

### 1. OBJECTIVE QUESTIONS

1. Vocal cords occur in:

- (a) pharynx (b) glottis  
(c) bronchial tube (d) larynx

**Ans :** (d) larynx

2. What is the mode of nutrition in fungi?

- (a) Autotrophic (b) Heterotrophic  
(c) Saprophytic (d) Parasitic

**Ans :** (c) Saprophytic

Fungal organisms feed on dead matter. They release chemicals to break complex organic matter into simple forms and absorb them. This is called saprophytic mode of nutrition.

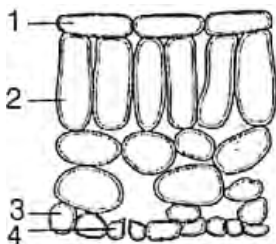
3. How many pairs of salivary glands are found in humans?

- (a) Two (b) Three  
(c) Six (d) Four

**Ans :** (b) Three

There are three pairs of salivary glands present in humans, namely the parotid gland, submandibulars and sublingual glands.

4. The diagram shows the arrangement of cells inside the leaf of a green plant. (No cell contents are shown). Which cells normally contain chloroplasts?



- (a) 1 and 2 (b) 1 and 4  
(c) 2 and 3 (d) 2 and 4

**Ans :** (d) 2 and 4

The palisade mesophyll cell (2) and guard cell (4) contain chloroplasts that absorb sunlight. Most of the chloroplasts are concentrated in the palisade cells to absorb maximum amount of sunlight required for photosynthesis.

5. In the cardiac cycle, diastole is:

- (a) The number of heart beats per minute

- (b) The relaxation period after contraction of the heart  
(c) The forceful pumping action of the heart  
(d) The contraction period after relaxation of the heart.

**Ans :** (b) The relaxation period after contraction of the heart

6. Blood vessel carry blood from lungs to heart through:

- (a) Pulmonary artery (b) Pulmonary vein  
(c) Coronary artery (d) None of these

**Ans :** (b) Pulmonary vein

7. Which of the following structures is involved in gaseous exchange in woody stem of a plant?

- (a) Stomata (b) Lenticel  
(c) Guard cell (d) Epidermis

**Ans :** (b) Lenticel

The guard cells regulate the opening and closing of stomata to maintain the flow of respiratory as well as photosynthetic gases (CO<sub>2</sub> and O<sub>2</sub>) in the plants.

8. Which substances are produced by anaerobic respiration in yeast?

	Carbon dioxide	Alcohol	Lactic Acid	Water
(a)	✓	✓	×	×
(b)	✓	×	✓	×
(c)	×	✓	×	✓
(d)	×	×	✓	✓

Key ✓ = produced, × = not produced.

**Ans :** (a)

During anaerobic respiration in yeast, following equation shows the products synthesised:



9. Which cell organelle is involved in breakdown of glucose to produce energy for metabolic activities?

- (a) Mitochondria (b) Chloroplast  
(c) Endoplasmic reticulum (d) Golgi body

**Ans :** (a) Mitochondria

Mitochondria performs the cellular respiration in which the glucose is broken down to liberate energy in the form of ATP for other metabolic activities.

10. From which structure, the free oxygen gas produced during photosynthesis is released?

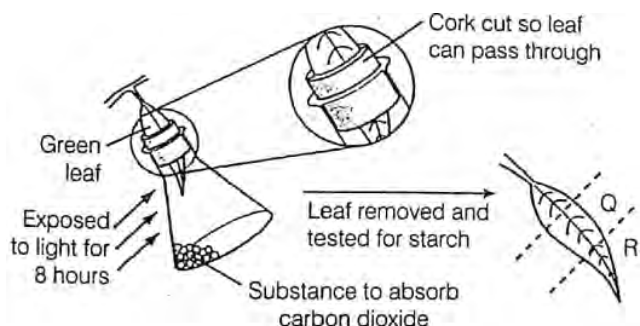
- (a) Epidermis (b) Stomata

- (c) Cortex (d) Guard cell

**Ans :** (b) Stomata

The oxygen gas produced during photosynthesis is released into the surroundings through stomata.

11. A plant is kept in the dark for two days. A leaf is used in an experiment to investigate the effect of two factors on photosynthesis as shown in the diagram.



What are the colours of *Q* and *R*, when the leaf is tested for starch, using iodine solution?

	<i>Q</i>	<i>R</i>
(a)	Blue/black	Brown
(b)	Brown	Brown
(c)	Blue/black	Blue/black
(d)	Brown	Blue/black

**Ans :** (b) *Q*-Brown, *R*-Brown

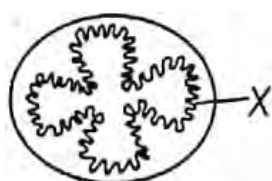
Some alkali solution is kept in the flask, which absorbs CO<sub>2</sub>, so no photosynthesis occurs and apical region of leaf will show negative results for starch test. Part *Q* of leaf remains in dark within the cut part of cork and no photosynthesis occurs here. It also shows negative result of starch test.

12. Villi present on the internal wall of intestine help in the
- emulsification of fats
  - breakdown of proteins
  - absorption of digested food
  - digestion of carbohydrates

**Ans :** (c) absorption of digested food

The small finger-like projections, i.e. villi present in intestine increase the surface area for better absorption of digested food.

13. The diagram represents a section through the small intestine.



What is the role of the structure labelled *X*?

- (a) They help to move the food along

- (b) They make a large surface area for absorption  
 (c) They protect against bacteria  
 (d) They move mucus over the surface

**Ans :** (b) They make a large surface area for absorption

Structure *X* shows microvilli, which increases the surface area for absorption of digested products i.e., amino acids, glucose etc.

14. Choose the forms in which most plants absorb nitrogen:
- Proteins
  - Nitrates and nitrites
  - Urea
  - Atmospheric nitrogen
- Choose the correct option.
- (a) 1 and 2 (b) 2 and 3  
 (c) 3 and 4 (d) 1 and 4

**Ans :** (b) 2 and 3

Most plants absorb nitrogen in the form of nitrates, nitrites and urea. All of these are taken up from the soil by the plant.

15. Only two of the following Statements accurately describe what happens in the mouth.
- Amylase breaks down large starch molecules into smaller maltose molecules.
  - Chewing increases the surface area of food for digestion.
  - Saliva emulsifies fats into smaller droplets.
  - Teeth breakup large insoluble molecules into smaller soluble molecules.

which statements are correct?

- (a) 1 and 2 (b) 2 and 3  
 (c) 3 and 4 (d) 1 and 4

**Ans :** (a) 1 and 2

Statement 1 and 2 are correct. Saliva cannot do emulsify fats and teeth do not break molecules or do not change insoluble ones into soluble ones. They only help in the churing of food.

16. When a person eats some egg white, proteins and water enter the stomach. Which substances are found leaving the stomach and leaving the small intestine?

	Leaving the Stomach	Leaving the Small Intestine
(a)	Amino acids and water	Amino acids and water
(b)	Fatty acids, glycerol and water	Fatty acids, glycerol and water
(c)	Protein and water	Fatty acids and glycerol
(d)	Protein, amino acids and water	Water

**Ans :** (d) Protein, amino acids and water, Water

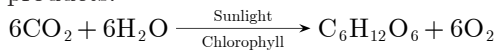
In stomach, egg white is broken down to amino acids. It contains albumin protein which is not completely broken down. Some of it is further hydrolysed in intestine, from where amino acids are absorded by food.

17. In photosynthesis, which substances are used up, which are produced and which are necessary, but remain unchanged after the reaction?

	Used up	Produced	Remain Unchanged
(a)	Carbon dioxide	Water	Oxygen
(b)	Chlorophyll	Carbon dioxide	Water
(c)	Oxygen	Starch	Cellulose
(d)	Water	Oxygen	Chlorophyll

**Ans :** (d) Used up-Water, Produced-Oxygen, Remain Unchanged-Chlorophyll

Equation of photosynthesis shows the reactants and products:



18. What is the final product of photosynthesis?  
 (a) Protein (b) Fat  
 (c) Starch (d) Mineral salt

**Ans :** (c) Starch

The final product of photosynthesis in plants is glucose and water. The glucose produced is stored as starch in storage organs.

19. During vigorous physical exercise, lactic acid is formed from glucose inside the muscle cells because  
 (a) there is lack of oxygen  
 (b) there is lack of water  
 (c) there is excess of carbon dioxide  
 (d) none of the above

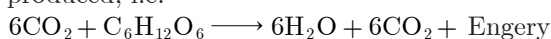
**Ans :** (a) there is lack of oxygen

Muscle cells respire anaerobically to produce lactic acid in the scarcity of oxygen during excessive physical exercise.

20. The following changes take place in an athlete's body during a 100 m race. Which change occurs first?  
 (a) Increased availability of oxygen to muscles  
 (b) Increased breathing rate  
 (c) Increased carbon dioxide concentration in the blood  
 (d) Increased production of carbon dioxide by muscles

**Ans :** (d) Increased production of carbon dioxide by muscles

In order to provide energy for 100 m race, respiration increases in athletes muscles and carbon dioxide is produced, i.e.

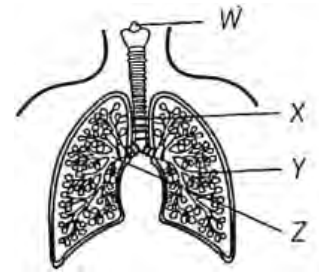


21. Major function of contractile vacuole is:  
 (a) Excretion (b) Circulation  
 (c) Osmoregulation (d) All the above

**Ans :** (c) Osmoregulation

22. The diagram shows part of the human gas exchange

system.



What are W, X, Y and Z?

	Bronchus	Bronchiole	Larynx	Trachea
(a)	W	X	Z	Y
(b)	X	Z	Y	W
(c)	Y	W	X	Z
(d)	Z	Y	W	X

**Ans :** (d)

Larynx is at the beginning of trachea. After trachea, bronchi are found which further branch into bronchioles.

23. Instrument used to measure blood pressure is  
 (a) barometer (b) potometer  
 (c) thermometer (d) sphygmomanometer

**Ans :** (d) sphygmomanometer

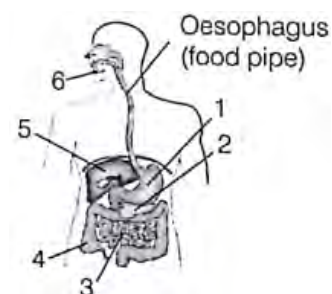
Blood pressure is measured by sphygmomanometer.

24. In which order do these events occur in human nutrition?  
 (a) Digestion → ingestion → absorption → assimilation  
 (b) Digestion → ingestion → assimilation → absorption  
 (c) Ingestion → digestion → absorption → assimilation  
 (d) Ingestion → digestion → assimilation → absorption

**Ans :** (c) Ingestion → digestion → absorption → assimilation

After ingestion, food is digested in buccal cavity, stomach and small intestine. Then the products of digestion, i.e. glucose and amino acids are absorbed from the ileum region into the blood which carries these products to body tissues and cells where assimilation occurs.

25. The diagram shows the human gut. Which numbered structures secrete digestive enzymes?

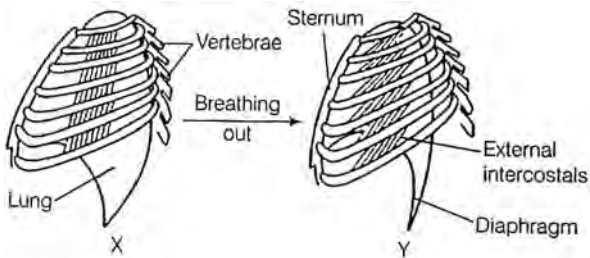


- (a) 1, 2, 3 and 4                      (b) 1, 2, 3 and 6
- (c) 2, 3, 4 and 5                      (d) 2, 3, 5 and 6

**Ans :** (b) 1, 2, 3 and 6

1 is stomach which secretes pepsin in gastric juice.  
 2 is pancreas which secretes trypsin and amylase.  
 3 is small intestine in which lipase and peptidase are secreted while 6 is salivary gland which secretes amylase in saliva.

26. The diagram shows the ribs and some of the muscles used in breathing.



which muscles relax in moving from position X to position Y?

	Diaphragm	External Intercostals
(a)	No	No
(b)	No	Yes
(c)	Yes	No
(d)	Yes	Yes

**Ans :** (d)

During exhalation, the diaphragm arches upwards as a result of muscle relaxation. The external intercostal muscles are also relaxed to move the ribcage back into position.

27. Which of the following is not a disorder of the circulatory system?
- (a) Atherosclerosis                      (b) Arteriosclerosis
  - (c) Arthritis                                  (d) Angina

**Ans :** (c) Arthritis

Arthritis is the inflammation of joints causing pain and stiffness.

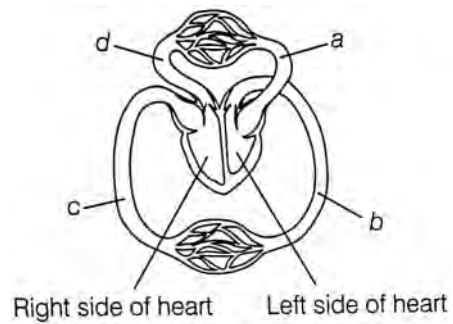
28. Which of the following is responsible for the transport of water and minerals from roots to aerial parts of the plant?
- (a) Xylem                                      (b) Phloem
  - (c) Cortex                                      (d) Both (a) and (b)

**Ans :** (a) Xylem

In rooted plants, transport of water and minerals occurs through xylem.

29. The diagram represents a part of human circulatory

system. Where is the blood pressure highest?



**Ans :** (b)

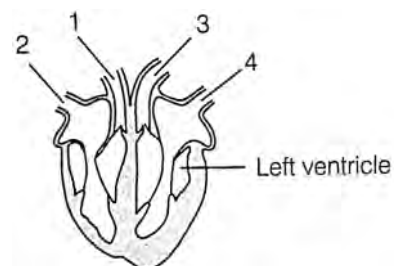
The lungs receive low pressure of blood from right side of the heart, with thinner ventricle wall as compared to the thicker wall of left ventricle. From the left ventricle, blood is pushed into aorta (B), which has normal blood pressure of about 16 KPa. Pressure in D is less than 4 Kpa.

In the Pulmonary vein A, the blood pressure is evenless, after being passed through the alveolare capillaries.

30. Urea is formed in:
- (a) Liver    (b) Spleen
  - (c) Kidney                                        (d) Lungs

**Ans :** (a) Liver

31. The diagram shows a vertical section through the heart.



what are the functions of the numbered blood vessels?

	Carries blood of body	Carries blood to lungs	Carries blood from lungs	Carries blood from body
(a)	1	2	3	4
(b)	1	3	4	2
(c)	2	4	3	1
(d)	3	1	4	2

**Ans :** (d)

Vessel 1 is pulmonary artery and carries blood to lungs. Vessel 2 is vena cava and carries blood from body to heart. Vessel 3 is aorta and carries blood from heart to body. Vessel 4 is pulmonary vein and carries blood from lungs to heart.

32. What is the correct route for blood flow in a human?  
 (a) Left atrium → Left ventricle → Lungs → Right ventricle → Right atrium  
 (b) Left atrium → Left ventricle → Right ventricle → Right atrium → Lungs  
 (c) Right atrium → Right ventricle → Left ventricle → Left atrium → Lungs  
 (d) Right atrium → Right ventricle → Lungs → Left atrium → Left ventricle

**Ans :** (d) Right atrium → Right ventricle → Lungs → Left atrium → Left ventricle

The correct route for blood flow in humans is

Right atrium → right ventricle → lungs → left atrium → left ventricle.

33. What may happen if a young plant is dug up and replanted in another place?  
 (a) The leaves lose less water  
 (b) The roots cannot take up mineral salts  
 (c) The stem cannot transport water  
 (d) The surface area of the root is reduced

**Ans :** (d) The surface area of the root is reduced

Digging up a plant may damage roots and affect mineral uptake. Wilting occurs if roots are damaged. Stem can still transport water.

34. Which of the following is not a purpose of transpiration?  
 (a) Supplies water for photosynthesis  
 (b) Helps in translocation of sugar in plants  
 (c) Cools leaf surface  
 (d) Transports minerals from the soil to all the parts of the plant

**Ans :** (b) Helps in translocation of sugar in plants

Transpiration is the loss of water in vapour form from the leaves. Translocation of sugars in plant is not performed by transpiration process.

35. The table shows the characteristics of blood in one blood vessel of the body.

Oxygen concentration	Carbon dioxide concentration	Pressure
High	Low	High

which blood vessel contains blood with these characteristics?

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

**Ans :** (a) Aorta

Oxygenated blood is carried back to the left atrium through the pulmonary vein and is pumped into the left ventricle before leaving the heart through the aorta. The thick muscular wall of the left ventricle of the heart contracts to generate the highest pressure possible to pump blood into the aorta and to the rest of the body.

36. What are the functions of the Xylem?

	Carrying sugars	Carrying water	Carrying mineral ions	Giving support
(a)	✓	×	×	✓
(b)	✓	✓	×	×
(c)	×	✓	✓	×
(d)	×	✓	✓	✓

Key ✓ = a function of xylem, × = not a function of xylem

**Ans :** (d)

Xylem is a part of vascular tissue which not only supports a stem, but also transport water and mineral ions. Phloem is involved in the transport of sugars dissolved in water.

37. Excretion is carried out by nephridia in:  
 (a) cockroach (b) amoeba  
 (c) earthworm (d) human

**Ans :** (c) earthworm

38. Which chambers of human heart contain oxygenated blood?  
 (a) Left atrium and left ventricle  
 (b) Left atrium and right ventricle  
 (c) Right atrium and left ventricle  
 (d) Right atrium and right ventricle

**Ans :** (a) Left atrium and left ventricle

Left atrium receives oxygenated blood from pulmonary vein. This blood enters left ventricle before being pushed into aorta in order to supply the whole body.

39. The process of conversion of glucose into pyruvic acid occurs in  
 (a) mitochondria (b) cytoplasm  
 (c) outside the cell (d) chloroplast

**Ans :** (b) cytoplasm

During aerobic respiration, the glucose is converted into pyruvic acid in the cytoplasm of respiring cells.

40. Which process occurring in human body does not involve energy from respiration?  
 (a) Contraction of heart muscle  
 (b) Diffusion of oxygen from the alveoli into the blood  
 (c) Digestion of bread  
 (d) Maintaining a constant body temperature

**Ans :** (b) Diffusion of oxygen from the alveoli into the blood

Exchange of O<sub>2</sub> and CO<sub>2</sub> at the site of alveoil occurs due to diffusion gradient as the inhaled air carries more O<sub>2</sub> than blood and blood contains more CO<sub>2</sub> than the atmospheric air. Processes in other options are all energy requiring.

41. The sites of exchange of wastes, nutrients, gases and hormones between the blood and body cells are the:  
 (a) arteries (b) arterioles

- (c) capillaries (d) veins

**Ans :** (c) capillaries

42. The rate at which oxygen moves from the alveoli of our lungs into our blood:

- (a) depends on the difference in oxygen concentration between the alveoli and the blood.  
 (b) depends on the color of the alveoli.  
 (c) depends on the availability of energy to transport gases across the membrane.  
 (d) none of the above

**Ans :** (a) depends on the difference in oxygen concentration between the alveoli and the blood.

43. The function of the glomerulus and Bowman's capsule of the nephron is to:

- (a) reabsorb water into the blood  
 (b) eliminate ammonia from the body  
 (c) reabsorb salts and amino acids  
 (d) filter the blood and capture the filtrate

**Ans :** (d) filter the blood and capture the filtrate

44. Structural and functional unit of kidney is

- (a) renal pelvis (b) nephridia  
 (c) nephron (d) hilum

**Ans :** (c) nephron

Nephron is the structural and functional unit of kidney.

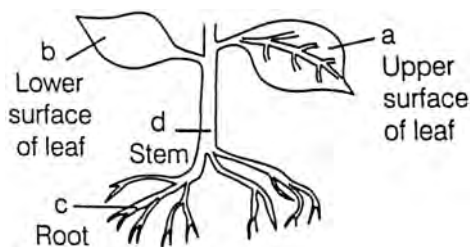
45. Choose the incorrect pair.

- (a) Ultrafiltration-Glomerulus  
 (b) Concentration of urine-Collecting duct  
 (c) Transport of urine-Ureter  
 (d) Storage of urine-Urinary bladder

**Ans :** (b) Concentration of urine-Collecting duct

Concentration of urine takes place in Henle's loop not in collecting duct.

46. The diagram shows parts of a flowering plant. Where does the most transpiration take place?



**Ans :** (b) Lower surface of leaf

Since, lower surface of leaf contains most of the stomata, water vapours moves out of stoma. This increases transpiration rate.

47. The correct order of air reaching from atmosphere to the lungs is through:

- (a) external nares, larynx, trachea and air sac

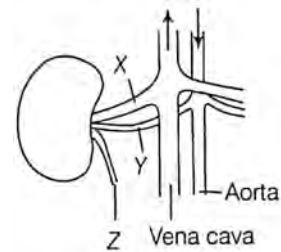
- (b) larynx, trachea, air sac and external nares

- (c) trachea, air sac, external nares and larynx

- (d) air sac, trachea, larynx and external nares

**Ans :** (a) external nares, larynx, trachea and air sac

48. In the figure given along side, the structures associated with human kidneys are marked (X, Y and Z). The relative concentrations of urea in these structures is



- (a) X is sometimes higher than Y

- (b) Y is always higher than Z

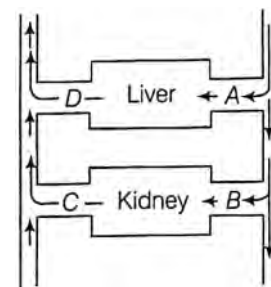
- (c) Y is always lower than Z

- (d) Z is sometimes lower than X

**Ans :** (c) Y is always lower than Z

Structure Y is renal artery which transports urea from the body tissues to kidney for removal. After filtration from blood in kidneys, concentration of urea increases in water (Z) containing urine thus, maintaining a constant level.

49. The diagram given below represents the liver, kidney and some associated blood vessels. Identify the vessel from the labelled parts A-D in which the blood will contain the lowest concentration of urea.



- (a) A

- (b) B

- (c) C

- (d) D

**Ans :** (c) C

When the kidney filters the blood, renal vein, i.e. part C has the lowest concentration of urea.

50. Proteins  $\xrightarrow{A}$  Peptones

Identify the enzyme A involved in the above reaction.

- (a) Salivary amylase (b) Bile juice

- (c) Pepsin (d) Lipase

**Ans :** (c) Pepsin

Proteins present in food are converted to peptones with the help of pepsin enzyme. It is secreted by gastric glands found in stomach wall.

51. Digestion of food in human starts from:  
 (a) Duodenum (b) Small intestine  
 (c) Mouth (d) Large intestine

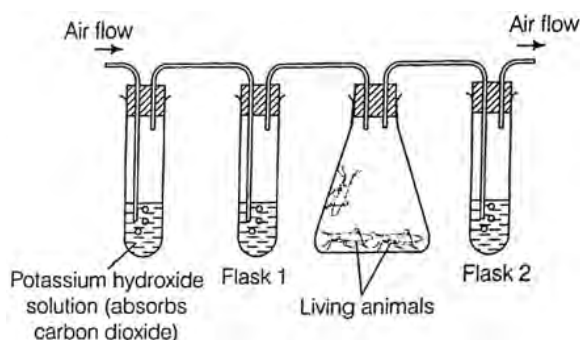
Ans : (c) Mouth

52. Which one indicates hypertension or high Blood Pressure (BP)?  
 (a) 120/80 (b) 110/70  
 (c) 130/80 (d) 140/90

Ans : (d) 140/90

Person having blood pressure 140/90, shows hypertension or high blood pressure. The normal blood pressure for humans is 120/80.

53. An experiment is set up as shown. Flasks 1 and 2 contain lime water. Air is pumped through the flasks.



What is the appearance of lime water in flasks 1 and 2 after a period of ten minutes?

	Flask 1	Flask 2
(a)	Clear	Clear
(b)	Clear	White/Cloudy
(c)	White/Cloudy	Clear
(d)	White/Cloudy	White/Cloudy

Ans : (b)

Living animals respire and produce carbon dioxide which causes lime water in flask 2 to become milky white. Potassium hydroxide solution in flask 1 absorb carbon dioxide but remains clear.

54. Flame cells are the excretory structures in  
 (a) arthropods (b) platyhelminths  
 (c) annelids (d) crustaceans

Ans : (b) platyhelminths

Flame cells are the excretory organs of organisms belonging to phylum Platyhelminthes.

55. Dialysing unit (artificial kidney) contains a fluid which is almost same as plasma except that is has  
 (a) high glucose (b) high urea  
 (c) no urea (d) high uric acid

Ans : (c) no urea

The dialysing fluid has the same composition as that of blood plasma except that it is devoid of nitrogenous waste such as urea.

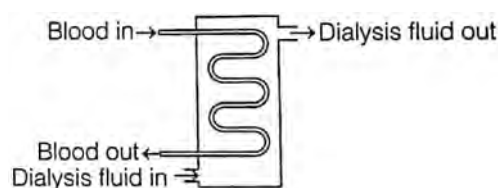
56. The movement of water and dissolved minerals from the roots of the leaves is best explained by:  
 (a) Cohesion-tension theory  
 (b) Translocation  
 (c) Tensile strength  
 (d) Pressure-flow hypothesis

Ans : (a) Cohesion-tension theory

57. Which of the following is not a component of plasma?  
 (a) water (b) globulins  
 (c) fibrinogen (d) platelets

Ans : (d) platelets

58. Figure given below is representing the dialysis machine for removing nitrogenous wastes in patient with a kidney failure.



which substances out of the following in the dialysis fluid should be at a lower concentration than in the blood of patient?

- (a) Glucose and urea  
 (b) Glucose and amino acids  
 (c) Salts and urea  
 (d) Glucose and salts

Ans : (c) Salts and urea

The dialysis fluid contains glucose, water, ions and various substances in the same concentration as the blood except urea and excess salts, which have low concentration in the dialysis fluid when compared to blood. Urea is a nitrogenous waste to be removed from the body along with the excess salts

59. Veins can be differentiated from arteries because the veins:  
 (a) have valves (b) have hard walls  
 (c) have pure blood in them (d) have thick walls

Ans : (a) have valves

60. Most often during a kidney disorder, the colour of urine changes from yellow to others. A patient is secreting dark colored urine which turns to blue or black later. This is due to the presence of which of the following?  
 (a) Homogentisic acid (b) Methaemoglobin  
 (c) Coproporphyrin (d) Both (a) and (b)

Ans : (a) Homogentisic acid

The build up of homogentisic acid in body occurs due to a rare genetic disorder i.e. Alkaptonuria. This causes the urine to run dark blue or black when exposed to air.

61. Main excretory organ of humans is  
 (a) kidney (b) lungs  
 (c) skin (d) liver

**Ans :** (a) kidney

Kidney is the main excretory organ of human beings, while other act as accessory excretory organs.

62. Which of the following is used in manufacturing of varnishes, glazing agents, etc?  
 (a) Tannin (b) Resins  
 (c) Essential oil (d) Rubber

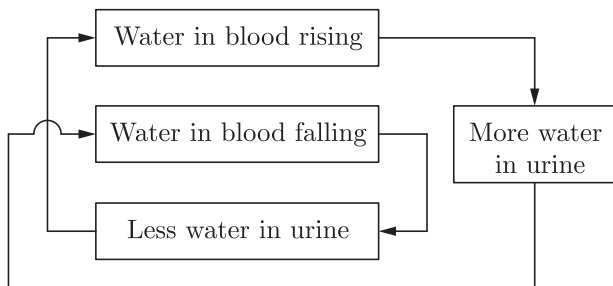
**Ans :** (b) Resins

Resins are used in manufacturing of varnishes, glazing agents, etc.

63. In amoeba the digestion is intracellular because:  
 (a) Amoeba is unicellular  
 (b) Amoeba is multicellular  
 (c) Amoeba is found in a pond  
 (d) Amoeba is a microscopic animal

**Ans :** (a) Amoeba is unicellular

64. Observe the figure given below which represents the control of water concentration in the blood.



This is negative feedback system because

- (a) It decreases the amount of water in the blood  
 (b) It increases any change occurring in the amount of water in the blood  
 (c) It reverses any change occurring in the amount of water in the blood  
 (d) It increases the amount of water in the blood

**Ans :** (c) It reverses any change occurring in the amount of water in the blood

The figure represents negative feedback control of water concentration in the blood. This system regulates any change that occurs in water concentration of the blood through feedback mechanism.

65. What is the term used when vessels open and let more blood through?  
 (a) Vasoconstriction (b) Vasodilatation  
 (c) Increased permeability (d) None of these

**Ans :** (b) Vasodilatation

66. The diagram given along side shows the human excretory system. Identify the function of part labelled

as X.



- (a) To excrete urea (b) To produce urea  
 (c) To produce urine (d) To store urine

**Ans :** (d) To store urine

‘X’ given in the diagram is the part of human excretory system called urinary bladder. Its main function is to store urine temporarily until it passed out through urethra.

67. Example(s) of liquid waste product in plants is/are  
 (a) rubber (b) clove oil  
 (c) gum (d) All of these

**Ans :** (d) All of these

All of these given options are examples of liquid waste products in plants.

68. A healthy woman consumes a litre of water at once.  
 1. How will be the internal environment of her body affected by this?  
 2. A corrective measure to bring the arising condition to normal state is.

Select the correct option for (i) and (ii) from those given below:

	(i)	(ii)
(a)	Plasma becomes diluted	Concentration of the urine formed.
(b)	Osmotic pressure of the plasma decreases	Increase in the volume of urine formed.
(c)	The body cells undergo shrinkage	Less water is reabsorbed by the kidneys.
(d)	Osmotic pressure of the plasma increases	Formation of dilute urine occurs.

**Ans :** (b) (i)-Osmotic pressure of the plasma decreases, (ii)- Increase in the volume of urine formed.

When a healthy person consumes very little water, the osmotic pressure of the plasma will decrease due to increased amount of water. As a result, the body will increase the volume of urine formation. The woman would thus, have to urinate frequently.

69. The breakdown of pyruvate to give carbon-di-oxide, water and energy takes place in:  
 (a) cytoplasm (b) mitochondria  
 (c) chloroplast (d) nucleus

**Ans :** (b) mitochondria

70. Digestion of starch starts from:  
 (a) Stomach (b) Intestine



(c) Oesophagus (d) Mouth

**Ans :** (d) Mouth

71. The process of transpiration in plants helps in:

- (a) Opening of stomata  
 (b) Absorption of CO<sub>2</sub> from atmosphere  
 (c) Upward conduction of water and minerals  
 (d) Absorption of O<sub>2</sub> from atmosphere

**Ans :** (c) Upward conduction of water and minerals

72. Root cap has no role in water absorption because:

- (a) It has no direct connection with the vascular system  
 (b) It has no cells containing chloroplasts  
 (c) It has no root hairs  
 (d) It has loosely arranged cells.

**Ans :** (c) It has no root hairs

73. Which substances will be present in the glomerular filtrate from the kidneys of a mammal?

	Glucose	Protein	Salts
(a)	✓	✓	×
(b)	×	✓	✓
(c)	✓	×	✓
(d)	×	×	✓

Key ✓ = present, × = absent

**Ans :** (c)

In mammals, the glomerular filtrate will consist of glucose and salts by the filtration of blood plasma. The proteins are not present in glomerular filtrate because they are relatively larger in physical size.

## 2. FILL IN THE BLANK

1. In human, the right lung is ..... lobed.

**Ans :** 3

2. Carbonic anhydrase regulates the formation of .....

**Ans :** bicarbonates

3. Principal waste product of metabolism in humans is .....

**Ans :** Water

4. .... valve separates the left atrium from the left ventricle.

**Ans :** tricuspid

5. Energy rich compound generated during photosynthesis is .....

**Ans :** ATP

6. Ninety percent of the water lost by the plants during transpiration is through the ..... of the leaf.

**Ans :** stomata

7. Blood circulation in humans is called ..... circulation.

**Ans :** double

8. Pressure in the arteries during ventricular relaxation is called ..... pressure.

**Ans :** diastolic

9. .... are regarded as complete photosynthetic units of plants.

**Ans :** Chloroplasts

10. Starch changes blue in ..... solution.

**Ans :** iodine

11. .... are the lymphatic capillaries arising from the small intestine.

**Ans :** lacteals

12. .... are fat soluble vitamins.

**Ans :** Vitamin A, D, E and K

13. Two ..... are present on both sides of the stomata.

**Ans :** guard cells

14. Largest digestive gland in the human body is .....

**Ans :** liver

15. The structural and functional units of lungs is .....

**Ans :** alveoli

16. The ..... prevents the entry of food into the respiratory tract.

**Ans :** epiglottis

17. .... (of bile juice) help in emulsification of fats.

**Ans :** Bile salts

18. In ....., waste is removed by diffusion.

**Ans :** kidney

19. Synthesis of ATP using light energy in photosynthesis is .....

**Ans :** photophosphorylation

20. Diffusion is insufficient to meet ..... requirement of multicellular organisms like humans.

**Ans :** oxygen

21. .... node is present near the opening of superior and inferior vena cavae.

**Ans :** Sinu-auricular

22. A plant pigment known as ..... is involved in the phenomenon of photoperiodism.

**Ans :** phytochrome

23. Man is ..... in nutrition.

**Ans :** heterotrophic

24. .... involves the intake of complex material prepared by other organisms.  
**Ans :** Heterotrophic
25. Contraction of heart is known as .....  
**Ans :** systole
26. The major function of the ..... blood cells is to transport oxygen.  
**Ans :** red
27. The semiliquid mixture of partially digested food found in the stomach is called .....  
**Ans :** chyme
28. The functional unit of the mammalian kidney is the .....  
**Ans :** nephron
29. .... are the solid bodies in fruits in which waste is stored.  
**Ans :** raphides
30. .... veins pour their ..... blood into left atrium.  
**Ans :** Pulmonary, oxygenated
31. Glomerulus occurs in ..... capsule.  
**Ans :** Bowman's
32. Kidney eliminate the excretory waste materials as their aqueous solution, called .....  
**Ans :** urine
33. .... secretes bile and cholesterol.  
**Ans :** liver
34. .... movements occur along the gut.  
**Ans :** Peristaltic
35. Second heart sound heard as ..... is due to closure of ..... valves at the beginning of ventricular diastole.  
**Ans :** Dup/Dubb, semilunar
36. The thin double-walled sac enclosing the heart is called .....  
**Ans :** pericardium
37. Rings of ..... present in trachea, bronchi and bronchioles prevent their collapse when air is not passing through them.  
**Ans :** cartilage
2. The lacteals contain absorbed carbohydrates.  
**Ans :** False
3. Teeth are the only part of the digestive system that physically breaks down food.  
**Ans :** False
4. The loss of water by a plant is called transpiration.  
**Ans :** True
5. Blood is not a tissue because it is a fluid.  
**Ans :** False
6. Bowman's capsule is found in heart.  
**Ans :** False
7. Arteries are the widest blood vessels.  
**Ans :** True
8. Birds and mammals have two-chambered heart.  
**Ans :** False
9. Grass-eating animals need a longer small intestine to allow the cellulose to be digested.  
**Ans :** True
10. Only animals have tissues.  
**Ans :** False
11. Some organs are used in more than one system.  
**Ans :** True
12. Fishes respire through skin.  
**Ans :** False
13. Translocation is the transportation of the products of photosynthesis.  
**Ans :** True
14. Essential amino acids cannot be synthesized in human body.  
**Ans :** True
15. Stretching of inner wall of guard cells, open the stomata.  
**Ans :** True
16. The systems in an organism work independently.  
**Ans :** False
17. Veins are thick walled.  
**Ans :** False

### 3. TRUE/FALSE

1. Fermentation is a form of aerobic respiration.  
**Ans :** False
18. Respiration is the only source of energy for all organisms.  
**Ans :** False
19. Carbon-di-oxide cannot be transported with

haemoglobin.

**Ans :** False

20. In a general sense, digestion is simply hydrolysis of complex polymers to monomers.

**Ans :** True

21. Leucocytes play an important role in blood coagulation.

**Ans :** False

22. Circulatory system also performs the function of homeostasis.

**Ans :** True

23. In humans, protein digestion is completed in the mouth.

**Ans :** False

24. Only the multicellular organisms require transporting mechanisms.

**Ans :** False

25. External respiration may be called breathing.

**Ans :** True

26. The exchange of nutrients and waste products between the blood and cells occurs within the arteries.

**Ans :** False

27. In humans, the alveoli are the functioning units of external respiration.

**Ans :** True

28. Trypsin digests proteins into amino acids.

**Ans :** False

29. Living organisms must maintain a constant internal environment.

**Ans :** True

30. Deficiency of folic acid causes scurvy.

**Ans :** False

31. A complete digestive tract consists of an oral and an anal opening.

**Ans :** True

32. Stomata are tiny pores present on the surface of leaves.

**Ans :** True

33. The liquid portion of the blood is called plasma.

**Ans :** True

34. Generally gravitational water is utilized by the plants.

**Ans :** False

35. Humans have an open circulatory system.

**Ans :** False

36. In photosynthesis, carbon-di-oxide is given out by diffusion process.

**Ans :** False

#### 4. MATCHING QUESTIONS

**DIRECTION :** Each question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in column I have to be matched with statements (p, q, r, s) in column II.

1.

Column I		Column II	
(A)	Nutrition	(p)	The increase in cell size and/or number
(B)	Synthesis	(q)	The movement of materials within the cell or within the organism.
(C)	Growth	(r)	The process of obtaining food
(D)	Transport	(s)	Combining small molecules to create larger more complex molecules.

**Ans :** A-r, B-s, C-p, D-q

2.

Column I		Column II	
(A)	Regulation	(p)	The removal of metabolic waste from an organism
(B)	Reproduction	(q)	The chemical process of oxidizing organic molecules to release energy.
(C)	Respiration	(r)	The replication of an organism
(D)	Excretion	(s)	The control and coordination of chemical processes within the organism

**Ans :** A-s, B-r, C-q, D-p

3.

Column I	Column II
----------	-----------

(A)	Stomach	(p)	The structure is the site where the chemical breakdown of proteins first occurs.
(B)	Large intestine	(q)	This organ absorbs most of the water from the undigested food.
(C)	Small intestine	(r)	This organ is the section of the alimentary canal where most of the food is absorbed into the blood.
(D)	Excretion	(s)	This organ secretes the chemical bile, which is used to emulsify fats.

Ans : A-p, B-q, C-r, D-s

4.

Column I		Column II	
(A)	Pancreas	(p)	This organ secretes the chemical enzymes amylase, protease and lipase.
(B)	Rectum	(q)	This is a storage site for faeces before being egested from the body.
(C)	Oesophagus	(r)	This tube structure transports food from the oral cavity to the stomach.
(D)	Oral cavity	(s)	The structure where mechanical digestion of food first occurs.

Ans : A-p, B-q, C-r, D-s

5.

Column I (Animal)		Column II (Respiratory Organ)	
(A)	Fish	(p)	Trachea
(B)	Birds	(q)	Gills
(C)	Aquatic	(r)	Lungs
(D)	Earthworm	(s)	Moist cuticle

Ans : A-q, B-r, C-p, D-s

6.

Column I (Region of digestive system)		Column II (Digestive Organ)	
(A)	Mouth	(p)	Pancreatic juice
(B)	Stomach	(q)	Intestinal juice
(C)	Duodenum	(r)	Gastric juice
(D)	Small intestine	(s)	Saliva

Ans : A-s, B-r, C-p, D-q

7.

Column I		Column II	
(A)	Autotrophic	(p)	Leech
(B)	Heterotrophic nutrition	(q)	Paramecium
(C)	Parasitic nutrition	(r)	Deer
(D)	Digestion in food vacuoles	(s)	Green plant

Ans : A-s, B-r, C-p, D-q

8.

	Column I		Column II
(A)	Phloem	(p)	Excretion
(B)	Nephron	(q)	Translocation of food
(C)	Veins	(r)	Clotting of blood
(D)	Platelets	(s)	Deoxygenated blood

Ans : A-(q), B-(p), C-(s), D-(r)

## 5. ASSERTION AND REASON

**DIRECTION :** The following question consist of two statements - Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- Both A and R are true and R is the correct explanation of A.
- Both A and R are true but R is not the correct explanation of A.
- A is true but R is false.
- A is false but R is true.
- Both Assertion and Reason are false.

1. **Assertion :** in the daytime, CO<sub>2</sub> generated during respiration is used up for photosynthesis.

**Reason :** There is no CO<sub>2</sub> release during day.

Ans : (a) Both A and R are true and R is the correct explanation of A

In night, dark reaction of photosynthesis occurs, in which the products of light reaction, i.e. CO<sub>2</sub>, ATP, NADPH and H<sub>2</sub>O are utilised. CO<sub>2</sub> is reduced for the production of carbohydrates.

2. **Assertion :** Raw materials needed for photosynthesis are carbon dioxide, water and minerals.

**Reason :** Nutrients provide energy to an organism.

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

Raw materials needed for photosynthesis are carbon dioxide, water and minerals like nitrogen, phosphorus, iron and magnesium.

Nutrients are the substances required for proper growth and maintenance of a living body but they provide energy to an organism.

Hence, both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

3. **Assertion :** Lungs always contain a residual volume of air.

**Reason :** It provides sufficient time for oxygen to be absorbed and for carbon dioxide to be released.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

During the breathing cycle, when air is taken in and let out, the lungs always contain a residual volume of air. It provides sufficient time for oxygen to be absorbed and for carbon dioxide to be released.

Both Reason and Assertion are true and Reason is the correct explanation of Assertion.

4. **Assertion :** Transpiration is a necessary evil.

**Reason :** It causes water loss but helps in absorption and upward movement of water and minerals.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

Transpiration is a necessary evil. It is so because water is lost in the form of vapours from the aerial parts of the plant through transpiration. But, it helps in absorption and upward movement of water and minerals creating transpiration pull.

5. **Assertion :** Translocation of sugar occurs through the phloem.

**Reason :** It is achieved by diffusion of sugars through phloem.

**Ans :** (c) A is true but R is false.

The transport or movement of soluble products (sugar) of photosynthesis from leaves to other parts of the plant is termed as translocation. It occurs in the part of vascular tissue known as phloem. The translocation in phloem is mainly achieved by utilising energy by expenditure of ATP.

Assertion is true, but Reason is false.

6. **Assertion :** Digestion breaks large complex molecules to simple smaller molecules which can be easily absorbed.

**Reason :** Digestion is necessary for the absorption of all molecules.

**Ans :** (c) A is true but R is false.

Digestion breaks large complex organic molecules to simple smaller ones which can be easily absorbed. However, certain molecules such as glucose, vitamin C etc, do not need any digestion before their absorption.

7. **Assertion :** Energy is used during the process of respiration.

**Reason :** Respiration stores energy in the form of ATP.

**Ans :** (d) A is false but R is true.

Respiration involves the oxidation of glucose inside the mitochondria to produce energy, which is stored in the high energy bonds of ATP molecules as biologically useful energy.

8. **Assertion :** During physiology of excretion, deamination does not take place in liver.

**Reason :** Deamination is a process to make use of excess of amino acids which cannot be incorporated into protoplasm.

**Ans :** (d) A is false but R is true.

9. **Assertion :** Egestion is the removal of nitrogenous waste products from the body.

**Reason :** Excretion is the discharge of undigested matter from the digestive tract.

**Ans :** (e) Both Assertion and Reason are false.

Egestion is the discharge of undigested matter from the digestive tract *via* anus. While, excretion is the removal of nitrogenous waste products from the body. Thus, both Assertion and Reason are false.

10. **Assertion :** The muscular walls of ventricles are thicker than auricles.

**Reason :** This helps in preventing the back flow of blood.

**Ans :** (c) A is true but R is false.

Since ventricles have to pump blood into various organs, they have thicker muscular walls than atria do. Valves prevent back flow of blood.

11. **Assertion :** In human heart, there is no mixing of oxygenated and deoxygenated blood.

**Reason :** Valves are present in the heart which allows the movement of blood in one direction only.

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

There is no mixing of oxygenated and deoxygenated blood due to presence of inter-auricular and inter-ventricular septum. On the other hand, valves are present in the heart which allows the movement of blood in one direction only.

12. **Assertion :** In woody plants, gaseous exchange occurs through lenticels.

**Reason :** Lenticels are specialised cells found along with stomata on the stem of woody plants.

**Ans :** (c) A is true but R is false.

In woody plants, gaseous exchange occurs through the small pores found on stems called lenticels. Stomata on the stem aid in gaseous exchange, in herbaceous plants.

Assertion is true, but Reason is false.

13. **Assertion :** Excretory unit of kidney is nephrons.

**Reason :** It has no role in secretion of urine.

**Ans :** (c) A is true but R is false.

Nephrons are the basic filtration unit of kidneys. They carry out filtration, selective reabsorption and tubular secretion to form urine in kidney, which is then passed out through the urethra, via the ureters and urinary bladder.

- 14. Assertion :** Muscles of stomach wall possess thick layers of muscles.

**Reason :** These muscles help in mixing the food with the enzymes presents in the alimentary canal.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

The lining of alimentary canal has muscles that contract rhythmically in order to push the food forward. This is known as peristaltic movement.

- 15. Assertion :** Artificial kidney is a device used to remove nitrogenous waste products from the blood through dialysis.

**Reason :** Reabsorption does not occur in artificial kidney.

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

Kidney failure can be managed by artificial kidney. It is a device used to remove nitrogenous waste products from the blood through dialysis.

Artificial kidney is different from natural kidney as the process of reabsorption does not occur in artificial kidney.

Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

- 16. Assertion :** Respiration is a biochemical process opposite to photosynthesis.

**Reason :** Energy is released during respiration.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

Respiration is defined as the process of biochemical oxidation of nutrients at cellular level. It occurs in the presence of specific enzymes at optimum temperature in the cells to release energy for various metabolic activities.

Both Reason and Assertion are true and Reason is the correct explanation of Assertion.

- 17. Assertion :** The release of energy in aerobic process is much more than in anaerobic process.

**Reason :** Each glucose molecule produces 2 molecules of ATP and 38 molecules of ATP in aerobic and anaerobic respiration, respectively.

**Ans :** (c) A is true but R is false.

In aerobic process, 38 molecules of ATP released per one glucose molecule is much more than the 2 molecules of ATP per one glucose molecule in anaerobic process.

Assertion is true, but Reason is false.

- 18. Assertion :** In plants there is no need of specialised respiratory organs.

**Reason :** Plants do not have great demands of gaseous exchange.

**Ans :** (a) Both A and R are true and R is the correct

explanation of A.

- 19. Assertion :** Plants have low energy needs.

**Reason :** Plant bodies have large proportion of dead cells.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

Because plants have a large proportion of dead cells in many tissues. So, their energy needs are low and they can afford to have slow transport system.

- 20. Assertion :** Walls of the intestine has numerous villi.

**Reason :** These villi increase the surface area of digestion.

**Ans :** (c) A is true but R is false.

All the digested food is taken up by the walls of intestine, which has numerous villi. These increase the surface area of absorption. Assertion is true, but Reason is false.

- 21. Assertion :** Mitochondria help in photosynthesis.

**Reason :** Mitochondria have enzymes for dark reaction.

**Ans :** (d) A is false but R is true.

- 22. Assertion :** Blood pressure is arterial blood pressure.

**Reason :** It is measured by sphygmomanometer.

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

- 23. Assertion :** Lymph, also known as tissue fluid is colourless.

**Reason :** It lacks erythrocytes.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

Lymph is similar to plasma of blood but is colourless due to lack of erythrocytes.

Erythrocytes contain haemoglobin, which imparts red colour to blood. Due to its absence, lymph is colourless.

- 24. Assertion :** The main organ of human excretory system is kidney.

**Reason :** Kidneys perform the function of removing excess water and nitrogenous wastes from the body.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

The main organ of human excretory system is kidney. The major function performed by kidneys is to remove excess water and nitrogenous wastes from blood in the form of urine.

Thus, both Assertion and Reason are true and Reason is the correct explanation of Assertion.

- 25. Assertion :** Lipases help in emulsification of fats.

**Reason :** Lipases hydrolyses fats and oils.

**Ans :** (d) A is false but R is true.

Bile helps in emulsification of fats whereas lipases are the enzymes which hydrolyze fats and oils.

- 26. Assertion :** Humans are not truly aerobic.

**Reason :** They produce lactic acid nanerobically.

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

Human are aerobically respiring animals, but sometimes anaerobic respiration takes place in certain tissues like skeletal muscles, which do not get immediately as much oxygen as it requires. Therefore, the muscles respire anaerobically and produce lactic acid from glucose.

**27. Assertion :** Photorespiration decreases net photosynthesis.

**Reason :** Rate of respiration in dark and light is almost same in all plants.

**Ans :** (d) A is false but R is true.

**28. Assertion :** HCl converts pepsinogen into active enzyme pepsin.

**Reason :** Pepsin converts protein into proteoses and peptones.

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

HCl creates an acidic medium, which facilitates the action of the enzyme pepsin. The active enzyme pepsin converts proteins into proteoses and peptones.

**29. Assertion :** Autotrophic nutrition occurs in green plants.

**Reason :** Green plants self-manufacture their

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

Autotrophic nutrition occurs in green plants. Food is self-manufactured by them using  $\text{CO}_2$ , light energy trapped by chlorophyll and water as raw materials.

Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

**30. Assertion :** Haemoglobin is the respiratory pigment in human beings.

**Reason :** It transports oxygen in the human body.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

Haemoglobin is the respiratory pigment in human beings. It takes up oxygen from the air in the lungs and carries it to tissues.

Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

**31. Assertion :** Interauricular septum separates left from right atrium.

**Reason :** Interventricular septum separates left from right ventricle.

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

There are four chambers of the heart. The left and right atria are separated by an interauricular septum. The two inferior chambers of the heart, i.e., right and left ventricles are separated by an interventricular septum.

**32. Assertion :** Blood of insects is colourless.

**Reason :** The blood of insect does not play any role in transport of oxygen.

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

**33. Assertion :** All the arteries carry oxygenated blood from the heart to various organs.

**Reason :** Pulmonary vein carries deoxygenated blood to the heart.

**Ans :** (e) Both Assertion and Reason are false.

The arteries carry oxygenated blood from the heart to various organs, except pulmonary artery.

The veins collect deoxygenated blood from different organs and bring back to the heart, except pulmonary vein.

Both Assertion and Reason are false.

**34. Assertion :** Human body produces highly toxic substances, which if not eliminated may cause the death.

**Reason :** Excretory substance removes nitrogenous waste from the body.

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

The biological process which involves the removal of harmful metabolic wastes from the body is called excretion. If these harmful wastes are not removed from the body, then it may cause the death of the organisms.

**35. Assertion :** Amoeba is an omnivore organism.

**Reason :** Lion is a carnivore organism.

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

Amoeba is an omnivore organism, its mode of nutrition is holozoic. Lion is a carnivore organism because it eats other animals (meat eaters). Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

**36. Assertion :** Liver is known as the smallest gland of the body.

**Reason :** It secretes salivary amylase.

**Ans :** (e) Both Assertion and Reason are false.

Liver is known as the largest gland of the body, which secretes bile juice. Salivary glands secrete salivary amylase. Both Assertion and Reason are false.

**37. Assertion :** Carbohydrate digestion mainly takes place in small intestine.

**Reason :** Pancreatic juice contains the enzyme lactase.

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

**38. Assertion :** Valves are present in the arteries.

**Reason :** Arteries carry oxygenated blood from heart to different body parts except pulmonary artery.

**Ans :** (d) A is false but R is true.

Valves are absent in arteries, whereas it is present in veins, which prevent back flow of blood.

**39. Assertion :** Plants lack excretory organs.

**Reason :** Plants usually absorb essential nutrients.

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

**40. Assertion :** Haemodialysis can save the life of patients with kidney failure.

**Reason :** Waste products like urea can be removed from the blood by haemodialysis.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

In case of kidney failure, haemodialysis is the process of purifying blood (or removing waste products like urea) by an artificial kidney. This can save the life of the patient.

**41. Assertion :** In humans, major amount of water is absorbed by the tubular part of nephron.

**Reason :** Absorption of water depends on the dissolved waste to be excreted from the body.

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

Major amount of water is selectively reabsorbed by the tubular part of nephron in humans. It depends on the amount of excess water present in the body and dissolved waste to be excreted from the body.

**42. Assertion :** Photosynthesis is an anabolic process.

**Reason :** The process of photosynthesis occurs in chlorophyll.

**Ans :** (c) A is true but R is false.

Photosynthesis is an anabolic process as it takes  $\text{CO}_2$  and  $\text{H}_2\text{O}$  then assembles them into glucose. The process of photosynthesis occurs in chloroplast.

**43. Assertion :** In humans, there is a complex respiratory system.

**Reason :** Human skin is impermeable to gases.

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

Humans need more oxygen to maintain their high metabolic rates. Thus, a complex respiratory system has evolved so as to meet this need.

**44. Assertion :** Alveoli contain an extensive network of blood vessels.

**Reason :** Alveoli is the site where exchange of gases occurs.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

The alveoli of lungs are richly supplied with blood and are the sites where exchange of gases ( $\text{O}_2$  and  $\text{CO}_2$ ) occurs between blood and atmosphere.

**45. Assertion :** Excretion is the biological process by which harmful wastes are removed from an organism's body.

**Reason :** The mode of excretion is completely same in both unicellular and multicellular organisms.

**Ans :** (c) A is true but R is false.

Excretion is the biological process by which harmful metabolic wastes are removed from the body. The mode of excretion is completely different in unicellular organisms. In unicellular organisms, waste products are diffused into surrounding water through body

surface. While, in multicellular organisms, specialised organs perform the function of excretion. Thus, Assertion is true, but Reason is false.

**46. Assertion :** Plants excrete various waste products during their life processes.

**Reason :** They produce urea just like humans.

**Ans :** (c) A is true but R is false.

Like human beings and other organisms, plants also excrete various waste products during their life processes. The waste products include gums,  $\text{CO}_2$ ,  $\text{O}_2$ , resins, rubber, etc.

Urea is produced in humans liver and excreted in the form of urine through urethra. Plants do not produce urea.

Thus, Assertion is true, but Reason is false.

**47. Assertion :** In anaerobic respiration, one of the end product is alcohol.

**Reason :** There is an incomplete breakdown of glucose.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

**48. Assertion :** Bile is essential for digestion of lipids.

**Reason :** Bile juice contains enzymes.

**Ans :** (c) A is true but R is false.

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