short explanation of digestion process.

➡ The food is completely digested in small intestine and complex food is converted into carbohydrates, protein and fat.

➡ **Digestion process** : The food entered into mouth is chewed then saliva mixes with it. Starch is partially digested by Amylase present in saliva. Then food goes to stomach by food pipe. Digestion begins in stomach by gastric juices. The food is completely digested from stomach to small intestine through bile juice and pancreatic juice.

➡ Conversion of components of digested food in small intestine like carbohydrates, fat, protein into simple form and is absorbed. Water and minerals are also absorbed.

23. Explain : To define the function / work life which can be seen with naked eye, it can not be called sufficient as a characteristic.

➡ Normally each living organism perform different processes continuously which do not occur in non-living things.

- ➡ The process of breathing continuously occurring in cows, dogs and human beings.
- ➡ Although in plants leaves being of different colours, the process of growth occurs in all the plants which can be seen.
- ➡ The movement of molecules present inside the cells in living organisms can not be seen however the contribution of molecules is important for movement.
- ➡ Viruses do not show any molecular movement until they infect same cell.
- ➡ Thus living organisms show breathing and growth processes but it is not sufficient for a living organism to respond towards breathing and growth like factors.

24. Explain : It is necessary for molecules to move.

- ➡ Cell is the basic element of the living organism. It contains various organelles and various molecules.
- ➡ Different definite cells form tissue system and organs are formed from tissues. Hence living organisms are well-organised structures.
- ➡ Small numerous molecules present in cells of living organisms are continuously in movement.
- ➡ If due to effect of environment molecules break down the organism will no longer be alive.
- ➡ Molecules are associated with repairing and maintenance processes in body of living organisms.
- ➡ Hence it can be said that molecules must move around all the time.

25. Mention the requirement of energy for life of living organisms.

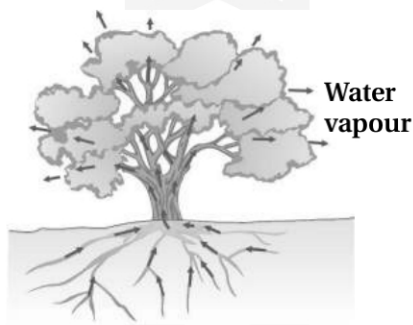
- ➡ The maintenance processes are needed to prevent damage and break down to living organisms
- ➡ The energy is required for the maintenance process. Its main source is food.
- ➡ The process of entering food inside the body is called nutrition.
- ➡ Energy is released by breaking down of elements of food inside the body. As a result molecular movement of various molecules take place and various functions are performed.
- ➡ Required molecules are formed useful for / growth and maintenance body of living organisms.
- ➡ Metabolic processes also occur in the body for formation of required molecules.
- ➡ More oxygen is needed for the metabolic process.
- ➡ By obtaining more oxygen through respiration, the process of break down of food occurs.
- ➡ Hence, for maintenance of living organisms, source of energy (food), metabolic processes and respiration processes are needed.

26. Give explanation : From where do plants obtain essential raw material for photosynthesis ?

- ➡ Autotrophs take in substances from the outside and convert them into stored forms of energy.
- ➡ Autotrophs take in carbon dioxide and water which is converted into carbohydrates in the presence of sunlight and chlorophyll.
- ➡ Carbohydrates are utilised for providing energy to the plant.
- ➡ Carbohydrates produced at the end of photosynthesis are stored in the form of starch. Which serves as the internal energy reserve to be used as and when required by the plant.

27. Explain : What is Transpiration ? Explain its importance in plants.

- ➡ Roots of the plant continuously absorb water from soil and transport it to upper parts of the body with the help of xylem tissue.



Movement of water during transpiration in a tree

➡ Hence water reaches till leaves. The loss of water in the form of vapour from stomataerial part of the plant is known as transpiration.

(A) Importance of Transpiration : Evaporation of water molecules from root cells creates a suction force as a result water is transported to various parts of the plants from roots.

(B) Due to Transpiration : Water is absorbed from root to leaves and upward movement of water and minerals dissolved in it.

- Temperature is regulated in plants.
- Transpiration pull becomes the major driving force in the movement of water in the xylem. As a result water reaches to all organs of the body.

28. Which methods are used in plants to get rid of excretory substances ?

- ➡ In plants, waste products are formed at the end due to physiological and biochemical processes occurring in it.
- ➡ Oxygen produced at the end of photosynthesis is released in atmosphere.
- ➡ Excess water is removed from plants through transpiration. This process is done by stomata of leaves.
- ➡ Plants store waste products in cellular vacuoles, also in leaves also which fall off.
- ➡ Other waste products are stored as resins and gums, especially in old xylem.
- ➡ Plants also excrete some waste substances into the soil around them.

29. Explain transportation of water in plants.

- ➡ Roots of the plant are in contact of ground water. As 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. Water, therefore, moves into the root from the soil to eliminate this difference.
- ➡ There is steady movement of water into root xylem, creating a column of water that is steadily pushed upwards.
- ➡ In Xylem tissue, vessels and tracheids of the roots, stems and leaves are interconnected to form a continuous system of water conducting channels reaching all parts of the plant.

30. Give importance of blood platelets.

- ➡ Situations when we are injured and start bleeding.
- ➡ Leakage would lead to a loss of pressure which would reduce the efficiency of the pumping system.
- ➡ To avoid this, the blood has platelet cells which play a lead role in it.
- ➡ Platelets circulate around the body and plug these leaks by helping to clot the blood at these points of

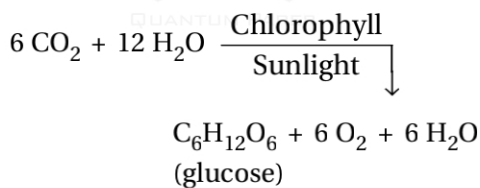
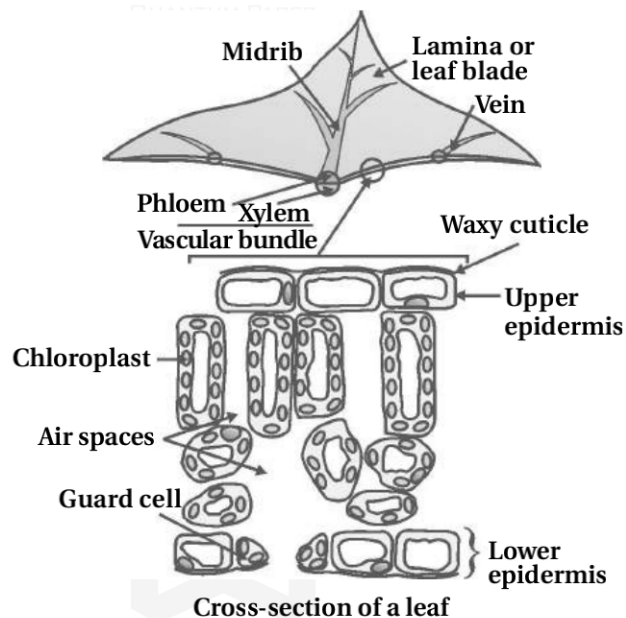
Section C

[12]

- Write the answer of the following questions. [Each carries 3 Marks]

31. Explain : Chlorophyll is needed for photosynthesis.

- ➡ In green plants CO_2 is obtained from atmosphere and H_2O is obtained from the roots of green plants with the help of chlorophyll of leaf chemical reaction occurs in presence of sunlight. Which results carbohydrates and oxygen are formed at the end. The whole process is called photosynthesis.



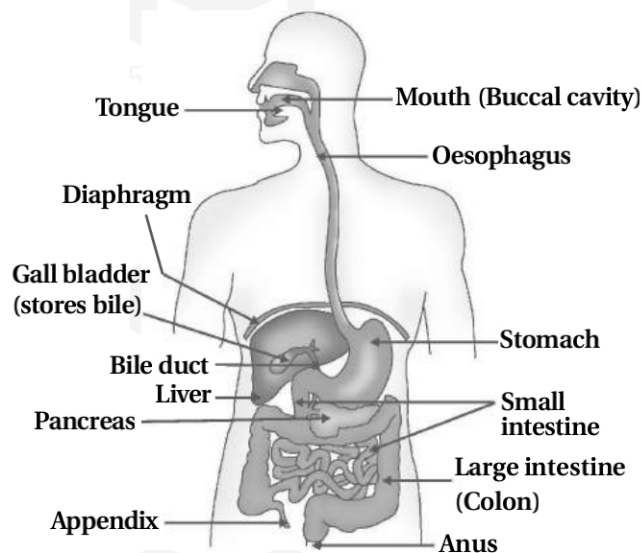
- ➡ Steps of process of photosynthesis :

- (i) Absorption of light energy by chlorophyll.
- (ii) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen.
- (iii) Reduction of carbon dioxide to carbohydrates.

- ➡ Some cells in leaves posses green coloured organelles. That contains chlorophyll.

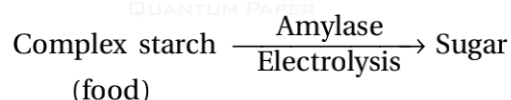
32. What is saliva ? Give its importance.

- ➡ The alimentary canal is basically a long tube extending from the mouth to the anus.



Human alimentary canal

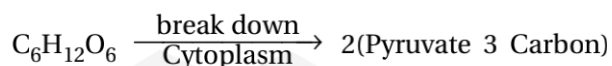
- ➡ The food taken in by mouth in human beings, has to pass through the same digestive tract.
- ➡ The food is converted into small pieces with the help of teeth.
- ➡ When food is chewed, a fluid called saliva secreted by the salivary glands. As a result food becomes soft.
- ➡ Since the lining of the canal is soft, the food is also wetted to make its passage smooth.
- ➡ The saliva contains an enzyme called salivary amylase that break down starch which is a complex molecule to give simple sugar.



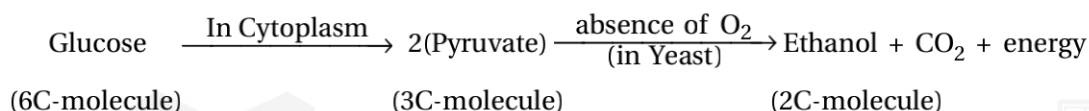
- ➡ The food is mixed thoroughly with saliva and moved around the mouth while chewing by the muscular tongue.
- ➡ It is necessary to move the food in a regulated manner along the digestive tube so that it can be processed properly in each part.

33. What is the difference between aerobic and anaerobic respiration ? Give examples of living organisms who possess anaerobic respiration.

- ➡ The processes of release of energy by break down of stored food of cells is called respiration.
- ➡ If respiration takes place in absence of oxygen it is called anaerobic respiration and respiration takes place in presence of oxygen it is called aerobic respiration.
- ➡ First of all stored glucose is decomposed without help of oxygen. This process occurs in cytoplasm.
- ➡ Glucose ($C_6H_{12}O_6$) is converted into two molecules of carbon pyruvate.



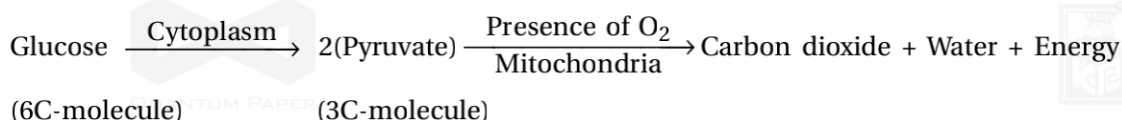
- ➡ Anaerobic Respiration : Further the pyruvate may be converted into ethanol and carbon dioxide.
- ➡ This whole process occurs in absence of oxygen so it is called anaerobic respiration.
- ➡ This process occurs in yeast during fermentation.



- ➡ **Aerobic Respiration :** In higher organisms, break down of glucose occurs completely with the help of oxygen.
- ➡ Break down of 3-carbon 2-pyruvate (3C) using oxygen takes place in mitochondria and 3 CO₂ and H₂O are formed.
- ➡ The release of energy in aerobic process is a lot greater than in the anaerobic process.
- ➡ **Difference :**

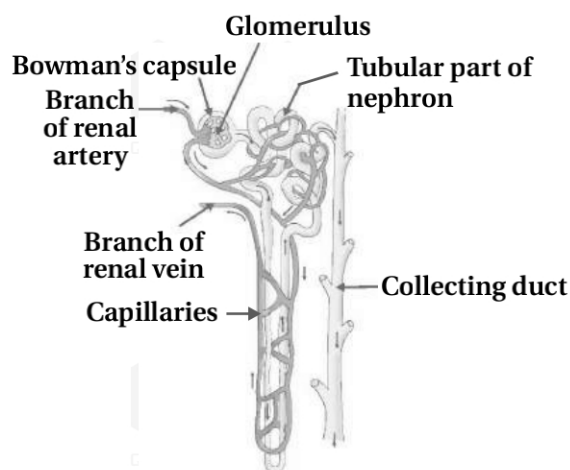
Aerobic Respiration	Anaerobic Respiration
(1) The process of aerobic respiration occurs in presence of oxygen.	(1) No need of presence of oxygen needed.
(2) CO ₂ and H ₂ O are formed by oxidation of Pyruvate.	(2) Ethanol and CO ₂ are formed by transformation of pyruvate.
(3) More amount of energy is obtained.	(3) Sufficient energy is not obtained.
(4) It is seen in higher organisms	(4) It is seen in yeast and parasite (organisms).
(5) Aerobic respiration takes place in Mitochondria.	(5) It occurs in cytoplasm.

- ➡ **Equation showing aerobic respiration :**



34. Draw the structure of a Nephron and explain the process of Urine formation ?

- ➡ Waste, excretory materials are removed from blood in the kidneys.
- ➡ Generally nitrogenous waste such as urea or uric acid are removed from blood in the kidneys in the form of urine outside the body.
- ➡ Hence, nitrogenous waste urea, or uric acid are released in liquid form from blood by kidneys. Such a liquid is called urine.
- ➡ **Urine formation process :**



Structure of a nephron

- ➡ Kidney has large numbers of filtration units called nephrons. That forms cup shaped structure at front part. It is associated with the cup shaped end of a coiled tube.
- ➡ Here initial filtration is done so it has glucose, amino acids, salts and a major amount of water.
- ➡ These filtrate components are transported in ureter and they are selectively re-absorbed.
- ➡ The amount of water re-absorbed depends 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 urinary bladder.
- ➡ Hence, tube connecting kidney and urinary bladder is ureter Urine is stored in urinary bladder.
- ➡ Urinary bladder : It is a muscular bag it is under nervous control, it feels pressure as urine fills in it.
- ➡ By contraction of urinary bladder urine is excreted through urethra.

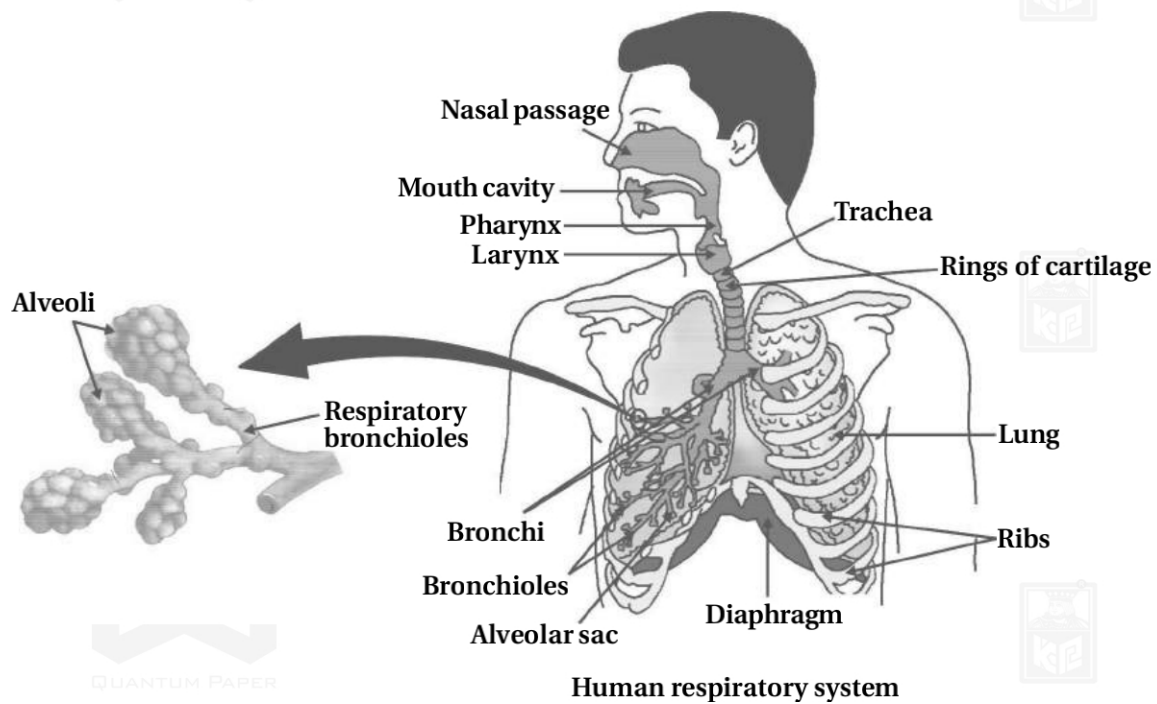
Section D

● Write the answer of the following questions. [Each carries 4 Marks]

[8]

35. Explain human respiratory system with a diagram.

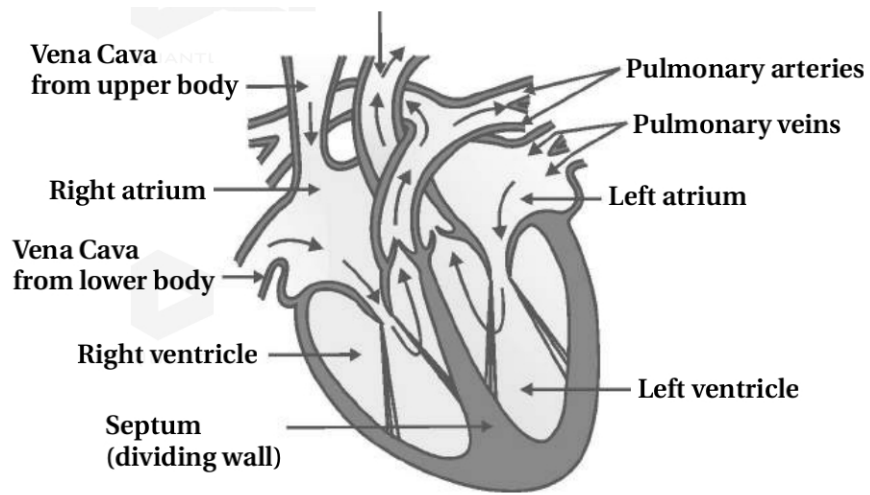
- ➡ In human beings atmospheric air is taken into the body through the nostrils. The air passing through the nostrils is filtered by fine hairs that line the passage.
- ➡ The passage is also lined with mucus which helps in this process.
- ➡ From here the air passes through the throat and into the lungs.
- ➡ Rings of cartilage are present in the throat. These ensure that the air passage does not collapse.
- ➡ Within the lungs, the passage divides into smaller and smaller tubes which finally terminate in balloon like structures which are called alveoli.
 - The alveoli provide a surface where the exchange of gases can take place.
 - The walls of the alveoli contain an extensive network of blood-vessels.
 - The blood brings carbon dioxide from the rest of the body to release into the alveoli.
 - The oxygen in the alveolar air is taken up by blood in the alveolar blood vessels to be transported to all the cells in the body.
- ➡ Breathing process : (Exhale-Inhale) :
 - When we breath in atmospheric air
 - we lift our ribs
 - flatten our diaphragm
 - the chest cavity becomes larger as a result.
 - air is sucked into the lungs and fills the expanded alveoli.
 - The blood brings carbon dioxide from the rest of the body for release into the alveoli.
 - During breathing oxygen is absorbed and carbon dioxide is released in atmosphere by lungs. Lungs always contain a residual volume of air so that there is sufficient time for oxygen to be absorbed and for the carbon dioxide to be released.



36. Draw the schematic sectional view (diagram) of human heart and also describe the circulation of blood in heart.

- ➡ Human heart is a muscular organ which is as big as our fist.
- ➡ Human heart is four chambered. The upper two chambers are called atria and lower two chambers are called ventricles.
- ➡ Oxygen and carbon dioxide are transported by blood only.
- ➡ The carbon dioxide rich blood has to reach the lungs for the carbon dioxide to be removed.
- ➡ The oxygenated blood from the lungs has to be brought back to the heart. This oxygen rich blood is their pumped to the rest of the body.
- ➡ Working Mechanism of Heart :
- ➡ Oxygen-rich blood from the lungs comes to the thin-walled upper chamber of the heart on the left, the left atrium. The left atrium relaxes. When it is collecting this blood.
- ➡ It then contracts, while the next chamber, the left ventricle, relaxes, so that the oxygenated blood is transferred to it. When the muscular left ventricle contracts in its turn, the blood is pumped out to the body.
- ➡ De-oxygenated blood comes from the body to the upper chamber on the right, the right atrium. As the right atrium contracts, the corresponding lower chamber, the right ventricle, dilates. This transfers blood to the right ventricle. Which in turn pumps it to the lungs for oxygenation.
- ➡ CO_2 is removed from the blood in lungs and pure O_2 is mixed into it. Hence blood is purified.
- ➡ Since ventricles have to pump blood into various organs, they have thicker muscular walls than the atria do.
- ➡ Valve : Valves ensure that blood does not flow backwards when the atria or ventricles contract.

Aorta



Schematic sectional view of the human heart