Ravi Maths Tuition

Life Processes

10th Standard

Science

Multiple Choice Question 156 x 1 = 156

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

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

2) The xylem in plants is responsible for

(a) Transport of water (b) Transport of food (c) Transport of amino acids (d) Transport of oxygen

3) The autotrophic mode of nutrition requires

(a) Carbon dioxide and water (b) Chlorophyll (c) Sunlight (d) All of the above

4) The breakdown of pyruvate to give carbon dioxide, water and energy takes place in

(a) Cytoplasm (b) Mitochondria (c) Chloroplast (d) Nucleus

5) 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

6) In which of the following groups of organisms, food material is broken down outside the body and absorbed?

(a) Mushroom, green plants, Amoeba (b) Yeast, mushroom, bread mould

(c) Paramecium, Amoeba, Cuscuta (d) Cuscuta, lice, tapeworm

7) Select the correct statement

(a) Heterotrophs do not synthesise their own food

(b) Heterotrophs utilise solar energy for photosynthesis (c) Heterotrophs synthesise their own food

(d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates

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

(a) Mouth $\longrightarrow$ Stomach $\longrightarrow$ Small intestine $\longrightarrow$ Oesophagus $\longrightarrow$ large intestine

(b) Mouth $\longrightarrow$ oesophagus $\longrightarrow$ stomach $\longrightarrow$ large intestine $\longrightarrow$ small intestine

(c) Mouth $\longrightarrow$ stomach $\longrightarrow$ oesophagus $\longrightarrow$ small intestine $\longrightarrow$ large intestine

(d) Mouth $\longrightarrow$ oesophagus $\longrightarrow$ stomach $\longrightarrow$ small intestine $\longrightarrow$ large intestine

9) In salivary amylase is lacking in the saliva which of the following events 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

10) 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) Oesophagus

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

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

12) A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water contains

(a) Complex proteins (b) simple proteins (c) fats (d) Starch

13) In which part of the alimentary canal food is finally digested?

(a) Stomach (b) Mouth cavity (c) Large intestine (d) Small intestine

14) 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 food

(d) trypsin digests proteins and lipase emulsified fats

15) When air is blown from mouth into a test-tube containing lime water, the lime water turned milky due to the presence of

(a) oxygen (b) carbon dioxide (c) nitrogen (d) water vapour

16) The correct sequence of anaerobic reactions in yeast is

(a) Glucose $\overset{Cytoptasm}{\longrightarrow}$ Pyruvate $\overset{mitochondria}{\longrightarrow}$ Ethanol+Carbon dioxide

(b) Glucose $\overset{Cytoptasm}{\longrightarrow}$ Pyruvate $\overset{Cytoplasm}{\longrightarrow}$ (c) Glucose $\overset{Cytoptasm}{\longrightarrow}$ Pyruvate $\overset{mitochondria}{\longrightarrow}$ Lactic acid

(d) Glucose $\overset{Cytoptasm}{\longrightarrow}$ Pyruvate $\overset{Cytoplasm}{\longrightarrow}$ Ethanol+ Carbon dioxide

17) Which of the following is most appropriate for aerobic respiration?

(a) Glucose $\overset{mitochondria}{\longrightarrow}$ pyruvate $\overset{Cytoptasm}{\longrightarrow}$ CO_2+H_2O+Energy

(b) Glucose $\overset{Cytoptasm}{\longrightarrow}$ pyruvate $\overset{mitochondria}{\longrightarrow}$ CO_2+H_2O+Energy

(c) Glucose $\overset{Cytoptasm}{\longrightarrow}$ pyruvate+energy $\overset{mitochondria}{\longrightarrow}$ CO_2+H_2O

(d) Glucose $\overset{Cytoptasm}{\longrightarrow}$ pyruate+energy $\overset{mitochondria}{\longrightarrow}$ CO_2+H_2O+Energy

18) Which of the following statement(s) is (are) true about respiration?
(i)During inhalation, ribs inward and diaphragm is raised
(ii)In the alveoli, exchange of gases takes place i.e., oxygen from alveolar air diffuse into blood and carbon dioxide from blood into alveolar air
(iii)Haemoglobin has greater affinity for carbon dioxide than oxygen
(iv)Alveoli increase surface area for exchange of gases

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

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

(a) Nostrils $\longrightarrow$ larynx $\longrightarrow$ pharynx $\longrightarrow$ trachea $\longrightarrow$ lungs

(b) Nasal passage $\longrightarrow$ trachea $\longrightarrow$ pharynx $\longrightarrow$ larynx $\longrightarrow$ alveoli

(c) Larynx $\longrightarrow$ nostrils $\longrightarrow$ pharynx $\longrightarrow$ lungs

(d) Nostrils $\longrightarrow$ pharynx $\longrightarrow$ larynx $\longrightarrow$ trachea $\longrightarrow$ alveoli

20) During respiration exchange of gases take place in

(a) Trachea and larynx (b) Alveoli of lungs (c) Alveoli and throat (d) Throat and larynx

21) Which of the following statement (s) is/ are true about heart?
(i)Left atrium receives oxygenated blood from different parts of body while right atrium receives deoxygenated blood from lungs
(ii)Left ventricle pumps oxygenated blood to different body parts while right ventricle pumps deoxygenated blood to lungs
(iii)Left atrium transfer oxygenated blood to right ventricle which sends it to different body parts
(iv)Right atrium receives deoxygenated blood from different parts of the body while left ventricle pumps oxygenated blood to different parts of the body

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

22) What prevents backflow of blood inside the heart during contraction?

(a) Valves in heart (b) Thick muscular walls of venticles (c) Thin walls of atria (d) All of the above

23) Single circulation i.e., blood flows through the heart only once during one cycle of passage through the body, is exhibited by

(a) Labeo, Chameleon, Salamander (b) Hippocampus, Exocoetus, Anabas (c) Hyla, Rana, Draco
(d) Whale, Dolphin, Turtle

24) In which of the following vertebrate group/groups, heart does not pump oxygenated blood to different parts of the body?

(a) Pisces and amphibians (b) Amphibians and reptiles (c) Amphibians only (d) Pisces only

25) Choose the correct statement that describes arteries.

(a) They have thick elastic walls, blood flows under high pressure; collect blood from different organs and bring it back to the heart
(b) They have thin walls with valves inside, blood flows under low pressure and carry blood away from the heart to various orange of the body
(c) They have thick elastic walls, blood flows under low pressure; carry blood from heart to various organs of the body
(d) They have thick elastic walls without valves inside, blood flows under high pressure and carry blood away from the heart to different parts of the body

26) The filtration units of kidneys are called

(a) Ureter (b) Urethra (c) Neurons (d) Nephrons

27) Oxygen liberated during photosynthesis comes from

(a) Water (b) Chlorophyll (c) Carbon dioxide (d) Glucose

28) The blood leaving the tissue becomes richer in

(a) Carbon dioxide (b) Water (c) Haemoglobin (d) Oxygen

29) Which of the following is an incorrect statement?

(a) Organisms grow with time (b) Organisms must repair and maintain their structure
(c) Movement of molecules does not take place among cells (d) Energy is essential for life processes

30) The internal (cellular) energy reserve in autotrophs is

(a) Glycogen (b) Protein (c) Starch (d) Fatty acid

31) Which of the following equation is the summary of photosynthesis?

(a) $6CO_2+12H_2O \rightarrow C_6H_{12}O_6+6CO_2+6H_2O$ (b) $6CO_2+H_2O+\text{Sunlight} \rightarrow C_6H_{12}O_6+O_2+6H_2O$
(c) $6CO_2+12H_2O+\text{Chlorophyll}+\text{Sunlight} \rightarrow C_6H_{12}O_6+6O_2+6H_2O$
(d) $6CO_2+12H_2O+\text{Chlorophyll}+\text{Sunlight} \rightarrow C_6H_{12}O_6+6CO_2+6H_2O$

32) Choose the event that does not occur in photosynthesis

(a) Absorption of light energy by chlorophyll (b) Reduction of carbon dioxide to carbohydrates

(c) Oxidation of carbon to carbon dioxide (d) Conversion of light energy to chemical energy

33) Opening and closing of the stomatal pore depends upon

(a) atmospheric temperature (b) oxygen concentration around stomata

(c) carbon dioxide concentration around stomata (d) water content in the guard cells

34) Choose the form in which mot plants absorb nitrogen

(i)Proteins

(ii)Nitrates and Nitrites

(iii)Urea

(iv)Atmospheric nitrogen

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

35) Which of the first enzyme to mix with food in the digestive tract?

(a) Pepsin (b) Cellulase (c) Amylase (d) Trypsin

36) Which of the following statement(s) is (are) correct?

(i)Pyruvate can be converted into ethanol and carbon dioxide by yeast

(ii)Fermentation takes place in aerobic bacteria

(iii)Fermentation takes place in mitochondria

(iv)Fermentation is a form of anaerobic respiration

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

37) Lack of oxygen in muscles often leads to cramps among cricketers. This results due to

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

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

38) Choose the correct path of urine in our body

(a) kidney $\rightarrow$ ureter $\rightarrow$ urethra $\rightarrow$ urinary bladder (b) kidney $\rightarrow$ urinary bladder $\rightarrow$ urethra $\rightarrow$ ureter

(c) kidney $\rightarrow$ ureter $\rightarrow$ urinary bladder $\rightarrow$ urethra

(d) urinary bladder $\rightarrow$ kidney $\rightarrow$ ureter $\rightarrow$ urethra

39) During deficiency of oxygen in tissues of human beings, pyruvic acid i converted into lactic acid in the

(a) Cytoplasm (b) Chloroplast (c) Mitochondria (d) Golgi body

40) Which organelle of the cell is known as powerhouse?

(a) ATP (b) Golgi bodies (c) Mitochondria (d) Nucleus

41) Deoxygenated blood enters the heart through

(a) Right ventricle (b) Right atrium (c) Light ventricle (d) Left atrium

42) Complete digestion of carbohydrates, proteins and fats takes place in

(a) Stomach (b) Large intestine (c) Small intestine (d) Villi

43) Carbohydrate in humans is stored in the form of

(a) Glycogen (b) Starch (c) Glucose (d) Maltose

44) Green dots present on a leaf are cell organelles called

(a) Chlorophyll (b) Chloroplast (c) Stomach (d) Veins

45) Cramps caused during sudden activities are due to the formation of

(a) Ethanol (b) Acetic acid (c) Lactic acid (d) Excess of water

46) Transverse folds on the walls of intestine are

(a) Vessels (b) Arteries (c) Veins (d) Villi

47) Lymph carries

(a) Digested fats only (b) Absorbed fats only (c) Digested and Absorbed fats (d) Water

48) Carbohydrates in plants are stored in the form of

(a) Glycogen (b) Starch (c) Glucose (d) Maltose

49) Amphibians have

(a) 1-chambered heart (b) 2-chambered heart (c) 3-chambered heart (d) 4-chambered heart

50) Tiny pores present on the surface of the leaf are called

(a) Stomata (b) Guard cells (c) Chloroplast (d) None of these

51) Respiration taking place in absence of oxygen is called

(a) Aerobic respiration (b) Anaerobic respiration (c) both of these (d) none of there

52) Which one of the following will decide whether something is alive:

(a) Body structure (b) Movement (c) Cellular organization (d) Both (a) and (b)

53) Narae the chemical reaction used to breakdown of complex molecules into simpler ones.

(a) Decomposition reaction (b) Double displacement reaction (c) Oxidising-reducing reaction (d) All of these

54) The process sufficient to meet the oxygen requirement of unicellular organisms is

(a) Respiration (b) Diffusion (c) Oxidation (d) All of these

55) Criteria used to decide whether something is alive is

(a) Body structure (b) Movements (c) Cellular organization (d) Both (a) and (b)

56) Function of chlorophyll in photosynthesis is

(a) Absorbing light energy (b) Breaking down H_2O molecule (c) No function (d) Reduction of CO_2

57) Proteins after digestion are converted into

(a) Carbohydrates (b) Small globules (c) Amino acids (d) Starch

58) Lacteals are

(a) Group of blood vessels (b) Lymph vessels (c) Both (i) and (ii) (d) None of these

59) Heterotroph's survival depends _____ on autotrophs.

(a) Directly (b) Indirectly (c) Directly and Indirectly (d) Directly or Indirectly

60) Correct equation for photosynthesis is

(a) $CO_2 + 12H_2O \longrightarrow C_6H_{12}O_6 + 6CO_2 + H_2O$ (b) $CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6CO_2 + H_2O$

(c) $6CO_2 + H_2O \longrightarrow C_6H_{12}O_6 + CO_2 + 12H_2O$ (d) $6CO_2 + 12H_2O \longrightarrow C_6H_{12}O6 + 6O_2 + 6H_2O$

61) Correct sequence of following events which occurs during photosynthesis is

(i) Absorption of light energy.

(ii) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen.

(in) Reduction of carbon dioxide to carbohydrates

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

62) Main site of photosynthesis is

(a) Leaf (b) Stem (c) Chloroplast (d) Guard cells

63) In the experiment to test the presence of starch, why is the leaf dipped in alcohol not heated directly

(a) Alcohol is flammable (b) For better heating (c) Alcohol is acidic in nature

(d) Alcohol is basic in nature

64) Photosynthesis is a

(a) Catabolic process (b) Parabolic process (c) Amphibolic process (d) Photochemical process

65) Closing and opening of pores is a function of

(a) Stomata (b) Chlorophyll (c) Chloroplast (d) Guard cells

66) Swelling of guard cells lead to

(a) Opening of stomatal pores (b) Closing of stomatal pores (c) Both (i) and (ii) (d) None of these

67) In the experiment, CO_2 is essential for photosynthesis, KOH is kept

(a) To seal the chamber (b) To absorb CO_2 (c) To support the plant while CO_2 is absent

(d) Both (b) and (c)

68) Which of the following is an essential element used in the synthesis of proteins?

(a) Hydrogen (b) Oxygen (c) Nitrogen (d) Carbon dioxide

69) Organisms which breakdown the food outside the body and then absorb it are

(a) Bread moulds (b) Yeast (c) Mushroom (d) All of these

70) Organisms using parasitic nutritive strategy is

(a) Cuscuta and lice (b) Ticks and tape worm (c) Leeches (d) All of these

71) Temporary finger-like extension of amoeba are called

(a) Cell membrane (b) Cell wall (c) Pseudopodia (d) Cilia

72) Food is moved to a specific spot in Paramecium by

(a) Villi (b) Cell membrane((c) Pseudopodia (d) Cilia

73) Rhythmic movement of muscles in the lining of gut are known a

(a) Contracting movements (b) Dilating movements (c) Peristaltic movements (d) None of these

74) Bile juice is secreted by

(a) Stomach (b) Pancreas (c) Small intestine (d) Liver

75) Pancreas secretes the following pancreatic juices

(a) Trypsin (b) Pepsin (c) Bile juice (d) Both (a) and (b)

76) Lipase acts on

(a) Amino acids (b) Fats (c) Carbohydrates (d) All of these

77) After digestion, proteins, carbohydrates and fats are respectively converted into

(a) Glucose, fatty acids and glycerols (b) Amino acids, glucose and fatty acids

(c) Amino acids, glucose, fatty acids and glycerol (d) Glucose, glycerol and fatty acids

78) III human beings respiratory pigment is

(a) Chlorophyll (b) Water (c) Blood (d) Haemoglobin

79) CO_2 is transported in our body through

(a) Haemoglobin (b) Blood (c) Water (d) Cd)All of these

80) Blood consists of a fluid medium is called

(a) Lymph (b) Platelets (c) Plasma (d) All of these

81) Separation of right and left side of the heart is to

(a) Ensure proper and efficient working of heart (b) Avoid any blockage

(c) Allow highly efficient supply of oxygen (d) All of these

82) Pulmonary artery carries blood

(a) Away from the heart (b) Towards the heart (c) None of these (d) Both of these

83) One cell-thick vessels are called

(a) Arteries (b) Veins (c) Capillaries (d) Pulmonary artery

84) Lymph carries

(a) Digested food (b) Absorbed food (c) Digested and absorbed food (d) Water

85) The loss of water in the form of vapour from the aerial parts of the plants is known as

(a) Evaporation (b) Translocation (c) Transpiration (d) Conductions

86) The transport of soluble products of photosynthesis is known as

(a) Evaporation (b) Translocation (c) Transpiration (d) Conductions

87) Amount of water reabsorbed in nephrons depend on

(a) How much excess water is there in the body (b) How much dissolved water there is to be excreted

(c) Rate of intake of food (d) Both (a) and (b)

88) Name the tissues associated with the conduction of water in plants.

(a) Phloem (b) Xylem (c) Parenchyma (d) Both (a) and (b)

89) What is the source of O_2 liberated during photosynthesis

(a) CO_2 (b) H_2O (c) $C_6H_{12}O_6$ (d) None of these

90) Name the artificial method for the removal of liquid nitrogenous waste from body

(a) Excretion (b) Dialysis (c) Urination (d) All of these

91) Name the type of blood vessel which carry blood from organs to the heart

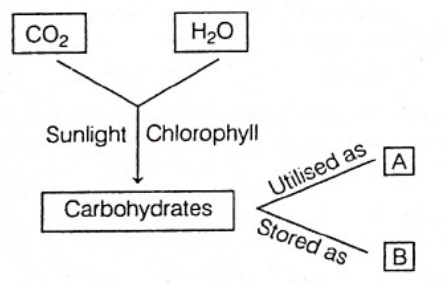
(a) Artery (b) Veins (c) Lymph (d) All of these

92) Before carrying out the test for the presence of starch in a leaf on exposure to sunlight, the leaf is put into alcohol in a beaker and boiled over a water bath. This step is carried out to

(a) extract starch (b) dissolve chlorophyll (c) allow water to move into a leaf

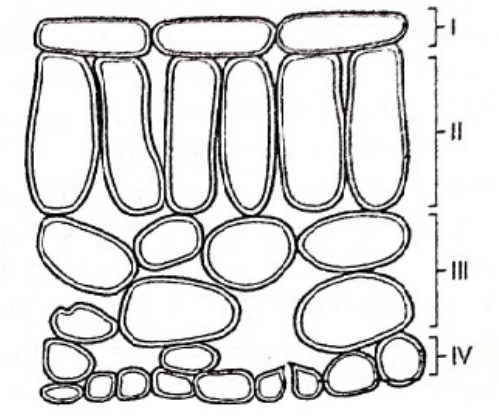
(d) make membranes of leaf cells more permeable.

93) In the following flowchart showing autotrophic nutrition in green plants, A and B respectively are



(a) oxygen and energy (b) starch and oxygen (c) energy and starch (d) oxygen and water

94) In the given transverse sectlon of the leaf, identify the layer of cells where maximum photosynthesis occurs.



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

95) One of the events that does not occur duting photosynthests is

(a) chlorophyll absorbs solar energy (b) carbon dioxide is released during the process

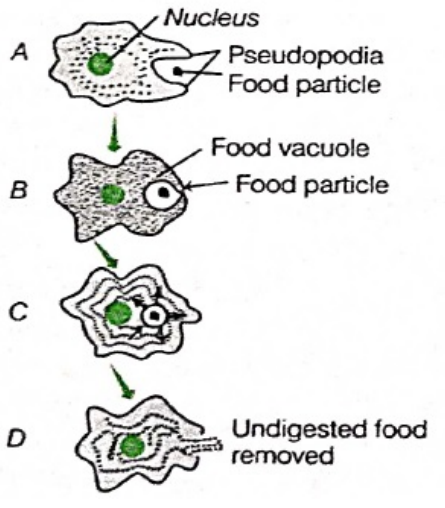
(c) oxygen is released during the process (d) carbon dioxide is absorbed during the process

96) 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

97) Given below figures show different stages of nutrition in Amoeba. Observe the figures and identify which of the following represent absorption of food in Amoeba?



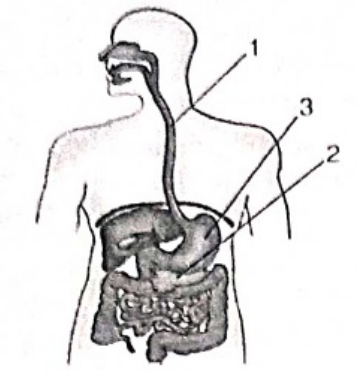
(a) A (b) B (c) C (d) D

98) If salivary amylase is lacking in the saliva, which of the following events 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

99) Observe the diagram of human digestive system. Which of the following correctly represents the organ labelled as 2?



(a) Secretes bile juice, which acts on fat molecule

(b) Secretes pancreatic juice, which contains enzymes like amylase, trypsin, etc.

(c) Secretes intestinal juice, which contain amylolytic, proteolytic and lipolytic enzymes

(d) Release digestive juice which containing HCl, pepsin mucus, etc.

100) Given below are two columns. The column I shows the 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

(a)

Column I (Enzymes)	Column II (Components)
Pepsin	Starch

(b)

Column I (Enzymes)	Column II (Components)
Trypsin	Proteins

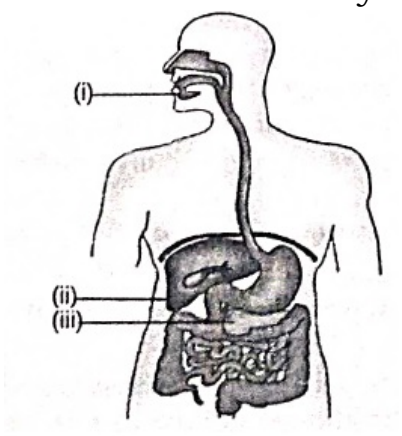
(c)

Column I (Enzymes)	Column II (Components)
Lipase	Proteins

(d)

Column I (Enzymes)	Column II (Components)
Amylase	Emulsified fat

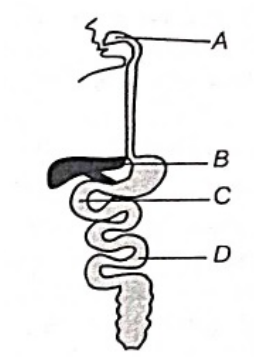
101) In human alimentary canal, the specific enzyme/ juice secreted in locations (i), (ii) and (iii) are



(a) (i) Amylase (ii) Pepsin (ii) Bile (b) (i) Amylase (i) Bile (ii) Trypsin

(c) (i) Lipase (ii) Amylase (iii) Pepsin (d) (i) Trypsin (ii) Bile (i) Amylase

102) Observe the diagram of human digestive system



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

Column I	Column II
A	1. The length of this depends on food the organism eats.
B	2. Initial phase of starch digestion
C	3. Increases the efficiency of lipase enzyme action.
D	4. This is the site ofthe complete digestion of carbohydrates, proteins and fats.

(a)

A	B	C	D
1	2	3	4

(b)

A	B	C	D
2	3	4	1

(c)

A	B	C	D
2	4	3	1

(d)

A	B	C	D
4	1	2	3

103) The function not performed by villi is

(a) to increase the surface area for absorption (b) to ensure rich supply of blood vessels

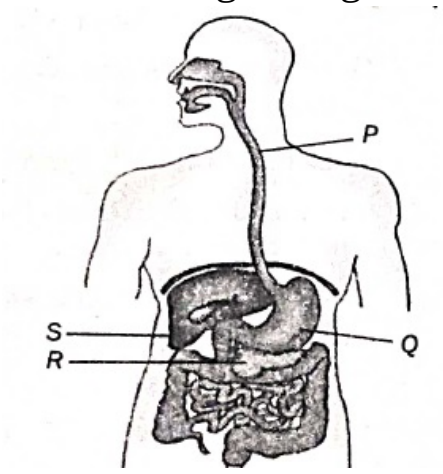
(c) absorption of food (d) egestion of food

104) Pancreas secretes lipase enzyme. Mr. Ayub is suffering from malfunctioning of the pancreas. Which of the following will be adversely affected in Mr. Ayub's body?

(a) Digestion of carbohydrates (b) Digestion of proteins (c) Digestion of fats

(d) Digestion of vitamins

105) Refer to the given figure and select the incorrect statement regarding P, Q, R and S



(a) P exhibits peristaltic movement to push partially digested food towards stomach

(b) Digestion of fats takes place in Q only

(c) Digestive juices secreted by R contains enzymes trypsin, amylase and lipase

(d) Digestive juices secreted by S gets stored in gall bladder and helps in the digestion of fat

106) Select the option that Incorrectly matches the organ to digestive reactlon taking place in it.

(a)

Organs	Digestive reactions
(a) Stomach	$\text{Protein} \xrightarrow{\text{Pepsin}} \text{Small polypeptides}$

(b)

Organs	Digestive reactions
(b) Oesophagus	$\text{Sucrose} \xrightarrow{\text{Sucrase}} \text{Glucose} + \text{Fructose}$

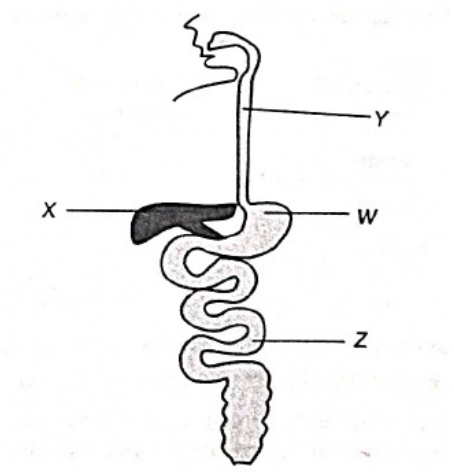
(c)

Organs	Digestive reactions
(c) Mouth	$\text{Starch} \xrightarrow{\text{Ptyalin}} \text{Maltose}$

(d)

Organs	Digestive reactions
(d) Small intestine	$\text{Sucrose} \xrightarrow{\text{Sucrase}} \text{Glucose} + \text{Fructose}$

107) Refer to the given figure of human digestive system and select incorrect statement regarding it.



(a) Glands present in the wall of W release inactive protein digesting enzyme pepsinogen

(b) Y is highly muscular and exhibits peristaltic movement

(c) The juice secreted by X contains enzymes like trypsin and lipase

(d) Z of herbivores is longer than that of carnivores

108) Which of the foliowlng ls Incorrectly paired with its function?

(a)

(a) Small intestine	Enzymatic digestion of lipids, proteins and polysaccharides

(b)

(b) Oesophagus	Transport of food from the mouth to the stomach

(c)

(c) Stomach	Mechanical and some chemical digestion of food

(d)

(d) Large intestine	Absorption of indigested sugars, fats and amino acids

109) Which one of the following event in the mouth cavity would be affected if the enzyme salivary amylase is lacking in the saliva?

(a) Breakdown of starch into sugar (b) Breakdown of proteins into amino acid

(c) Absorbtion of vitamins (d) Breakdown of fats into fatty acids and glucose

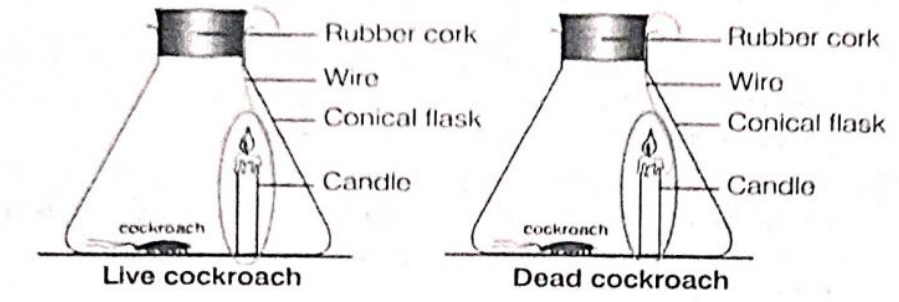
110) Choose the correct statement

(a) The wall of the stomach absorb most of the water from digested food

(b) Colon is the largest part of small intestine (c) All end products of digestion are insoluble in water

(d) The small intestine is the main region for the absorption of food.

111) A student conducted an experiment. In flask A, the student placed a candle and a living cockroach while in flask B, a candle and a deceased cockroach are placed.



After 10 minutes, the student observed that the candle in flask A extinguished faster while candle in flask B kept burning for a longer time. What can be evaluated from this experiment?

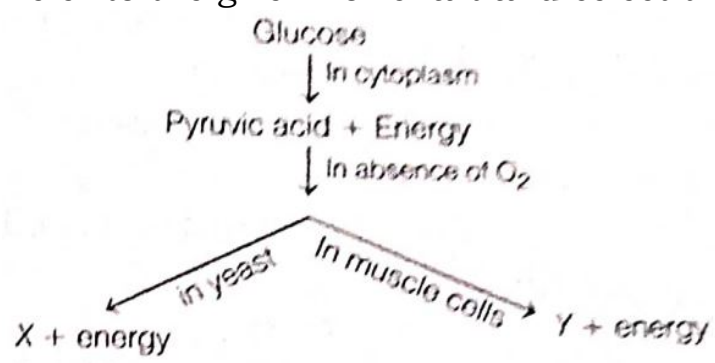
(a) Water vapours produced by living beings prevents burning of candle

(b) Living beings consume oxygen during respiration

(c) Burning of candle decreases the lifespan of cockroach

(d) Candle produces high amount of carbon dioxide

112) Refer to the given flowchart and select the option that correctly identifies X and Y.



(a)		(b)		(c)		(d)	
X	Y	X	Y	X	Y	X	Y
Ethanol + CO_2	Lactic acid	Lactic acid	Ethanol	Ethanol + CO_2	$CO_2 + H_2O$	Lactic acid	$CO_2 + H_2O$

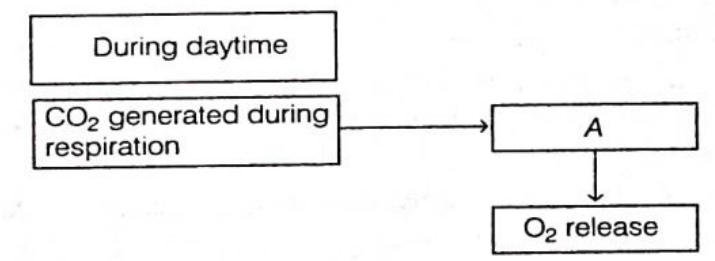
113) During vigorous exercise the occurrence of cramps in the outer muscles of an athlete is due to the conversion of pyruvate to

(a) glucose (b) ethanol (c) lactic acid (d) lactose

114) The energy released during cellular respiration is used to synthesise

(a) ribosomes (b) RBC (c) ATP (d) mitochondria

115) Observe the given flowchart and identify the blank A from the given options.



(a) Respiration (b) Photosynthesis (c) Transpiration (d) Fermentation

116) As compared to terrestrial organisms, the rate of breathing in aquatic organisms is

(a) faster because they need more oxygen for their survival

(b) faster because the amount of dissolved oxygen in water is fairly low

(c) slower because the amount of dissolved oxygen in water is fairly low

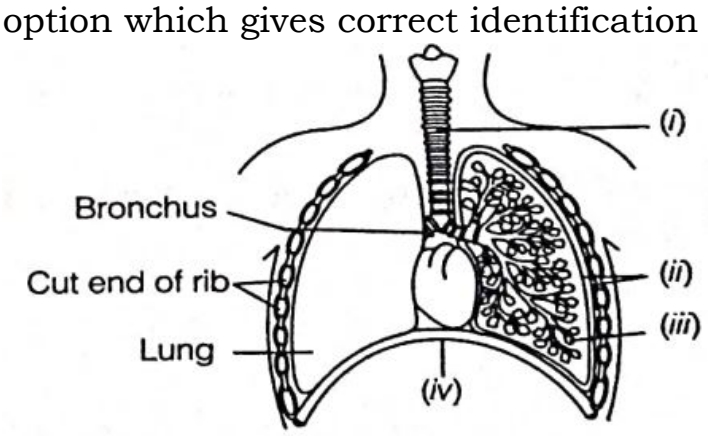
(d) slower because the capacity of water of dissolving atmospheric air is limited

117) The function of the lining of mucus in the nasal passage of human beings is to

(a) increase the temperature of inhaled air (b) move the air in and out

(c) filter the air that we breathe in (d) absorb oxygen from the air

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



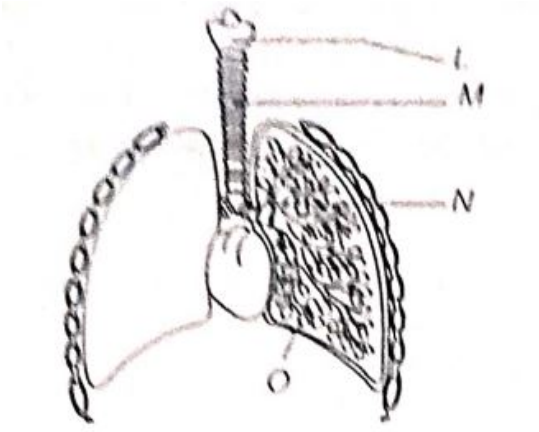
(a) (i) Trachea It is supported by bony rings for conducting inspired air

(b) (ii) Ribs When we breathe out, ribs are lifted

(c) (iii) Alveoli: Thin walled sac-like structure for exchange of gases

(d) (iv) Diaphragm It is pulled up when we breathe in

119) Refer to the given figure and read the given statements regarding it.



Which of the given statements is/are correct?

I. L-provides a passage into trachea through a slit like aperture called glottis.

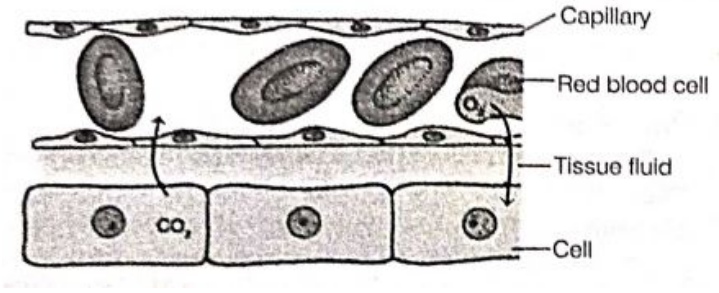
II. M-has cartilaginous rings to prevent it from getting collapsed in between breaths.

III. Wall of N is composed of moist, non-ciliated squamous epithelium and it is the mainsite of gaseous exchange.

IV. During inhalation, O-becomes dome-shaped whereas, during exhalation It becomes flat.

(a) I and II (b) II and III (c) I and III (d) Only II

120) Below is the diagram illustrating a process occurring in the human body.



In which of these regions/organs could it be occurring?

(i) Lungs

(ii) Heart

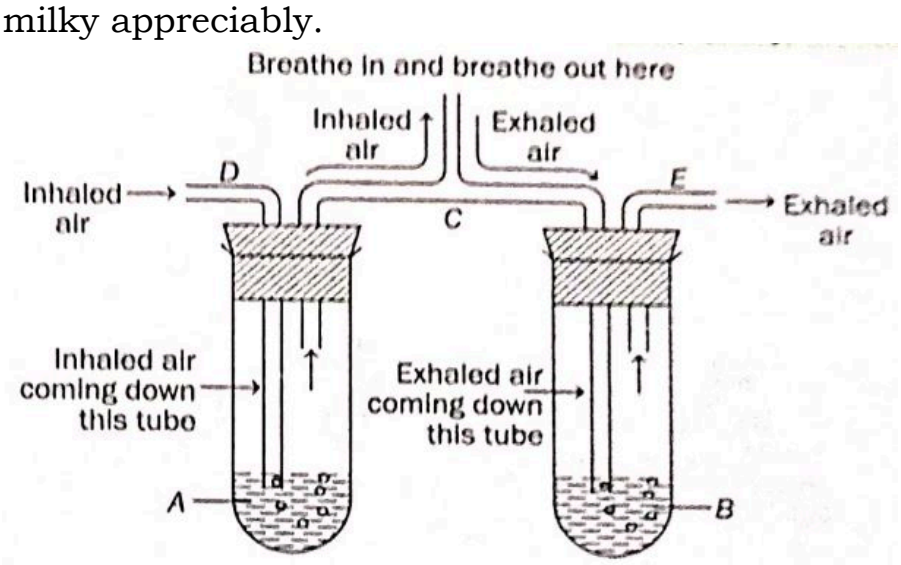
(iii) Brain

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

121) Which of the following statements are true about respiration?
(i) During inhalation, ribs move inward and diaphragm is raised.
(ii) In the alveoli, exchange of gases takes place, i.e. oxygen from alveolar air diffuses into blood and carbon dioxide from blood into alveolar air.
(iii) Haemoglobin has greater affinity for carbon dioxide than oxygen.
(iv) Alveoli increases surface area for exchange of gases.

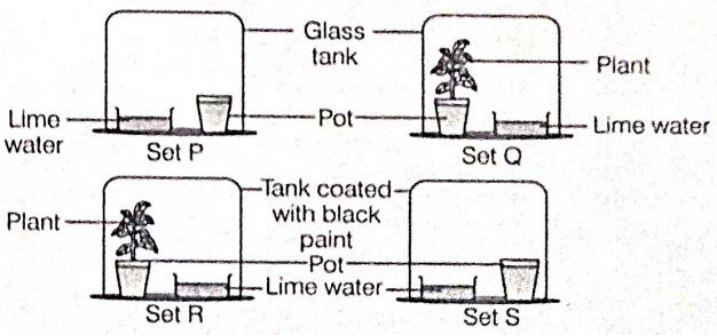
(a) (i) and (iv) (b) (ii) and (iii) (c) (i) and (iii) (d) (ii) and (iv)

122) An experiment is set up as shown. To perform the experiment, we put the top end of the tube C in mouth and 'breath in' and 'breath out' gently. Identify in which of the boiling tube lime-water turns milky appreciably.



(a) Tube A (b) tube B (c) Both tube A and tube B (d) Neither tube A nor tube B

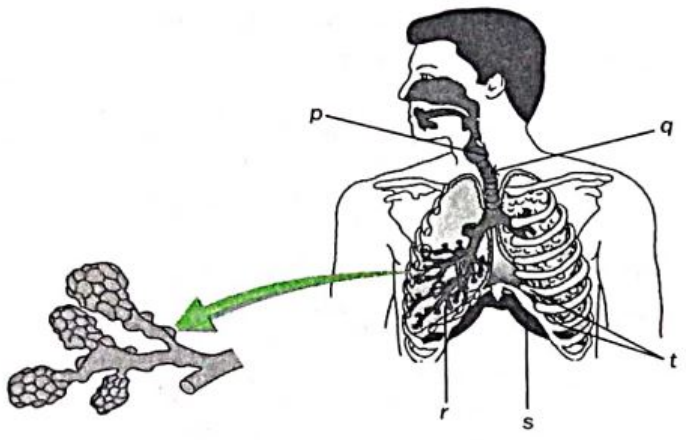
123) Lime water turns cloudy in the presence of a gas which is a byproduct of respiration. Shown below are four setups kept in sunlight for 24 hours.



In which setup is lime water expected to be the cloudiest?

(a) Setup P (b) Setup Q (c) Setup R (d) Setup S

124) Refer to the given figure and answer the following questions.



Which of these parts
I. are the actual sites of gaseous exchange?
II. Is the common passage for both air and food?
III. Is provided with incomplete cartilaginous rings?
IV. relaxes and gets back to its original shape during expiration?
V. moves upwards and outwards during inspiration?

(a)

I	II	III	IV	V
s	p	q	r	t

(b)

I	II	III	IV	V
r	p	q	s	t

(c)

I	II	III	IV	V
t	q	r	s	p

(d)

I	II	III	IV	V
p	q	r	s	t

125) Which row in the table provided below displays the accurate products of anaerobic respiration in both humans and in yeast?

(a)

Humans	Humans	Yeast	Yeast
lactic acid	carbon dioxide	lactic acid	carbon dioxide
✗	✓	✗	✗

(b)

Humans	Humans	Yeast	Yeast
lactic acid	carbon dioxide	lactic acid	carbon dioxide
✓	✗	✗	✓

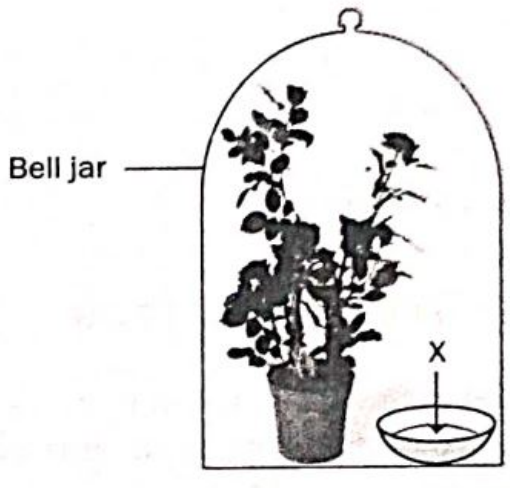
(c)

Humans	Humans	Yeast	Yeast
lactic acid	carbon dioxide	lactic acid	carbon dioxide
✗	✓	✓	✗

(d)

Humans	Humans	Yeast	Yeast
lactic acid	carbon dioxide	lactic acid	carbon dioxide
✓	✓	✓	✗

126) The setup given below shows the experiment on respiration. The X labelled in the setup marks the name of some chemical which is used to absorb some gas that is evolved as a byproduct during respiration. Identify X.



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

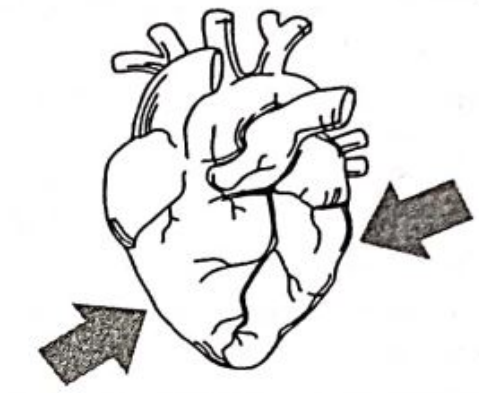
127) Which of the following statement (s) Is/are true about heart?
(i) Left atrium receives oxygenated blood from different parts of body, while right atrium receives deoxygenated blood from lungs.
(ii) Left ventricle pumps oxygenated blood to different body parts, while right ventricle pumps deoxygenated blood to lungs.
(iii) Left atrium transfers oxygenated blood to right ventricle which sends it to different body parts.
(iv) Right atrium receives deoxygenated blood from different parts of the body, while left ventricle pumps oxygenated blood to different parts of the body.

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

128) Which of the following statement(s) is (are) true about human heart?
(i) Right atrium receives oxygenated blood from lungs through pulmonary artery
(ii) Left atrium transfer oxygenated blood to left ventricle which sends it to various parts of the body.
(iii) Right atrium receives deoxygenated blood from different parts of the body through vena cava.
(iv) Left atrium transfers oxygenated blood to aorta which sends to different parts of the body.

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

129) ldentify the phase of circulation which is represented in the diagram of heart given below. Arrows indicate contraction of the chambers shown.



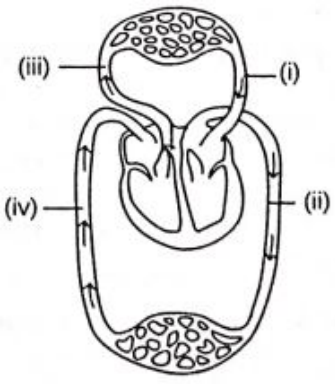
(a) Blood transferred to the right ventricle and left ventricle simultaneously

(b) Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously

(c) Blood transferred to the right auricle and left auricle simultaneously

(d) Blood is received from lungs after oxygenation and is received from various organs of the body

130) The figure given below shows a schematic plan of blood circulation in humans with labels. Identify the correct label with its functions.



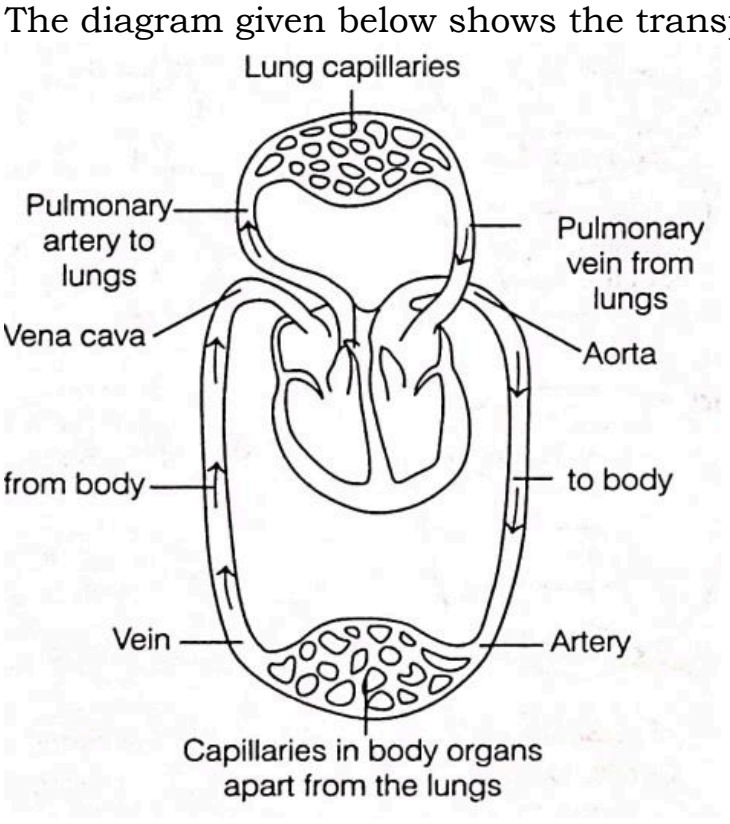
(a) (i) Pulmonary vein - takes impure blood from body parts

(b) (ii) Pulmonary artery - takes blood from lungs to heart

(c) (iii) Aorta - takes blood from heart to body parts

(d) (iv) Vena cava - takes blood from body parts to right auricle

131) The diagram given below shows the transport of gases in the body.



Select the correct option showing the transport of oxygen to the cell.

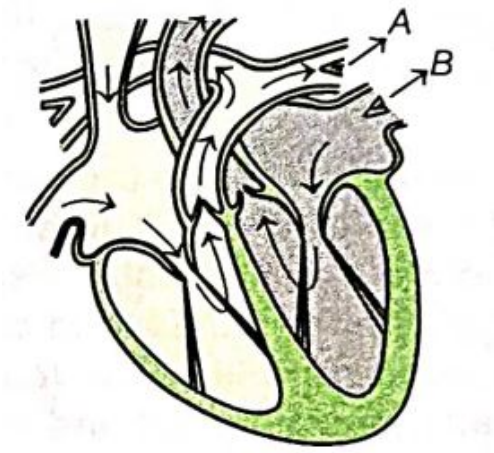
(a) Lungs → pulmonary vein → left atrium → left ventricle → aorta → body cells

(b) Lungs → pulmonary vein → right ventricle → aorta → body cells

(c) Lungs → pulmonary artery → left atrium → left ventricle → vena cava → body cells

(d) Lungs → pulmonary artery → right atrium → right ventricle → vena cava → body cells

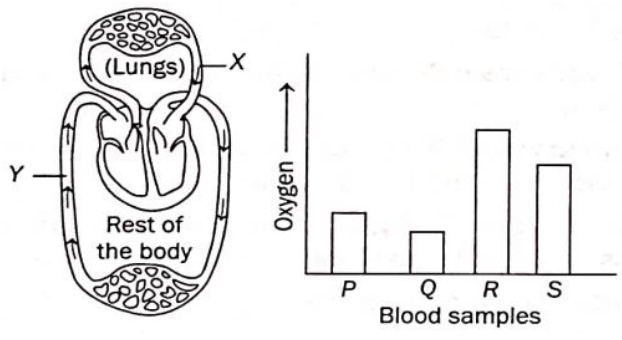
132) Consider the following statements in connection with the functions of the blood vessels marked A and B in the diagram of a human heart as shown.



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

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

133) The graph given below shows the amount of oxygen in four blood samples, i.e. P, Q, R, and S taken at the same time from different blood vessels in the body. The diagram here shows the blood circulation in our body. Which blood samples (P, Q, R and S) have been most likely taken from parts X and Y of the circulatory system?



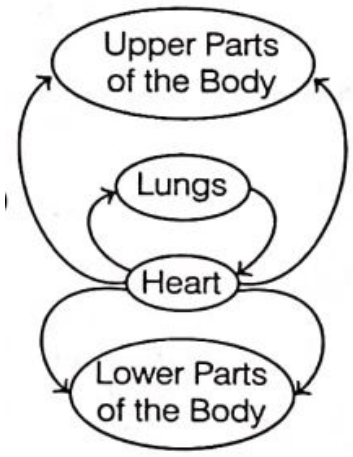
(a) Q and P (b) S and R (c) Q and R (d) R and Q

134) Refer to the figure given of heart and choose the Correct options.

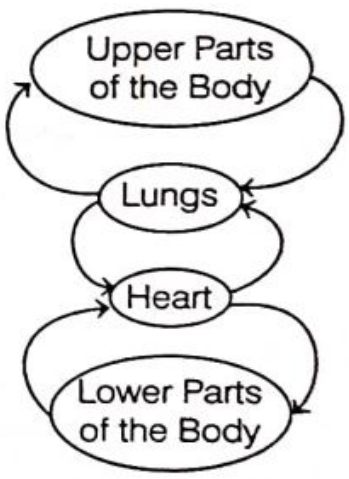
(a) The blood Y reaches lungs (b) The blood from body enters the heart through P
(c) Y receives blood from lungs (d) Q receives blood from body

135) Choose the flowchart that correctly shows the circulation of blood in the human body.

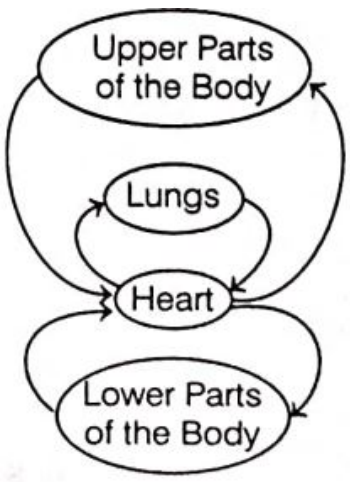
(a)



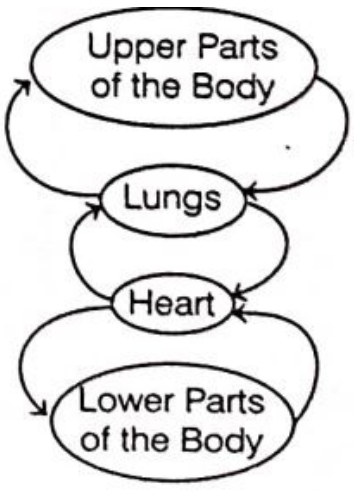
(b)



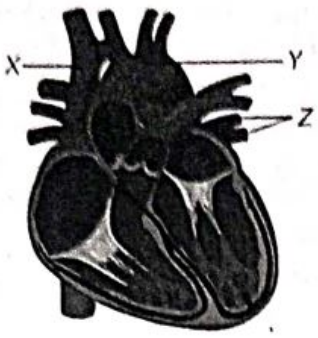
(c)



(d)



136) Refer to the given diagram of a human heart.



Which out of the following options correctly identifies the vessels that carries oxygenated and deoxygenated blood?

(a)

Oxygenated blood	**deoxygenated blood**
X and Z	Y

(b)

Oxygenated blood	**deoxygenated blood**
X and Y	Z

(c)

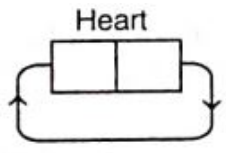
Oxygenated blood	**deoxygenated blood**
Y and Z	X

(d)

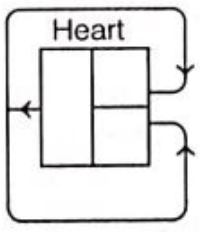
Oxygenated blood	**deoxygenated blood**
Y	X and Z

137) AlI animals having four-chambered hearts have double circulation in which the blood passes twice in one complete cycle through the heart.
See the diagrams given below and choose the correct one in this regard.

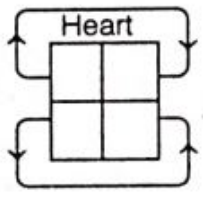
(a)



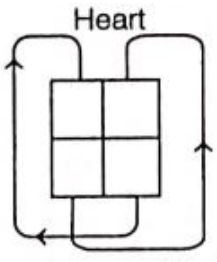
(b)



(c)



(d)



138) In which of the following groups of organisms, blood flows only once through the heart during one cycle of passage through the body?

(a) Rabbit, parrot, turtle (b) Frog, crocodile, pigeon (c) Whale, Labeo, penguin

(d) Shark, dog fish, sting ray

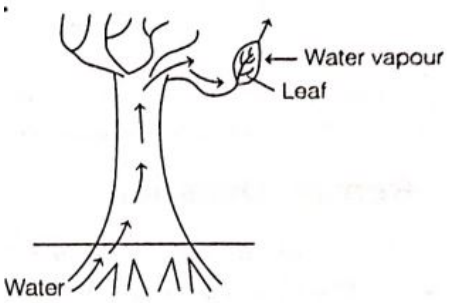
139) Water in the root enters due to

(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

140) Observe the following diagram and identify the process and its significance from the following options.



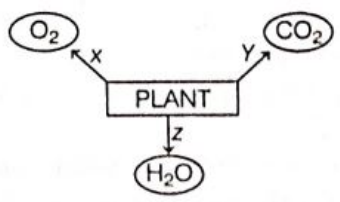
(a) Evaporation maintains water contents in the leaf cells

(b) Transpiration creates a suction force which pulls water inside the plant

(c) Excretion helps in excreting out wastewater from the plant

(d) Translocation helps in transporting materials from one cell to another

141) Look at the diagram below carefully.



ldentify the process taking place at Z.

(a) Reproduction (b) Transpiration (c) Photosynthesis (d) Translocation

142) The process in which loss of water in the form of vapours from the aerial parts of plants takes place is X, which helps in Y. Here, X and Y respectively are

(a) transpiration and photosynthesis (b) transpiration and temperature regulation

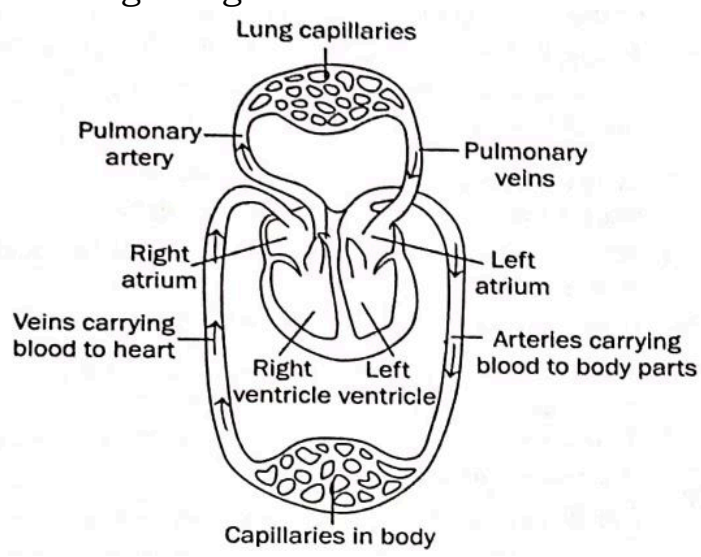
(c) translocation and movement of soluble products of photosynthesis in phloem

(d) translocation and absorption of water and minerals from soil by roots

143) Which of the following is accomplished in a plant by utilising the energy stored in ATP?
I. Transport of food.
II. Transport of oxygen.
III. Transport of water and minerals.
IV. Transport of water, minerals and food.

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

144) The diagram given below shows the circulation of blood in the human body.



Select the correct statement supported by the diagram.

(a) All arteries carry oxygenated blood (b) Capillaries are permeable to gases

(c) The wall between the left ventricle and right ventricle is porous

(d) Blood can flow back and forth between the right atrium and the right ventricle

145) Single circulation, i.e. blood flows through the heart only once during one cycle of passage through the body is exhibited by

(a) Labeo, Chameleon, Salamander (b) Hippocampus, Exocoetus, Anabas (c) Hyla, Rana,Draco

(d) Whale, Dolphin, Turtle

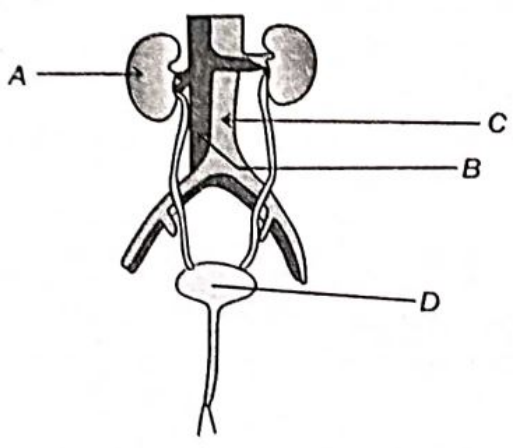
146) Which one of the following statements related to capillaries is correct?

(a) These act as connective link between arteries and veins

(b) These are deeply penetrated inside the tissues

(c) These help in exchange of materials between blood and surrounding coils (d) All of the above

147) In the given diagram, A, B, C and D respectively are



(a) A - Left kidney; B - Aorta; C - Vena cava; D - Urethra

(b) A - Left kidney; B - Vena cava; C - Aorta; D - Urinary bladder

(c) A - Right kidney; B - Aorta; C - Ureter; D - Urethra

(d) A - Right kidney; B - Vena cava: C - Aorta; D - Urinary bladder

148) What is common between extensive network of blood vessels around walls of alveoli and in glomerulus of nephron?

(a) Thick walled arteries richly supplied with blood (b) Thin walled veins poorly supplied with blood

(c) Thick walled capillaries poorly supplied with blood

(d) Thin walled capillaries richly supplied with blood

149) Which row is the sequence of organs that urine passes through after it is formed in the nephron?

(a) Collecting duct > urethra > urinary bladder > ureter

(b) Ureter > urinary bladder > collecting duct > urethra

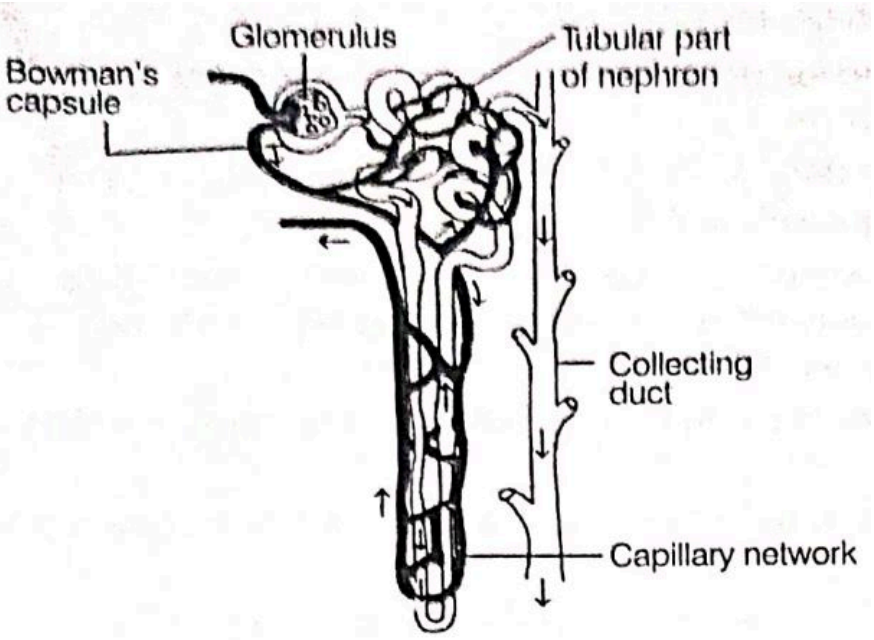
(c) Collecting duct > ureter > urinary bladder > urethra

(d) Urethra > urinary bladder > collecting duct > ureter

150) 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

151) Examine the picture depicting a nephron.



In a healthy adult, the initial filtrate in the kidneys is about 180 L daily. However, the volume actually excreted is only a litre or two a day. This happens because the remaining filtrate is reabsorbed.
In which part of the nephron could the water be getting reabsorbed?

(a) In the Bowman's capsule (b) In the long tubular part (c) In the collecting duct

(d) In the glomerulus

152) In a person, the tubule part of the nephron is not functioning at all. What will be its effect on urine formation?

(a) The urine will not be formed (b) Quality and quantity of urine is unaffected

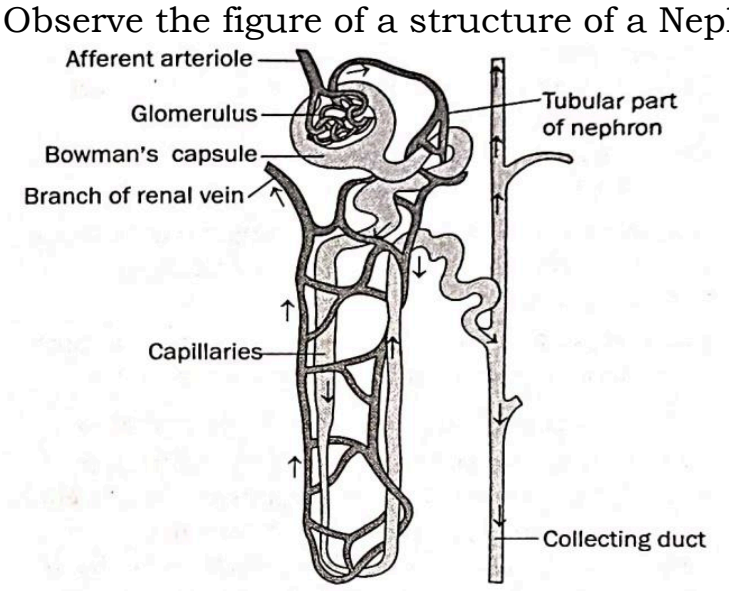
(c) Urine is more concentrated (d) Urine is more diluted

153) An adult human on an average produces

(a) 1 - 2 L of urine per day (b) 1 - 5 L of urine per day (c) 2 - 5 L of urine per day

(d) 4 - 5 L of urine per day

154) Observe the figure of a structure of a Nephron below.



The total amount of liquid that passes through it in the form of glomerular filtrate is approximately 150-180 L/day, while the amount of urine flowing out of all the nephron is only 1.5 to 1.8 L/day.
Water is getting reabsorbed. In which part of the nephron could the water be getting reabsorbed?

(a) In the Bowman's capsule (b) In the long tubular part (c) In the collecting part

(d) In the glomerulus

155) Plants use completely different process for excretion as compared to animals. Which one of the following processes is not followed by plants for excretion?

(a) They can get rid of excess water by transpiration

(b) They selectively filter toxic substances through their leaves

(c) Waste products are stored as resins and gums in old xylem

(d) They excrete waste substances into the soil around them

156) In which part of the nephron could the water be getting reabsorbed?

(a) in the Bowman's capsule (b) In the long tubular part (c) in the collecting duct

(d) In the glomerulus

Assertion and reason 28 x 1 = 28

157) **Assertion:** Nitrogen is an essential element used in the synthesis of proteins and other compounds in plants.
Reason: Plants take in nitrogen in the form of inorganic nitrates or nitrites.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

158) **Assertion:**Parasitic nutritive strategy is used by a wide variety of organisms.
Reason: It means they derive nutrition from plants or animals without killing them.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

159) **Assertion:**ATP is the output of the exothermic reaction that takes place in the cell.

Reason: ATP is used further by endothermic reactions.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

160) **Assertion:**Fishes take in water through their mouths and force it past the gills

Reason: This is where the dissolved oxygen is taken up by blood.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

161) **Assertion:** Oxygen is more readily soluble in water than carbon dioxide.

Reason: Hence it gets transported easily through blood.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

162) **Assertion:** Photosynthesis takes place in green parts of the plants.

Reason: Photosynthesis always takes place in leaves.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

163) **Assertion:** Capillaries are the thinnest blood vessels.

Reason: Capillaries connect the branches of arteries and veins

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

164) **Assertion**: The plants store some of the waste products in their body parts.

Reason: Raphides are the solid waste products of plants.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

165) **Assertion**: The movement of water and dissolved salts in xylem is always upwards.

Reason: The upward movement of water is due to low pressure created by transpiration.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

166) **Assertion**: Blood takes up oxygen from the alveolar air and release CO_2 during exchange.
Reason: The concentration of O_2 is more in alveolar air.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

167) **Assertion**: The large intestine is the largest part of the alimentary canal.
Reason: Tiger has a shorter small intestine, than herbivores.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

168) **Assertion**: Most of the living organisms carry out aerobic respiration.
Reason: Mitochondria is the site of aerobic respiration in the cell.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

169) **Assertion:** The Bowman's capsule and the tubule together make a nephron.
Reason : The function of tubule is to allow the selective reabsorption of substances like glucose, amino acils, urea, salts and water into the blood capillaries.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

170) **Assertion:** Pancreatic juice digests starch, proteins and fats.
Reason: Pancreatic juice contains digestive enzymes like pancreatic amylase, trypsin and lipase.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

171) **Assertion:** The accumulation of lactic acid in the muscles causes muscle cramps.
Reason: During vigorous physical exercise leg muscles respire anaerobically.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

172) **Assertion:** Phloem helps in translocation of food from the leaves.
Reason: Phloem provides mechanical support to plant.
Codes
(a) Both A and R are true and R is correct explanation of the assertion.
(b) Both A and R are true but R is not the correct explanation of the assertion.
(c) A is true but R is false.
(d) A is false but R is true.

173) **Assertion**: Trachea does not collapse, when there is no air in it.

Reason: Trachea is supported by cartilage.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

174) **Assertion:** The average number of heart beat of a person at rest is about 80 per minute.

Reason: One contraction and relaxation of the heart constitutes a complete heart beat.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

175) **Assertion:** Ureters are the tubes which carry urine from kidneys to the bladder.

Reason: Urine is stored in the urethra.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

176) **Assertion:** Ventricles have thicker walls than auricles.

Reason: Ventricles have to pump blood into various organs with great pressure.

Codes

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

177) **Assertion (A)** Nitrogen is an essential element for plant growth and is taken up by plants in the form of inorganic nitrates or nitrites.

Reason (R) The soil is the nearest and richest source of raw materials like nitrogen, phosphorus and other minerals for the plants.

(a) If both A and R are true and R is the correct explanation of A

(b) If both A and R are true, but R is not the correct explanation of A

(c) If A is true, but R is false

(d) If A is false, but R is true

178) **Assertion (A)** Amoeba takes in food using finger-like extensions of the cell surface.

Reason (R) In all unicellular organisms, the food is taken in by the entire cell surface

(a) If both A and R are true and R is the correct explanation of A

(b) If both A and R are true, but R is not the correct explanation of A

(c) If A is true, but R is false

(d) If A is false, but R is true

179) **Assertion (A)** The inner walls of the small intestine have finger-like projections called villi which are rich in blood.

Reason (R) These villi have a large surface area to help the small intestine in completing the digestion of food.

(a) If both A and R are true and R is the correct explanation of A

(b) If both A and R are true, but R is not the correct explanation of A

(c) If A is true, but R is false

(d) If A is false, but R is true

180) **Assertion (A)** The rate of breathing in aquatic organisms is much slower than that seen in terrestrial organisms.
Reason (R) The amount of oxygen dissolved in water is very low as compared to the amount of oxygen in air.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true, but R is not the correct explanation of A
(c) A is true, but R is false
(d) A is false, but R is true

181) **Assertion (A)** The walls of atria are thicker than those of the ventricles.
Reason (R) Ventricles have to pump blood into various organs at high pressure.
(a) Both 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

182) **Assertion (A)** Left atrium receives oxygenated blood from pulmonary vein.
Reason (R) Right atrium transfers deoxygenated blood to the right ventricle, which pumps it to the lungs for oxygenation.
(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

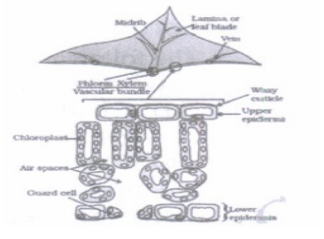
183) **Assertion (A)** Capillaries have walls that are just one cell thick.
Reason (R) Exchange of material between the blood and surrounding cells takes place across the capillaries.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true, but R is not the correct explanation of A
(c) A is true, but R is false
(d) A is false, but R is true

184) **Assertion (A)** Amphibians can tolerate mixing of oxygenated and deoxygenated blood.
Reason (R) Amphibians are animals with two-chambered heart.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true, but R is not the correct explanation of A
(c) A is true, but R is false
(d) A is false, but R is true

Passage Based Questions 4 x 1 = 4

185) Xylem tissue forms a centinous system of water conducting channel reaching all parts of the plant. At the roots, cells in contact with the soil actively takes up ions. This creates difference in the concentration of these ions between the root and the soil. This creates the steady movement of water into: 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
(a) Name the process responsible for the absorption of water from roots to leaves.
(b) Name the major driving force in the movement of water in the xylem, during day time.
(c) Name the cells which is responsible for the transportation of ions in the plant.
(d) State one factor which rise water up in plant.

186) 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. Theyform 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 stoma. These holes allow gases to diffuse in and out of the leaves. The 'stoma 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

(a) Mention two functions of lower epidermis.

(b) Where are chloroplasts present in the leaf?

(c) What are the functions of xylem and phloem in leaf?

(d) List one structural and one functional difference between upper and lower epidermis.

187) 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?

188) 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?

Data Based Questions 4 x 1 = 4

189) More than a million Americans die of cardiac diseases each year. One of the major causes is high cholesterol levels in the blood. The National Cholesterol Education Program suggests that total blood cholesterol level should be:

Blood Cholesterol Level Chart			
	Desirable	**Borderline (high)**	**High Risk**
Total Cholesterol	< 200	200-240	> 240
Triglycerides	< 150	150-500	> 500
Low Density Cholesterol	< 130	130-160	> 160
High Density Cholesterol	> 50	50-35	< 35

Given below are blood report of two persons

	Total Cholesterol	**Triglycerides**
Patient A	356	180
Patient B	180	100

Answer the following questions based on the above information

(a) Which of the organ can be affected in a patient A? Can you infer the same risk factor for patient B?

(b) What information is left out for the blank columns?

(c) A person with high risk category have to be suggested a suitable diet? Which of the following are correct guidelines for the patient

(i) High sugar and starch

(ii) Low salt and fats

(iii) High proteins

(iv) Low sugar and proteins

(d) Apart from following a prescribed diet, some other changes should be brought in the lifestyle to avoid aggravation of symptoms in a patient who is already suffering from high blood cholesterol

A. Yoga and exercise

B. Quitting smoking and alcohol

C. Walking and doing small chores on your own

D. Enjoying loud music

Which of the following is the correct option

(i) A,C (ii) B,C,D (iii) A,B,C (iv) A, D

190)

Normal Hemoglobin Count Ranges Widely Accepted by Physicians	
Birth	13.5 to 24.0 g/dl (mean 16.5 g/dl)
< 1 mth:	10.0 to 20.0 g/dl (mean 13.9 g/dl)
1 to 2 mths:	10.0 to 18.0 g/dl (mean 11.2 g/dl)
2 to 6 mths:	9.5 to 14.0 g/dl (mean 12.6 g/dl)
0.5 to 2 yrs:	10.5 to 13.5 g/dl (mean 12.0 g/dl)
2 to 6 yrs	11.5 to 13.5 g/dl (mean 12.5 g/dl
6 to 12 yrs	11.5 to 15.5 g/dl (mean 13.5 g/dl)
Females	
Age 12 to 18 yrs:	12.0 to 16.0 g/dl (mean 14.0 g/dl)
Age > 18 yrs:	12.1 to 15.1 g/dl (mean 14.0 g/dl)
Males	
Age 12 to 18 yrs:	13.0 to 16.0 g/dl (mean 14.5 g/dl)
Age > 18 yrs:	13.6 to 17.7 g/dl (mean 15.5 g/dl)

Answer the following questions based on the above information

(a) Infer the disease which can be diagnosed from the given data in a girl studying in high school and has hemoglobin level 8 g/dl.

(b) A student of class 10th likes to eat a diet rich in carbohydrates, junk food has been found anaemic hence he finds it difficult to concentrate on his studies. To help him out of this situations, name any four foods that he must include in his diet.

(c) A person of 18 years has pale skin, feels dizzy after mild exercise and feels very tired. He got his Hb levels tested. His tests may have shown haemoglobin levels _____

(i) > 14 g/dl (ii) < 11 g/dl (iii) > 16 g/dl (iv) < 17 g/dl

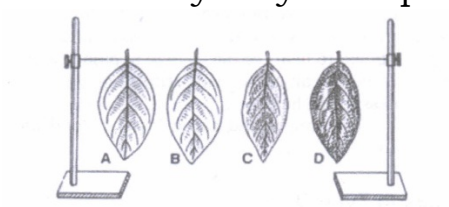
(d) Role of haemoglobin is not to

(i) Attach oxygen entering the lungs

(ii) Serve as respiratory pigment

(iii) Increase residual volume of our lungs

191) To demonstrate the transpiration from the leaf surface, Saily took four banyan leaves. Both the surfaces of the A leaf, lower surface (with stomata) of Bleaf, upper surface (without stomata) of C leaf are vaselined. The Vaseline is not applied on the D leaf. Now, as shown in the figure the leaves are hanged so that they may transpire freely.



Comparison of transpiration. Demonstration by four leave

Leaf number	**Mass at start/g**	**Mass at end/g**
A	1.0	1.0
B	1.2	1.1
C	1.3	0.8
D	1.2	0.9

Answer the following questions based on the above information

(a) Was the Vaseline effective in prevention of water loss?

(b) Which surface allowed more loss of water?

(c) Percentage loss of mass in leaf C is-

(i) 38.5 (ii) 37.5 (iii) 36.5 (iv) 39.5

(d) The maximum loss of mass take place in leaf

(i) A (ii) B (iii) C (iv) D

192)

Year		Number of heart attack per 100000
	Men aged 40-44	**Women aged 40 - 44**
1969-73	125	13
1974-78	135	15
1979-83	116	11
1984-88	86	6
1989-93	68	9
1994-98	48	9

(a) What is the trend in the heart attacks over the period of time?
(b) Give one reason for the cause of heart attack.
(c) If a person is bleeding for long period of time why there is more chance for him to suffer a heart attack?
(i) it puts lot of pressure on heart
(ii) it releases pressure from heart
(iii) it causes lack of oxygen to the heart
(iv) none of these
(d) Hypertension is caused by
(i) constriction of arterioles
(ii) expansion of arterioles
(iii) low level of platelets
(iv) high level of platelets

2 Marks 172 x 2 = 344

193) Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like humans?

194) What processes would you consider essential for maintaining life?

195) What are the differences between autotrophic nutrition and heterotrophic nutrition?

196) Where do plants get each of the raw materials required for photosynthesis?

197) What is the function of digestive enzymes?

198) What are the different ways in which glucose is oxidized to provide energy in various organisms?

199) What are the components of the transport system in highly organised plants?

200) How is food transported in plants?

201) How is the amount of urine produced regulated?

202) What is the role of saliva in the digestion of food?

203) What are the necessary conditions for autotrophic nutrition and what are its byproducts?

204) How are the alveoli designed to maximise the exchange of gases?

205) What would be the consequences of a deficiency of haemoglobin in our bodies?

206) What are the difference between the transport of materials in xylem and phloem?

207) Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.

208) How does aerobic respiration differ from anaerobic respiration?

209) What is the role of acid in our stomach?

210) What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration?

211) How are the lungs designed in human beings to maximise the area for exchange of gases?

212) How is oxygen and carbon dioxide transported in human beings?

213) What are the components of the transport system in highly organised plants?

214) What it is necessary to separate oxygenated and deoxygenated blood in mammals and birds?

215) How the process of digestion will be affected if the bile ducts get blocked?

216) (a)What prevents the entry of food into trachea while swallowing?
(b)Why rate of breathing is faster in aquatic animals as compared to terrestrial animals?

217) What do the following transport?
(a)Xylem
(b)Phloem
(c)Pulmonary vein
(d)Pulmonary artery

218) Name the following:
(i)The process in plants that links light energy with chemical energy
(ii)Organisms that can prepare their own food
(iii)The cell organelle where photosynthesis occurs
(iv)Cells that surround a stomatal pore
(v)Organisms that cannot prepare their own food
(vi)An enzyme secreted from gastric glands in stomach that acts on proteins.

219) "All plants give out oxygen during day and carbon dioxide during night".Do you agree with this statement? Give reason

220) How do the guard cells regulate opening and closing of stomatal pores?

221) Two green plants are kept separately in oxygen free containers, one in the dark and the other in continuous light.Which one will live longer? Give reasons.

222) If a plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring? Justify your answer.

223) Why do fishes die when taken out of water?

224) Differentiate between an autotroph and a heterotroph.

225) Is 'nutrition' a necessity for an organism? Discuss.

226) What would happen if green plants disappear from earth?

227) Leaves of a healthy potted plant were coated with vaseline.Will this plant remain healthy for long?Give reasons for your answer.

228) Match the words of Column (A) with that of Column (B)

Column A	Column B
(a) Phloem	(i) Excretion
(b) Nephron	(ii) translocation of food
(c) Veins	(iii) Clotting of blood
(d) Platelets	(iv) Deoxygenated blood

229) Differentiate between an artery and vein.

230) What are the adaptations of leaf for photosynthesis?

231) Why is small intestine in herbivores longer than in carnivores?

232) What will happen if mucus is not secreted by the gastric glands?

233) What is the significance of the emulsification of fats?

234) What cause movement of food inside the alimentary canal?

235) Why does absorption of digested food occur mainly in the small intestine?

236) Match Group (A) with group (B)

Group A	**Group B**
(a) Autotrophic nutrition	(i) Leech
(b) Heterotrophic nutrition	(iii) Paramecium
(c) Parasitic nutrition	(iii) Deer
(d) Digestion in food vacuoles	(iv) Greeen plant

237) Why is the rate of breathing in aquatic organism much faster than in terrestrial organisms?

238) Why is blood circulation in human heart called double circulation?

239) What is the advantage of having four chambered heart?

240) Mention the major event during photosynthesis.

241) In each of the following situation what happens to the rate of photosynthesis?
(i)Cloudy days
(ii)No rainfall in the area
(iii)Good manuring in the area
(iv)Stomata get blocked due to dust

242) Name the energy currency in the living organisms.When and where is it produced?

243) What is common for Cuscuta, ticks and leeches?

244) Explain the role of mouth in digestion of food.

245) What are the functions of gastric glands present in the wall of the stomach?

246) Match the terms in Column (A) with those in Column (B)

Column (A)	**Column (B)**
(a) Trypsin	(i) Pancreas
(b) Amylase	(ii) Liver
(c) Bile	(iii) Gastric glands
(d) Pepsin	(iv) Saliva

247) Name the correct substrates for the following enzymes
(i)Trypsin (ii)Amylase
(iii)Pepsin (iv)Lipase

248) Why do veins have thin walls as compared to arteries?

249) What will happen if platelets were absent in the blood?

250) Plants have low energy needs as compared to animals.Explain

251) Why and how does water enter continuous into the root xylem?

252) Why is transpiration important for plants?

253) How do leaves of plants help in excretion?

254) How do autotrophs obtain CO_2 and N_2 to make their food?

255) Why is respiration considered an exothermic process?

256) What is meant by 'translocation' with respect to transport in plants?

257) Name the term for transport of food from leaves other parts of the plant.

258) Name the excretory unit of a kidney

259) What is breathing?

260) Name the type of blood vessels which carry blood from organs to the heart.

261) Name the process by which autotrophs prepare their own food

262) What are enzymes?

263) What are the two functions of the kidneys?

264) Name an enzyme secreted by salivary glands as well as pancreas.

265) Which pancreatic enzyme is effective in digesting proteins?

266) What is the site in cells where glucose is converted into 3 carbon molecule of pyruvate?

267) What are life processes?

268) What is the impact of leakage or loss of blood upon the pressure?

269) Name the tissue which transports water and mineral in a plant

270) What is lymph?

271) Which are the most common chemical reaction in a body?

272) Which product are formed during respiration in our muscles when there is less supply of oxygen?

273) What is the full form of ATP?

274) Write one function of each of the following components of the transport system in human beings:
(a) Blood vessels
(b) Blood platelets
(c) Lymph
(d) Heart

275) List two vital functions of the human kidney.Name the procedure used in the working of artificial kidney.

276) Draw the human heart and label the following on it:
(i)Aorta,
(ii)Coronary,
(iii)pulmonary trunk and
(iv)superior vena cava.

277) Point out two differences between an artery and vein.

278) What is the mode of nutrition when organism use simple substances like CO_2 and water to prepare food inside the body?

279) What is nutrition?

280) In what form is food energy stored in plants and animals

281) Name the process by which energy is obtained by living organism

282) What is peristaltic movement

283) In desert plants the stomata remains closed during the day and opens at night. How do these plants photosynthesize?

284) Why is nitrogen essential for plants?

285) Name the intermediate 3-carbon molecule formed from six-carbon molecule of glucose during respiration

286) Why are the rings of cartilage present in air tube-Trachea?

287) Why is more energy released in aerobic respiration than in anaerobic respiration

288) Where is water absorbed in the digestive system?

289) Name the muscles of stomach which regulate the release of food from stomach to small intestine.

290) Name two organisms that break down the food outside the body and then absorb it

291) Name the respiratory pigment in higher animals.

292) Name the blood vessel which carries blood away from the heart for purification

293) Name the tissue which transports soluble products of photosynthesis in a plant

294) Which enzyme, present in saliva breaks down starch

295) What would be the consequence of deficiency of haemoglobin in your body?

296) List three characteristics of lungs which make it an efficient respiratory surface

297) (a) What is the role of HCl in our stomach?
(b) What is emulsification of fats?
(c) Which protein digesting enzyme is present in pancreactic juice?

298) Differentiate between arteries and veins

299) What causes the opening and closing of stomata?

300) Explain digestion in the mouth.

301) Why is respiration an exothermic reaction?

302) When is lactic acid formed in our muscles?

303) What is the range of pH in small intestine and stomach respectively?

304) Name the glands associated with common duct in digestive system. Also name their secretions.

305) Write two important functions of transpiration in plants .

306) Why are the walls of ventricles thicker and more muscular than the walls of atria?

307) Write one feature which is common to each of the following pairs of terms:
(i) glycogen and starch
(ii) chlorophyll and haemoglobin
(iii) gills and lungs
(iv) arteries and veins

308) Explain the process of breathing.

309) What is residual volume?

310) Name the components of xylem and phloem.

311) What is the function of lymph?

312) Name the components of blood

313) Give the events that occur during photosynthesis

314) Explain the digestion in stomach

315) Explain digestion in the small intestine

316) Give the characteristics of any respiratory surface

317) Give the pathway of air in the human respiratory system

318) What are the various types of heterotrophic nutrition? Give examples of each type

319) Name the organs where the following functions in humans are performed
(i) Absorption of food. (ii) Absorption of water

320) Name the respiratory organs of
(i) fish
(ii) mosquito
(iii) earthworm and
(iv) frog
(v) cockroach

321) (a) The composition of the air inside the lungs changes during breathing.
(i) State three differences between inhaled air and the exhaled air.
(ii) Describe three features of the alveoli which assist gaseous exchange.
(b) (i) State what is meant by anaerobic respiration.
(ii) Where does anaerobic respiration occur in human?

322) Bile is made in the liver, stored in the gall bladder and passes into the small intestine. Describe the role of bile in digestion.

323) What process in plants is known as transpiration?

324) Write any 3 differences between aerobic and anaerobic respiration.

325) What is the mode of nutrition in human beings?

326) Why do the walls of the trachea not collapse when there is less air in it?

327) List the three kinds of blood vessels of human circulatory system and write their functions in tabular form.

328) Why do herbivores have longer, small intestine than carnivores?

329) Write correct sequence in four steps about the method for the preparation of temporary mount of a stained leaf peel.

330) What are enzymes? Name anyone enzyme of our digestive system and write its function

331) 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.

332) Name the acid present in the following:
(i) Tomato (ii) Vinegar (iii) Tamarind

333) a - What is this structure called and give its state-open or closed?
b - Where are they present?
c - What controls the opening and closing of it?
d - Draw the opposite figure to this.

334) Three organisms ate food in the form of glucose and the end products after respiration are:
a - ethanol + CO_2
b - CO_2+H_2O
c - Lactic acid + water
Explain how is this possible?

335) Name the following in human system:
(i) Balloon like structures richly supplied with blood capillaries.
(ii) Prevents the back flow of blood in heart.
(iii) squeeze out the water with amino acids and other wastes and separates from the blood.
(iv) Bring impure blood to kidney.
(v) Rythmic contraction and relaxation of walls of digestive system

336) Name the excretory wastes of the following:
(a) Digestive systems
(b) Kidney
(c) Skin
(d) Lungs
(e) Plants stem
(f) Leaves

337) Give the role of the following in plants and animals:
(a) Guard cells
(b) Tracheids and vessels
(c) Lymph
(d) Phloem
(e) Bio-catalyst

338) Name two parasitic plants and animals.

339) In what form is the food energy stored in plants and animals?

340) What are the two main functions of kidney?

341) What is the pH range in mouth, stomach, small intestine and liver?

342) 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.

343) In an experiment, saliva is added to the test tube containing pieces of bread (powdered). What will be the result?

344) Name the movement of food all along the gut.

345) What causes movement of food inside the alimentary canal?

346) A person suffering from liver disease is advised to avoid fatty and highly acidic foods.
Give a reason, why each of the foods mentioned should be avoided by a person suffering from liver disease?

347) What do you mean by emulsification of fat?

348) What is the significance of emulsification of fats?

349) How is the wall of small intestine adapted for performing the function of absorption of food?

350) 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.

351) State the role of pancreas in digestion of food.

352) What happens to extra glucose or carbohydrate in an animal body?

353) Arrange the organs of the human respiratory system in a proper logical sequence
Bronchi, lungs, nose, trachea, pharynx

354) Oxygen mostly is carried by a pigment in our blood whereas carbon dioxide is transported in dissolved form in our blood.
Give two reason that make the above statement correct.

355) (i) Why is it important to prevent oxygenated and deoxygenated blood from mixing in birds and mammals?
(ii) Which animals can tolerate some mixing of the oxygenated and deoxygenated blood stream? On what factor does the body temperature of the animal depend?

356) Why have plants low energy needs?

357) Plants have low energy needs as compared to animals. Explain.

358) What will happen if
(i) Xylem tissue in plants is removed.
(ii) we are Injured and start bleeding.

359) Which mechanism plays an important role in transportation of water in plants?
(i) During daytime
(ii) At night

360) What is the advantage of having four- chambered heart?

361) The left kidney is placed a little higher than the right kidney. Give suitable reason for this statement.

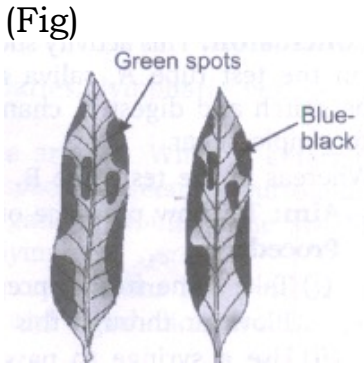
362) Name the substances other than water, that are reabsorbed during urine formation. What are the two parameters that decide the amount of water that is reabsorbed in the kidney?

363) Why is it said that kidneys help in the process of osmoregulation? Explain.

364) Explain in brief two ways by which leaves of a plant help in excretion.

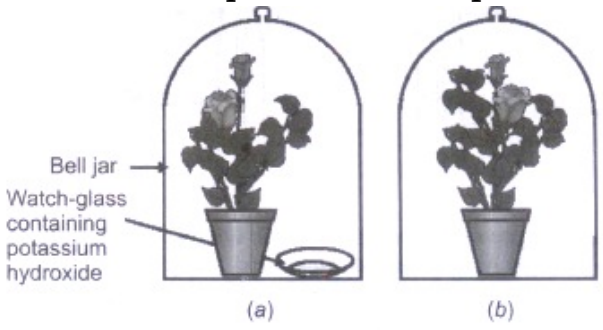
Activity Based Questions 8 x 2 = 16

365) 1. Take a potted plant with variegated leaves – for example, money plant or crotons.
2. Keep the plant in a dark room for three days so that all the starch gets used up.
3. Now keep the plant in sunlight for about six hours.
4. Pluck a leaf from the plant. Mark the green areas in it and trace them on a sheet of paper.
5. Dip the leaf in boiling water for a few minutes.
6. After this, immerse it in a beaker containing alcohol.
7. Carefully place the above beaker in a water-bath and heat till the alcohol begins to boil.
8. What happens to the colour of the leaf? What is the colour of the solution?
9. Now dip the leaf in a dilute solution of iodine for a few minutes.
10.Take out the leaf and rinse off the iodine solution.
11.Observe the colour of the leaf and compare this with the tracing of the leaf done in the beginning (Fig)



12.What can you conclude about the presence of starch in various areas of the leaf?

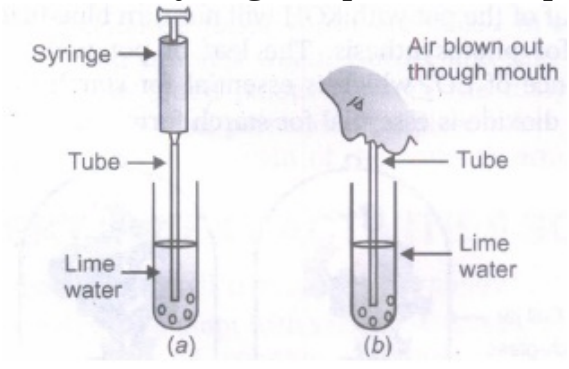
366) 1. Take two healthy potted plants which are nearly the same size.
2. Keep them in a dark room for three days.
3. Now place each plant on separate glass plates. Place a watch-glass containing potassium hydroxide by the side of one of the plants. The potassium hydroxide is used to absorb carbon dioxide.
4. Cover both plants with separate bell-jars as shown in **Fig.**



5. Use vaseline to seal the bottom of the jars to the glass plates so that the set-up is air-tight.
6. Keep the plants in sunlight for about two hours.
7 Pluck a leaf from each plant and check for the presence of starch as in the above activity.
8. Do both the leaves show the presence of the same amount of starch?
9. What can you conclude from this activity?

367) 1. Take 1 mL starch solution (1%) in two test tubes (A and B).
2. Add 1 mL saliva to test tube A and leave both test tubes undisturbed for 20-30 minutes.
3. Now add a few drops of dilute iodine solution to the test tubes.
4. In which test tube do you observe a colour change?
5. What does this indicate about the presence or absence of starch in the two test tubes?
7. What does this tell us about the action of saliva on starch?

368) 1. Take some freshly prepared lime water in a test tube.
2. Blow air through this lime water.
3. Note how long it takes for the lime water to turn milky.
4. Use a syringe or pichkari to pass air through some fresh lime water taken in another test tube (Fig)



5. Note how long it takes for this lime water to turn milky.
6. What does this tell us about the amount of carbon dioxide in the air that we breathe out?

369) 1. Take some fruit juice or sugar solution and add some yeast to this. Take this mixture in a test tube fitted with a one-holed cork.
2. Fit the cork with a bent glass tube. Dip the free end of the glass tube into a test tube containing freshly prepared lime water.
3. What change is observed in the lime water and how long does it take for this change to occur?
4. What does this tell us about the products of fermentation?

370) 1. Observe fish in an aquarium. They open and close their mouths and the gill-slits (or the operculum which covers the gill-slits) behind their eyes also open and close. Are the timings of the opening and closing of the mouth and gill-slits coordinated in some manner?
2. Count the number of times the fish opens and closes its mouth in a minute.
3. Compare this to the number of times you breathe in and out in a minute.

371) 1. Visit a health centre in your locality and find out what is the normal range of haemoglobin content in human beings.
2. Is it the same for children and adults?
3. Is there any difference in the haemoglobin levels for men and women?
4. Visit a veterinary clinic in your locality. Find out what is the normal range of haemoglobin content in an animal like the buffalo or cow.
5. Is this content different in calves, male and female animals?
6. Compare the difference seen in male and female human beings and animals.
7. How would the difference, if any, be explained?

372) 1. Take two small pots of approximately the same size and having the same amount of soil. One should have a plant in it. Place a stick of the same height as the plant in the other pot.
2. Cover the soil in both pots with a plastic sheet so that moisture cannot escape by evaporation.
3. Cover both sets, one with the plant and the other with the stick, with plastic sheets and place in bright sunlight for half an hour.
4. Do you observe any difference in the two cases?

3 Marks 65 x 3 = 195

373) What criteria do we use to decide whether something is alive?

374) What are outside raw materials used for by an organism?

375) How is the small intestine designed to absorb digested food?

376) How are fats digested in our bodies? Where does this process take place?

377) Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

378) How is food transported in plants?

379) What are the differences between the transport of materials in xylem and phloem?

380) How are oxygen and carbon dioxide transported in human beings? How are lungs designed to maximize the area for exchange of gases?

381) Write the functions of the following in the digestive process:
(i)Bile
(ii)Bicarbonate secreted by the duodenum
(iii)Pancreatic amylase

382) 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.

383) What is 'translocation'? Why is it essential for plants?Where in plants are the following synthesized:
(i)Sugar (ii)Hormones

384) Name the constituents of blood.Why white blood corpuscles are called 'soldiers of the body'?

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

386) Describe the digestive system.

387) In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion

388) (i) Write the balanced chemical equation for the process of photosynthesis.
(ii) When do the desert plants take up carbon dioxide and perform photosynthesis?

389) State the role of the following in human digestive system:
(i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi

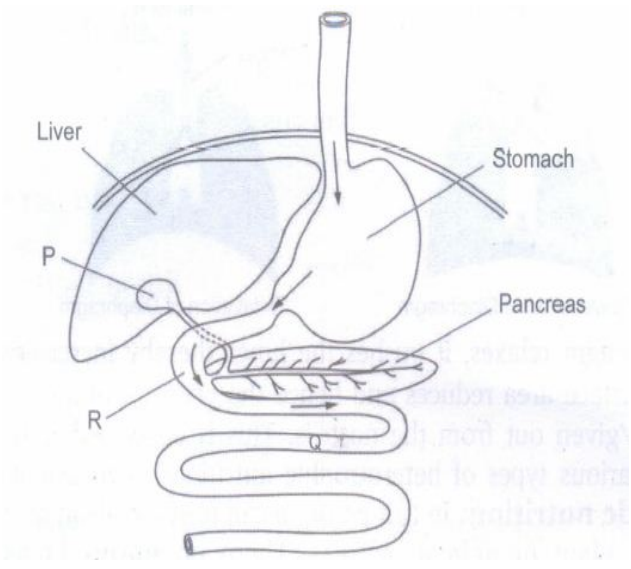
390) (a) Name the site of exchange of material between the blood and surrounding cells
(b) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide in human body

391) How does nutrition occur in amoeba?

392) Draw a diagram of open and closed stomata

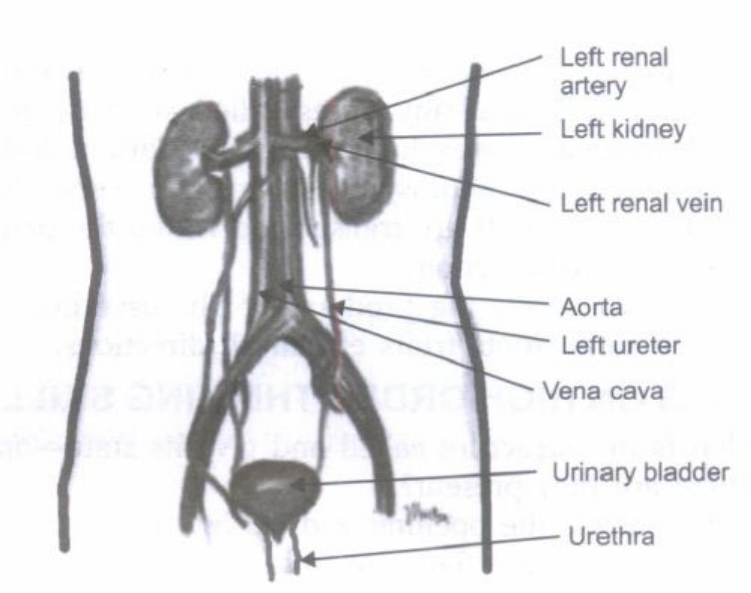
393) Draw a labelled diagram of transverse section of a leaf.

394) Explain breathing mechanism

395) 

Label p, Q and R in the alimentary canal above and state the function of each. Explain what happens to fat at R.

396) Name the excretory organs of the human excretory system. Show all the organs with a labelled diagram.



397) Before testing leaves for the presence of starch, the green chlorophyll must be removed. The chlorophyll can be removed by boiling the leaf in ethanol.
(i) Describe how ethanol can be boiled safely.
(ii) Suggest why the chlorophyll needs to be removed

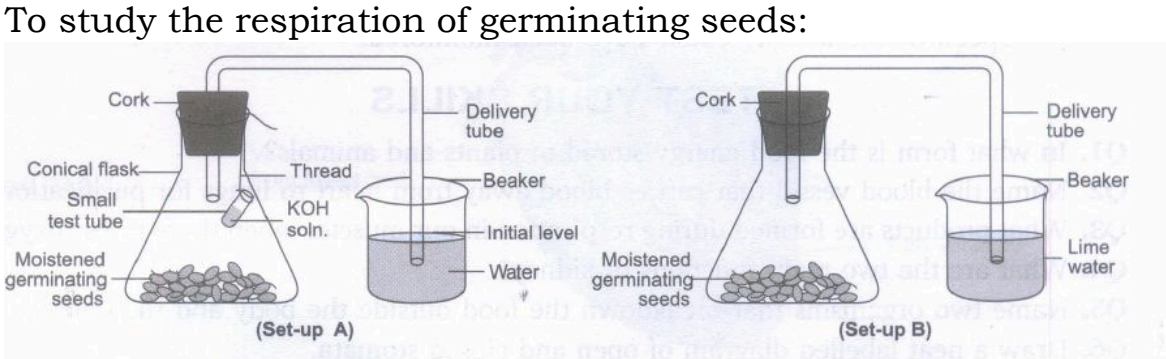
398) A student wanted to find out if starch was present in both leaves grown in direct sunlight and leaves grown in the shade. Plan an investigation to determine if starch is present in both types of leaf.

399) Name the process carried out by any person that releases energy. State the balanced chemical equation that describes this process.

400) For studying the stomata pore a student want to prepare a slide and focus it under a microscope.
(a) Name any two leaves one should use for this experiment.
(b) Describe how a peel is plucked from the leaf
(c) Name the stain used for the mount.
(d) How can you avoid the air bubbles and drying of the mount?

401) If you have to prove that carbon dioxide is present in air how can you show it? Plan an investigation for the set up in the lab.

402) To study the respiration of germinating seeds:



(a) Name two chemicals that are kept in the test tube to absorb carbon dioxide gas released in the concial flask.
(b) Explain why the level of water in the bent tube rises in the set up A
(c) State the observation in set up B

403) A student wants to study the rate of respiration in yeast cells at different temperatures. Predict the result and list the materials required for the set up.

404) A student records the observation to study the rate of respiration in three different,people. Study the data collected and answer the questions given below:

Activity	Person1 {breathing in one minute}	2 Person	Person3
1. Walking 2.Running 3.Climbing 20 stairs by running	20times 35 times 40 times	24 times 37 times 30 times	26 times 34 times 45 times

(a) Which variable is kept constant?
(b) Which variable is changed?
(c) Which reading is anomalous?
(d) Suggest one improvement in this experiment

405) What is photosynthesis? Explain its mechanism.

406) State the events occurring during the process of photosynthesis. ls it essential that these steps take place one after the other immediately?

407) List the events in proper sequence that take place during the process of photosynthesis.

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

409) Explain the role of mouth in the digestion of food.

410) (i) With the help of an activity, explain the action of saliva on the food we eat.
(ii) Why is bile juice important in the process of digestion?

411) People sometimes complain about acidity in the stomach.
(i) What is the reason for the complaint?
(ii) Is the production of this substance necessary?
(iii) How does the inner lining of the stomach prevents itself from the harmful effects of this substance?

412) Out of a goat and a tiger, which one will have a longer small intestine? Justify your answer.

413) Why is small intestine in herbivores longer than in carnivores?

414) (i) Write the function of the following in the human alimentary canal.
(a) Saliva
(b) HCI in stomach
(c) Bile juice
(d) VIIII
(ii) Write one function of each of the following enzymes.
(a) Pepsin
(b) Lipase

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

416) Bile Juice does not have any digestive enzyme, but still plays a significant role in the process of digestion. Justify the statement.

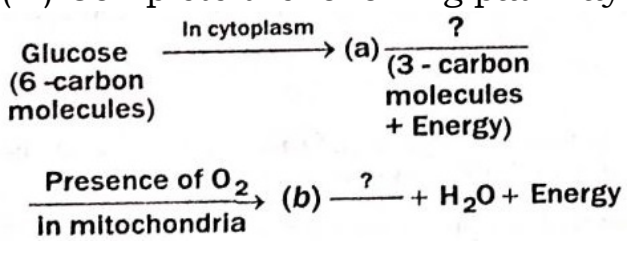
417) (i) Write the reaction that represents the chemical changes which take place during photosynthesis.
(ii) State the function of chlorophyll.

418) 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.

419) Write two different ways in which glucose is oxidised to provide energy in human body. Write the products formed in each case.

420) (i) A product is formed in the cytoplasm of our muscles due to the breakdown of glucose when there is a lack of oxygen. Name the product and also mention the effect of build up of this product.
(ii) Differentiate between fermentation in yeast and aerobic respiration on the basis of end products formed.

421) (i) In the process of respiration, state the function of alveoli.
(ii) Rate of breathing in aquatic organisms is much faster than that in terrestrial organisms. Give reasons.
(iii) Complete the following pathway showing the breakdown of glucose



422) (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.

423) Write one important function for each of the following in the human respiratory system
(i) Rings of cartilage
(ii) Alveoli
(iii) Haemoglobin
(iv) Lining of mucus

424) Identify the parts correctly matched with description given below.
(i) Small pores present in woody plants for gaseous exchange.
(ii) Respiratory surface in humans.
(iii) Respiratory surface of earthworms.
(iv) Primary organ of respiration.
(v) Cartilaginous flap.
(vi) Contraction and relaxation of these changes the thoracic volume.

425) Explain the process of transport of oxygenated and deoxygenated blood in a human body.

426) Write three types of blood vessels. Give one important feature of each.

427) What is double circulation?

428) (i) Why is blood circulation in human heart called double circulation?
(ii) Why is the separation of the right side and the left side of the heart useful? How does it help birds and mammals?

429) In birds and mammals, the left and right side of the heart are separated. Give reasons.

430) What is the other name of tissue fluid? Write its two functions.

431) Given below is a table representing the characteristics of two fluids involved in the transportation of substances in the human body.

Fluid A	**Fluid B**
Colourless	Coloured
Contains less oxygen	Contains more oxygen
Contains less protein	Contains more protein

(i) Identify fluid A and fluid B.
(ii) With the help of a flowchart, describe the movement of fluid A from the intercellular spaces to the main circulatory system.
(iii) What role does fluid A play in the digestion of food in humans?

432) Two major forces help in the transport of water in a plant. Force A is the driving force In the movement of water during the day, whereas force B helps the movement of water in a plant during the night or during the day when humidity is very high.
(i) Identify force A and force B.
(ii) Describe how each of these forces helps in the movement of water in plant?

433) The leaves of a plant were covered with alumninium foil, how would it affect the physiology of the plant?

434) Leaves of a healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons for your answer.

435) Define the term transpiration. Design an experiment to demonstrate this process.

436) Draw a diagram of human excretory system and label the followlng.
(i) Urinary bladder
(ii) Left kidney
(iii) Left ureter

437) We water the soil, but it reaches the topmost leaves of the plants. Explain in brief the process involved.

Case Study Questions 26 x 4 = 104

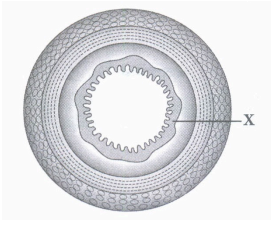
438) The small intestine is the longest part of the alimentary canal. It is a narrow tube of about 6 metres which lies coiled in the abdomen. The length of small intestine varies in different animals depending on the type of food they eat.

(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

439) 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**

(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

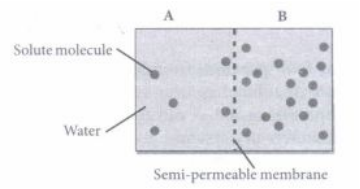
(a) cell membrane is impermeable

(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?



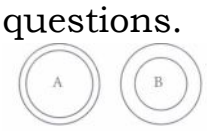
(a) Movement of solvent molecules will take place from chamber A to B.

(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

440) Given are the sections of two pipes, A and B. If you need to represent blood vessels with these, which of the pipes would correspond to the artery and which one to a vein. Identify it and answer the following questions.



(i) B is best defined as the vessel which

(a) always supply oxygenated blood to the different organs

(b) always carry blood away from the heart to different organs

(c) always break up into capillaries that reunite to form a vein

(d) always carry blood from one visceral organ to another visceral organ.

(ii) In A, valves are present to check backward flow of blood flowing at

(a) atmospheric pressure **(c) low pressure**

(b) high pressure **(d) all of these**

(iii) Which of the following statements is correct regarding A?

(a) Carries blood from an organ towards the heart

(b) Always carry oxygenated blood with single exception

(c) Carries blood from heart towards the organ

(d) All of these

(iv) Which of the following statements is incorrect?

(a) A has typically larger lumen than B.

(b) Walls of B are elastic enabling them to stretch and shrink during changes in blood pressure

(c) Flow of blood is slower in A than in B

(d) None of these

(v) Blood pressure in the pulmonary artery is

(a) more than that of pulmonary vein

(b) less than that in the vena cava

(c) same as that in aorta

(d) less than pulmonary vein.

441) Our body needs to remove the wastes that build up from cell activities and from digestion. It 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) CO_2

(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)**

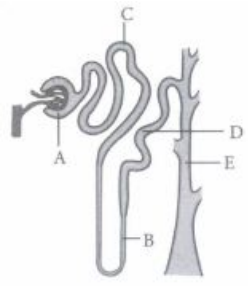
(iii) A person who is not taking food or beverages will have _____ in urine.

(a) little glucose	**(b) less urea**	**(c) excess urea**	**(d) little fat**

(iv) Glomerular filtrate is first collected by

(a) distal convoluted tubule	**(b) proximal convoluted 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, (lII)-C, (IV)-D **(b) (I)-A, (lI)-B, (lII)-C, (lV)-D**

(c) (I)-B, (II)-A, (lII)-C, (IV)-E **(d) (I)-E, (lI)-B, (lII)-D, (lV)-A**

442) All living cells need nutrients,O_2 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 corpusles in 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 oflymph?

(a) It is similar to the plasma of blood, but is colourless and contains less proteins.

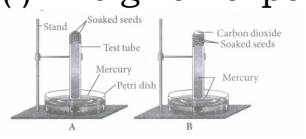
(b) It is similar to the WBCs of blood, but is colourless and contain more proteins.

(c) It is similar to the RBCs of blood and red in colour.

(d) It contains more fats

443) In fermentation, the incomplete oxidation of glucose achieved under anaerobic conditions by sets of reactions where pyruvic acid is converted to CO_2 and ethanol. The enzymes, pyruvic acid decarboxylase and alcohol dehydrogenase catalyse these reactions.

(i) The given experimental set-up demonstrates



(a) photosynthesis **(b) aerobic respiration**
(c) anaerobic respiration **(d) ascent of sap**

(ii) Fermentation is represented by the equation

(a) $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 686kcal$

(b) $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + 59kcal$

(c) $6CO_2 + 12H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} > C_6H_{12}O_6 + 6H_2O + 6O_2$

(d) $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$.

(iii) A test tube containing molasses solution and yeast is kept in a warm place overnight. The gas collected from this mixture

(a) extinguishes the flame **(b) bursts into flame when ignited**
(c) turns lime water milky **(d) both (a) and (c)**

(iv) Ethyl alcohol fermentation occurs in

(a) Lactobacillus **(b) muscles of humans** **(c) Yeast** **(d) all of these**

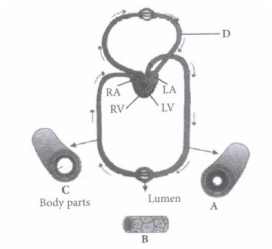
(v) Though vertebrates are aerobes, but their (i) show anaerobic respiration during (ii) During this (iii) of skeletal muscle fibres is broken down-to release lactic acid and energy. Lactic acid, if accumulates causes muscle fatigue.

Fill up the blanks in the above paragraph and select the correct option

	(i)	(ii)	(iii)
(a)	**skeletal muscles**	**heavy exercise**	**glucose**
(d)	**skeletal muscles**	**mild exercise**	**glycogen**
(c)	**skeletal muscles**	**heavy exercise**	**glycogen**
(d)	**cardiac muscles**	**heavy exercise**	**glycogen**

444) Double circulation is a type of circulating system in which the blood passes through the heart twice before completing a full circuit of the body. Blood is pumped from the heart to the lungs and returns to the heart before being distributed to other organs and tissues of the body.

(i) The figure shows blood circulation in humans with labels A to D. Select the option which gives correct identification of label and functions of the part.



(a) B - Capillary- Thin without muscle layer and wall two cell layers thick

(b) C - Vein-Thin walled and blood flows in jerks/spurts

(c) D - Pulmonary vein-Takes oxygenated blood to heart, PO_2 = 95 mm Hg

(d) A - Artery-Thick walled and blood flows evenly

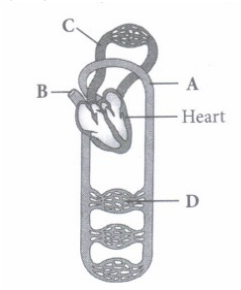
(ii) Incomplete double circulation is seen in

(a) mammals (b) pisces (c) aves (d) amphibians.

(iii) Which of the following animals shows double circulatory pathway?

(a) Snake (b) Frog (c) Eel (d) Whale

(iv) The given figure is of circulatory system. Identify the labelled parts (A-D) from the list (I-VII).



(I) Pulmonary circulation (II) Systemic circulation (III) Superior vena cava (IV) Inferior vena cava

(V) Aorta (VI) Veins and venules (VII)Arterioles and capillaries

(a) A-(V), B-(lII), C-(I), D-(VII)

(b) A-(VII), B-(IV), C-(I), D-(VI)

(c) A-(V), B-(III), C-(lI), D-(VII)

(d) A-(VII), B-(V), C- (I), D-(VI)

(v) Select the option which properly represents pulmonary circulation in humans.

(a) Left auricle $\xrightarrow{\frac{\text{Deoxygenated}}{\text{blood}}}$ Lungs $\xrightarrow{\frac{\text{Oxygenated}}{\text{blood}}}$ Right ventricle

(b) Left auricle $\xrightarrow{\frac{\text{Oxygenated}}{\text{blood}}}$ Lungs $\xrightarrow{\frac{\text{Deoxygenated}}{\text{blood}}}$ Right ventricle

(c) Right ventricle $\xrightarrow{\frac{\text{Deoxygenated}}{\text{blood}}}$ Lungs $\xrightarrow{\frac{\text{Oxygenated}}{\text{blood}}}$ Left auricle

(d) Right ventricle $\frac{\text{Oxygenated}}{\text{blood}}$ $>$ Lungs $\frac{\text{Deoxygenated}}{\text{blood}}$ $\gg$ Left auricle

445) Transpiration is the evaporative loss of water by plants. It occurs mainly through the stoma in the leaves. Besides the loss of water vapour in transpiration, exchange of oxygen and carbon dioxide in the leaf also occurs through pores called stomata. Normally stomata remain open in the day time and close during the night

(i) Which of the following will not directly affect transpiration?

(a) Temperature **(b) Light**

(c) Wind speed **(d) Chlorophyll content of leaves**

(ii) Water vapour comes out from the plant leaf through the stomatal opening. Through the same stomatal opening, carbon dioxide diffuses into the plant during photosynthesis. Reason out the above statements . using one of following options.

(a) The above processes happen only during night time.

(b) One process occurs during day time and the other at night.

(c) Both processes cannot happen Simultaneously.

(d) Both processes can happen together at day time.

(iii) Which of the following statements is not true for stomatal apparatus?

(a) Guard cells invariably possess chloroplasts and mitochondria.

(b) Guard cells are always surrounded by subsidiary cells.

(c) Stomata are involved in gaseous exchange.

(d) Inner wall of guard cells are thick.

(iv) Which of the following is not a purpose of transpiration?

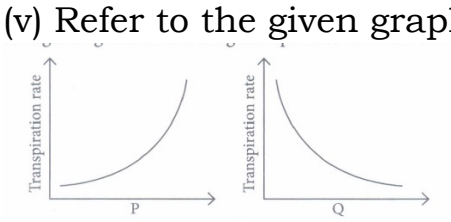
(a) Helps in absorption and transport in plants

(b) Prevents loss of water

(c) Maintains shape and structure of plants by keeping the cells turgid

(d) Supplies water for photosynthesis

(v) Refer to the given graphs regarding factors affecting transpiration rate and select the correct option.



(a) P-Atmospheric temperature; Q-Atmospheric pressure

(b) P-Relative humidity; Q-Atmospheric temperature

(c) P-Air movement; Q-Light

(d) P-Atmospheric pressure; Q-Relative humidity

446) We need energy to perform various activities. This energy is derived from the catabolism of various components of food, e.g., proteins, carbohydrates, fats, etc. Oxygen is required for catabolic processes and carbon dioxide is released in the process. So, the body requires a continuous exchange of gases, oxygen from the atmosphere is taken inside and carbon dioxide produced is given out. In human beings, respiratory pigment called haemoglobin present in RBCs has very high affinity for oxygen. In tissues, exchange of gases occurs between oxygenated blood and tissue cells.

(i) People living at sea level have around 5 million RBCs per cubic millimetre of their blood whereas those living at an altitude of 5400 metres have around 8 million. This is because at high altitude

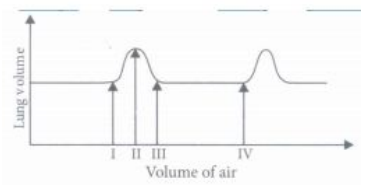
(a) people eat more nutritive food, therefore more RBCs are formed

(b) people get pollution-free air to breathe and more oxygen is available

(c) atmospheric 02 levelisless and hence more RBCs are needed to absorb the required amount of 02 to survive

(d) there is more UV radiation which enhances RBC production.

(ii) The given graph illustrates the changes in lung volume during the process of breathing .



The change from II to III indicates the

(a) movement of diaphragm away from the lungs

(b) expansion of the thoracic cavity

(c) movement of air out of the lungs

(d) expansion of ribs.

(iii) Which one of the following is a possibility for most of us in regard to breathing, by making a conscious effort?

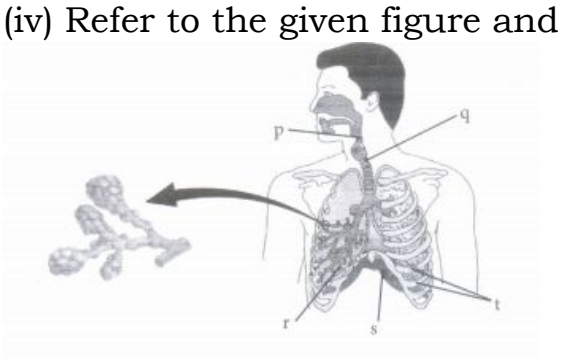
(a) One can breathe out air totally without oxygen.

(b) One can breathe out air through Eustachian tube by closing both nose and mouth.

(c) One can consciously breathe in and breathe out by moving the diaphragm alone, without moving the ribs at all.

(d) The lungs can be made fully empty by forcefully breathing out all air from them.

(iv) Refer to the given figure and answer the following question .



Which of these parts

(I) are the actual sites of respiratory gas exchange?

(II) is the common passage for air and food?

(III) is provided with incomplete cartilaginous rings?

(IV) relaxes and gets back to its original shape during expiration?

(v) moves upwards and outwards during inspiration?

(a) (I) - s, (II) - p, (III) - q, (IV) - r, (V) - t

(b) (I) - r, (II) - p, (III) - q, (IV) - s, (V) - t

(c) (I) - t, (II) - q, (III) - r, (IV) - s, (V) - P

(d) (I) - p, (II) - q, (III) - r, (IV) - s, (V) - t

(v) Which of the following sequences is correct to initiate inspiration?

(I) The contraction of intercostal muscles raises the ribs and sternum

(II) Volume of thorax increases

(III) Intrathoracic pressure of the lungs decreases

(IV) Diaphragm contraction

(v) Air rushes into lungs

(a) (I), (II), (IV), (V), (III)

(b) (I), (II), (III), (IV), (V)

(c) (I), (IV), (II), (III), (V)

(d) (V), (I), (II), (III), (IV)

447) 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) ATP **(b) NADPH** **(c) Carbohydrate** **(d) Both (a) 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 $^{14}CO_2$. 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)**

448) Digestion is a catabolic process in which complex and large components of food are broken down into their respective simpler and smaller forms with the help of various hydrolytic enzymes. In human, the process of intake of essential nutrients in the form of food takes place through an entire system known as digestive system. The digestive system in human includes alimentary canal and its associated digestive glands.

(i) Identify the cells whose secretion protects the lining of gastro-intestinal tract from various enzymes.

(a) Duodenal cells **(b) Chief cells** **(c) Goblet cells** **(d) Oxyntic cells**

(ii) Digestion of proteins is incomplete in the absence of enterokinase, because

(a) trypsinogen is not converted into trypsin

(b) pepsinogen is not converted into pepsin

(c) prorennin is not converted into rennin

(d) chymotrypsinogen is not converted into chymotrypsin

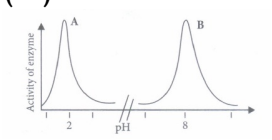
(iii) Match the column I with column II and column III. Choose the correct option.

Column I (Substrate)	**Column II (Enzyme)**	**Column III (Product)**
1. Lactose	A. Lipase	I. Galactose
2. Fatty acid	B. Trypsin	II. Maltose
3. Starch	C. Lactase	III. Glycerol
4. Proteins	D. Amylase	IV. Dipeptides

(a) 1- A-I; 2-C-II; 3-B-III; 4-D-IV **(b) I-D-I; 2-A-II; 3-B-III; 4-C-IV**

(c) l-C-I; 2-A-III; 3-D-II; 4-B-IV **(d) l-C-I; 2-A-II; 3-D-III; 4-B-IV**

(iv) A and B in the given graph are the action spectra of the two enzymes. The two enzymes are



(a) A: amylase **B: trypsin**

(b) A: pepsin **B: trypsin**

(c) A: chymotrypsin **B: rennin**

(d) A: lactate dehydrogenase **B: amylase.**

(v) If the inner surface of the ileum in the human small intestine was smooth, rather than being folded and subdivided into villi, which of the following statements would be true?

(a) The rate of absorption of digested food molecules would be higher, because the digested food would pass more easily through the digestive tract.

(b) Digestion would not be as effective, because there would be fewer cells secreting trypsin (a proteindigesting enzyme).

(c) Humans would have needed to evolve a much longer small intestine to absorb sufficient nutrients from their food.

(d) Humans would not be able to survive, because the digestive tract would be more susceptible to damage.

449) 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) CO_2 + ATP + H_2O

450) Heterotrophic nutrition is a mode of nutrition in which organisms obtain readymade organic food from outside sources. The organisms that depend upon outside sources for obtaining organic nutrients are called heterotrophs. Heterotrophic nutrition is of three types: saprophytic, parasitic and holozoic nutrition.

(i) In which of the following groups of organisms food material is broken outside the body and absorbed?

(a) Mushroom, green plants, Amoeba
(b) Yeast, mushroom, bread mould
(c) Paramecium, Amoeba, Cuscuta
(d) Cuscuta, lice, tapeworm

(ii) Which of the following is a parasite?

(a) Yeast (b) Taenia (c) Amoeba (d) Earthworm

(iii) Which of the following is an example of saprotroph?

(a) Grass (b) Mushroom (c) Amoeba (d) Paramecium

(iv) Heterotrophic nutrition involves

(a) production of simple sugar from inorganic compounds
(b) utilisation of chemical energy to prepare food
(c) utilisation of energy obtained by plants
(d) all of these. (v) In Paramecium, food enters the body through

(a) mouth (b) pseudopodia (c) cilia (d) cytostome

451) The small intestine is a tubular structure within the abdominal cavity that carries the food in continuation with the stomach up to the colon from where the large intestine carries it to the rectum and out of the body. The main function of this organ is to aid in digestion. All nutrients are usually absorbed into blood across the mucosa of the small intestine. In addition, the small intestine absorbs water and electrolytes, thus playing critical role in maintenance of body water and acid-base balance.

(i) Which of the following is incorrect regarding intestinal villi?

(a) They possess microvilli.

(b) They increase the surface area.

(c) They are supplied with capillaries and the lacteal vessels.

(d) They only participate in digestion of fats

(ii) Which enzymes are likely to act on the baked potatoes eaten by a man, starting from the mouth as they move down the alimentary canal?

(a) Pancreatic amylase → Salivary amylase → Lipases

(b) Disaccharidase like maltase → Lipases → Nucleases

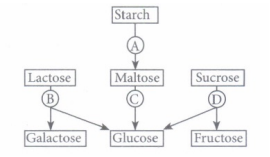
(c) Salivary amylase → Pancreatic amylase → Disaccharidases

(d) Salivary maltase → Carboxypeptidase → Trypsinogen

(iii) After surgical removal of an infected gall bladder, a person must be especially careful to restrict dietary intake of

(a) starch (b) protein (c) sugar (d) fat.

(iv) The given flow chart shows the fate of carbohydrates during digestion in the human alimentary canal. Identify the enzymes acting at stages indicated as A, B, C and D and select the correct option.



(a) A - Amylase, B - Maltase, C - Lactase, D - Invertase

(b) A - Amylase, B - Maltase, C - Invertase, D - Lactase

(c) A - Amylase, B - Invertase, C - Maltase, D - Lactase

(d) A - Amylase, B - Lactase, C - Maltase, D - Invertase

(v) The given diagram represents a section of small intestinal mucosa. Identify A, Band C.

(a) A-Villi, B-Lacteal, C-Capillaries

(b) A-Lacteal, B-Villi, C-Capillaries

(c) A-Villi, B-Lacteal, C-Crypts

(d) A-Crypts, B-Lacteal, C-Capillaries

452) The food which is prepared by the process of photosynthesis in the leaves of a plant has to be transported to other parts like stem, roots, branches, etc. Therefore this food is transported to other parts of the plant through phloem.

(i) A few drops of sap were collected by cutting across a plant stem by a suitable method. The sap was tested chemically. Which one of the following test results indicates that it is phloem sap?

(a) Acidic **(b) Alkaline**

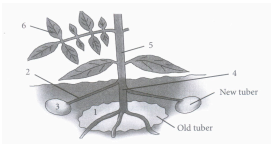
(c) Low refractive index **(d) Absence of sugar**

(ii) What is the direction of movement of sugars in phloem?

(a) Bi-directional **(b) Non-directional**

(c) Upward **(d) Downward**

(iii) The given diagram shows a potato plant forming new tubers. Which route would be taken by most of the food at this time?



(a) $1 \rightarrow 4 \rightarrow 2 \rightarrow 3$ (b) $6 \rightarrow 5 \rightarrow 2 \rightarrow 3$

(c) $1 \rightarrow 4 \rightarrow 5 \rightarrow 6$ (d) $6 \rightarrow 5 \rightarrow 4 \rightarrow 1$

(iv) A girdled plant (upto bast) may survive for some time but it will eventually die, because

(a) water will not move downwards

(b) water will not move upwards

(c) sugars and other organic materials will not move downwards

(d) sugars and other organic materials will not move upwards

(v) Phloem sap is mainly made of

(a) water and sucrose **(b) water and minerals**

(c) oligosaccharides and hormones **(d) sucrose only**

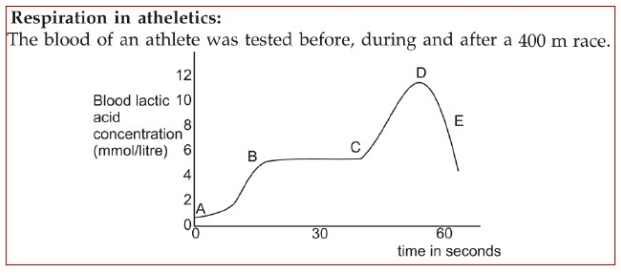
453) All living cells require energy for various activities. This energy is available by the breakdown of simple carbohydrates either using oxygen or without using oxygen.

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

(a) Breathing (b) Tissue respiration

(c) Organ respiration (d) Digestion of food

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

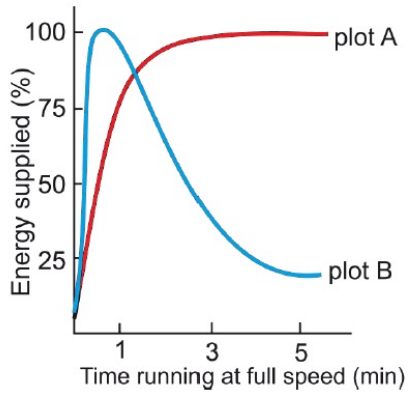


Lactic acid production has occurred in the athlete while running in the 400 m race. Which of the following processes explains this event?

(a) Aerobic respiration (b) Anaerobic respiration

(c) Fermentation (d) Breathing

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



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

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

(iv) The characteristic processes observed in anaerobic respiration are

i) presence of oxygen

ii) release of carbon dioxide

iii) release of energy

iv) release of lactic acid

(a) i) ,ii) only (b) i), ii), iii) only

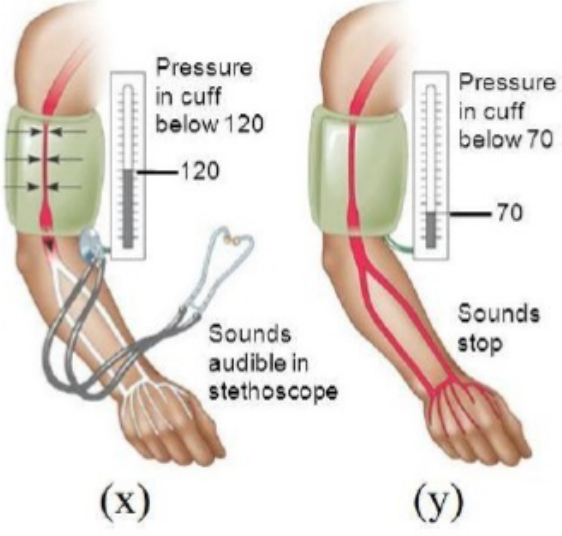
(c) ii), iii), iv) only (d) iv) only

454) The force exerted by the blood against the wall of a vessel is called blood pressure. This pressure is much greater in arteries than in veins. The pressure of blood inside the artery during ventricular systole (contraction) is called systolic pressure and pressure in the artery during ventricular diastole (relaxation) is called diastolic pressure.

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

		Systolic blood pressure	Diastolic blood pressure
(a)	Average range	90-120mm of Hg	60-80mm of Hg
(b)	Reading of blood pressure	High	Low
(c)	Ventricles of heart	Contract	Relaxed
(d)	Blood pressure in arteries	Minimum	Maxmium

(ii) Choose the correct combination to depict the given figure:



(a) x. Systolic pressure, y. Systolic pressure
(b) x. Systolic pressure, y. Diastolic pressure
(c) x. Diastolic pressure, y. Systolic pressure
(d) x. Diastolic pressure, y. Diastolic pressure

(iii) The characteristics observed in hypertension are:

1. Constriction of arterioles
2. Results in rupture of an artery
3. Causes internal bleeding
4. Increased blood flow

Choose the correct option based on the statements.
(a) 1 and 2 (b) 1, 2 and 3 (c) Only 4 (d) 2, 3 and 4

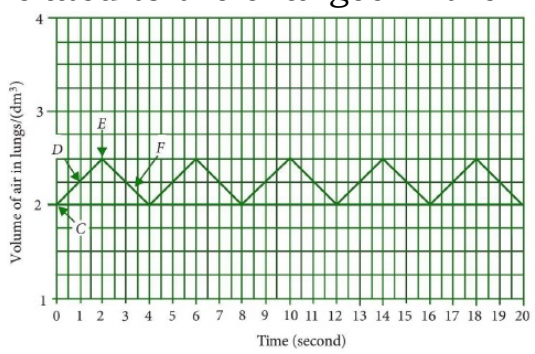
(iv) A person travelling through a public transport suddenly fainted. Upon check-up by a health care provider, it was found that his blood pressure was 152-95. Name the medical condition that the person is going through.

(a) Low blood pressure (b) High blood pressure
(c) Low sugar level (d) High sugar level

(v) In the above case, the health care provider used an instrument to check the blood pressure of the patient. Name the instrument used by the health care provider.

(a) Stethoscope (b) Pulse oximetry
(c) Sphygmomanometer (d) Otoscope

455) 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?

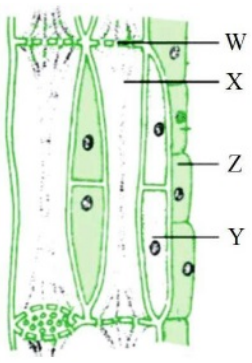
(a) Nostrils → larynx → pharynx → trachea → lungs

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

(c) Larynx → nostrils → pharynx → lungs

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

456) The food which is prepared by the process of photosynthesis in the leaves of a plant has to be transported to other parts like stem, roots, branches etc. Therefore this food is transported to other parts of the plant through a kind of tubes called phloem. The transport of food from leaves to other parts of a plant is called translocation. The food made by the leaves is in the form of simple sugar. Phloem is present in all the parts of a plant. Phloem is a long tube made of many living cells joined end to end. The living cells of phloem are called sieve tubes.



(i) Identify the correct pair of labelled parts with the help of this figure.

(a) W – Sieve plate, Y – Companion cell

(b) X – Sieve plate, Z – Companion cell

(c) Y – Sieve tubes, Z – Sieve plate

(d) X – Companion cell, Y – Phloem parenchyma

(ii) Name the labelled part which contains cytoplasm but no nucleus.

(a) Sieve tube (b) Companion cell

(c) Phloem parenchyma (d) Sieve plate

(iii) In which direction phloem translocates the food?

(a) Upward (b) Downward

(c) Backward (d) Either (a) or (b)

(iv) The phloem tissue in plants is responsible for the transport of

(a) amino acids (b) hormones (c) sugar (d) all of these.

(v) Which of the following is not a part of phloem?

(a) Companion cells (b) Tracheids (c) Sieve plate (d) Sieve tube

457) 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.