

CHAPTER 5

Life Processes

Life processes are various essential processes which take place in the body of living beings for their survival. They are also called metabolic processes. These processes are nutrition, respiration, transportation, excretion and reproduction.

5.1 NUTRITION

Nutrition is the breakdown of complex food nutrients into simpler forms and their utilisation to get energy for various processes taking place in the body. It may be of following types:

1. **Autotrophic Nutrition:** Some organisms manufacture their food from simple inorganic compounds. These organism are called autotrophs. They are green plants, some bacteria and some protists.
2. **Chemosynthetic Nutrition:** Non-green autotrophs like iron and sulphur bacteria prepare organic food by using chemical energy released during oxidation of simple inorganic compounds.
3. **Heterotrophic Nutrition:** The organisms obtain ready-made food from plants or animals, dead or alive. All animals, most protists and bacteria are heterotrophs. Heterotropic nutrition may be saprotrophic (fungi), parasitic (*Cuscuta*, tapeworms, etc.) and holozoic (herbivores, carnivores, omnivores and scavengers).

Nutrition in unicellular organisms such as *Amoeba*, takes place through cell surface.

1. In *Amoeba* food is captured by pseudopodia and gets enclosed in a food vacuole. Digestion occurs inside food vacuole. The digested food diffuses into the cell cytoplasm and undigested part of food is expelled at any point on the body surface.

Nutrition in multicellular organisms such as human beings takes place through a specialised system called digestive system.

Human alimentary canal is about 9 metres long tube, from mouth to anus. In mouth, teeth bite, tear, chew and grind the food. Food is mixed thoroughly with saliva secreted by salivary glands and is swallowed with the help of muscular tongue.

Oesophagus is about 25 cm long muscular tube which passes food from mouth to stomach by its peristaltic movements.

2. Stomach is a muscular bag. It contains gastric glands in its wall that secrete gastric juice, hydrochloric acid (HCl) and mucus. Stomach stores food, churns it into a fine pulp called chyme and mixes gastric juice with it.
3. Small intestine is about 6 metres (20 feet) long and 2.5 cm wide coiled tube. It is the site of complete digestion of food. It receives the secretions from pancreas and liver. It has numerous finger-like projections called villi for absorption of food. The unabsorbed food is passed to large intestine.
4. Large intestine (colon) is about 1.5-1.8 metres (5-6 feet) long and about 6 cm wide tube. It opens outside through anus. Caecum is a small pouch in large intestine which ends into a blind tube called vermiform appendix. In man, it has no function and is a vestigial organ.
5. Salivary glands, liver and pancreas are main digestive glands which help in digestion.

Digestion of food in different parts of alimentary canal takes place by the secretions of digestive glands.

1. In mouth, enzyme salivary amylase present in saliva acts upon the starch of food. Gastric

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glands release hydrochloric acid, pepsin and mucus. Hydrochloric acid makes food acidic. It destroys bacteria present in the food. Mucus protects the inner lining of stomach from action of HCl. Pepsin digests proteins.

2. In small intestine, bile juice secreted by liver and stored in a pouch-like organ called gall bladder, makes the medium alkaline for the action of enzymes of pancreatic and intestinal juice and emulsifies fats. Trypsin brings about protein digestion. Lipase acts on emulsified fats and breaks them into fatty acids and glycerol.

In large intestine, the water from undigested food is absorbed and rest is removed from the body through anus.

1. The end products of carbohydrate, fat and protein digestion are glucose, glycerol and fatty acids, and a acids respectively.
2. Glucose and amino acids diffuse into the blood through intestinal wall. Glycerol and fatty acids enter the lymph vessels or lacteals present in villi.

5.2 RESPIRATION

Respiration is the process of oxidation or breaking down of organic compounds (particularly glucose) to obtain energy. Respiration may be

1. Aerobic respiration, in which breakdown of glucose occurs in the presence of oxygen.
2. Anaerobic respiration, in which breakdown of glucose occurs in the absence of oxygen.

Glycolysis is the first step in the breakdown of glucose, common to both types of respiration. It occurs in cytoplasm. During glycolysis, one molecule of glucose (6-carbon molecule) is broken down into two molecules of pyruvic acid or pyruvate (3-carbon molecule) with four molecules of ATP.

1. In the presence of oxygen, pyruvic acid inside the mitochondria is broken down into CO_2 , H_2O and energy is released. This process is called Krebs cycle.
2. In the absence of oxygen, pyruvic acid breaks into ethyl alcohol or ethanol (2-carbon

molecule), CO_2 and releases energy. It is called anaerobic respiration.

3. In lack (deficiency) of oxygen in muscles, pyruvic acid breaks into lactic acid (3-carbon molecule) and energy, is released.

Respiration in plants occurs through stomata of leaves, through lenticels in older portions of stems and through root hair in roots.

Respiration in unicellular animals (Amoeba, Paramecium) and simple multicellular animals (sponges, coelenterates, planarian and free-living nematodes) occurs as direct respiration and in complex multicellular animals occurs as indirect respiration through skin (frog, earthworm, etc.), gills (fish, molluscs, etc.), air tubes or trachea (insects) book lungs (spider, scorpion) and lungs (vertebrates except fish).

5.2.1 Respiratory System in Man

Air is taken into through nostrils and nasal passages (Nose). They open into the pharynx by internal nares. Hair and mucous lining of nasal passages trap dust and bacteria coming with air and make inhaled air moist.

Trachea opens in pharynx. Its opening in the pharynx called glottis and is guarded by a cartilaginous flap called epiglottis. The wall of trachea is supported with C-shaped cartilaginous rings. Trachea is divided into two primary bronchi.

1. Each primary bronchus enters the lung of its side and divides into secondary and tertiary (segmental) bronchi. A bronchus with its branches is called a bronchial tree.
2. Each segmental bronchus after fine branching, ends in alveolar ducts which open into alveolar sacs.
3. Alveoli have enormous surface area for gaseous exchange and are covered with network of capillaries for rich blood supply.
4. Passage of air in human body is nostrils → Trachea → Bronchi → Alveolar sacs.

The lungs are the main respiratory organs in man. They are a pair of conical, highly spongy, air-filled sacs formed of millions of alveoli. They are enclosed by a double-layered membrane

called pleura and are located inside the air-tight thoracic cavity. The right lung is larger with three lobes while the left lung has just two lobes. Breathing is a mechanical process which is completed in following two steps:

1. **Inspiration:** It is taking in of air. In this process, ribs and sternum are pulled upward, forward and outward, diaphragm flattens increasing the volume of thoracic cavity and causing lungs to expand. Due to this, fresh air from air passages rushes in to fill in the alveoli.
2. **Expiration:** It is expelling of air out of lungs. In this process, ribs and sternum are pulled inward which decreases the volume of thoracic cavity and the air is forced out.
3. Exchange of gases occurs between alveolar air and blood in capillaries inside lung alveoli. Oxygen from the alveolar air diffuses into the blood and carbon dioxide from the blood diffuses into the alveolar air.
4. Transport of respiratory gases occurs by haemoglobin in RBCs of blood which combines with oxygen and forms an unstable compound, oxyhaemoglobin. Oxyhaemoglobin breaks down in the tissues and releases oxygen.
5. Carbon dioxide produced during cellular respiration is removed as bicarbonate dissolved in blood plasma and is carried to the lungs. In lungs, bicarbonate releases CO_2 .

5.3 TRANSPORTATION

Transportation is the movement of glucose, oxygen and other organic and inorganic substances from one part of the body to other.

1. In unicellular and simple multicellular organisms, substances move from cell to cell by diffusion.
2. In complex organisms, transport systems are developed.

5.3.1 Transportation in Plants

1. The upward movement of water and mineral

salts from roots to the aerial parts (leaves, branches, flowers, etc.) of the plant against the gravitational force is called ascent of sap. It occurs through xylem tissue throughout the plant body,

2. Root pressure, cohesion-adhesion tension of water molecules and the transpiration pull help in the upward movement of sap from root to the apex of a tree.

The transport of food from leaves to different parts of plant is called as translocation. It is carried out by phloem tissue.

5.3.2 Transportation in Human Beings

In human beings, transportation is carried out by circulatory system. It is composed of blood, blood vessels, heart, lymph and lymph vessels.

5.3.3 Heart – The Pumping Machine

1. Heart is a muscular pumping organ of the size of a fist. It is enclosed in a sac called pericardium, formed of two pericardial membranes.
2. Human heart is four-chambered. It consists of two auricles or atria and two ventricles. Auricles are receiving chambers, whereas ventricles are distributing chambers.
3. Each atrium opens into the ventricle of its side by an atrio-ventricular aperture. A bicuspid valve guards the left atrio-ventricular aperture, whereas a tricuspid valve guards the right atrio-ventricular aperture.
4. Three semilunar pulmonary valves guard the opening of right ventricle into the pulmonary aorta. Three semilunar aortic valves guard opening of left ventricle into aorta.
5. Right auricle receives deoxygenated blood from the body through superior or anterior vena cava or precaval and inferior or posterior vena cava or postcaval.
6. Left auricle receives oxygenated blood from the lungs via four pulmonary veins.
7. Pulmonary trunk arises from the right ventricle and carries deoxygenated blood to the lungs.
8. Aorta or aortic arch arises from the left

ventricle and supplies oxygenated blood to the whole body.

9. In double circulation, separation of deoxygenated and oxygenated blood results in two independent circulations: Pulmonary circulation for the oxygenation of deoxygenated blood and systemic circulation for the supply of oxygenated blood to all body organs.

5.3.4 Heartbeat and Cardiac Cycle

Working of heart includes rhythmic contractions (systole) and relaxations (diastole) of Cardiac cycle is one complete heartbeat which includes one systole and one diastole.

5.3.5 Blood Pressure

The pressure exerted by the blood discharged due to contraction of left ventricle on the wall of blood vessels is called blood pressure.

1. Systolic pressure (120 mm of Hg) is exerted during ventricular contraction (ventricular systole).
2. Diastolic pressure (80 mm of Hg) is exerted during relaxation of ventricle (ventricular diastole).

5.3.6 Blood Vessels

These are of three types:

1. Arteries are distributing vessels. They carry blood from heart to various body organs.
2. Veins are collecting vessels. They collect blood from various parts of the body and carry it to the heart.
3. Capillaries are microscopic vessels which form a link between arteries and veins.

5.3.7 Blood

It is a red-coloured fluid. The fluid matrix of blood is called plasma. Blood cells or corpuscles (RBCs, WBCs and platelets) are suspended in the plasma.

5.3.8 Lymphatic System

The lymphatic system consists of lymph (the fluid), lymph vessels and lymph nodes.

1. Lymph is filtered blood. It is a link between blood and tissue fluid which facilitates exchange of substances between blood and body cells by diffusion. The tissue fluid on entering lymphatic capillaries is called lymph.
2. Lymph vessels are called lymphatics. They form a network in the body. In the intestinal wall, they are called lacteals.
3. Lymph nodes are formed of lymphatic tissue. Thymus and spleen are lymphatic organs. Tonsils and adenoids are masses of lymphatic tissue.

5.4 EXCRETION

Excretion is the removal of harmful and unwanted metabolic wastes from the body.

Osmoregulation is the regulation of osmotic pressure of body fluids by controlling the amount of water and salts in the body.

5.4.1 Excretion in Plants

Waste products in plants are tannins, resins, gums, alkaloids, essential oils, salt crystal, etc. They are deposited in old and non-functional xylem, older leaves which are soon shed off, dead cells of bark, etc. The plants living in saline habitats excrete excess of salts.

5.4.2 Excretion in Animals

In unicellular animals, ammonia and carbon dioxide diffuse out of their body by simply diffusion.

Excretion in man occurs by one pair of kidneys located in the abdominal cavity. Kidneys form urine, remove nitrogenous wastes, excess of water and salts from the blood. Blood enters Kidneys for filtration through a pair of renal arteries and a pair of renal veins collects filtered blood from kidneys.

Nephrons or uriniferous tubules are basic filtration units of kidney.

1. The cup-like hollow proximal part of each nephron is known as Bowman's capsule. It is filled with a tuft of blood capillaries called

glomerulus. The glomerulus and Bowman's capsule collectively form a Malpighian body which acts as ultrafilters. The blood while passing through glomerular capillaries is filtered under pressure and the filtrate is collected in the cavity of Bowman's capsule.

- The remaining tubular part of nephron has Proximal Convolute Tubule (PCT), U-shaped Henle's Loop and Distal Convolute Tubule (DCT). The distal convolute tubule opens into the collecting tubule which finally opens into pelvis part of ureter. All parts of renal tubule are covered with a network of peritubular capillaries.

5.4.3 Urine Formation

Urine formation involves following steps:

- Ultrafiltration:** Water and dissolved substances such as urea, uric acid, glucose, amino acids, some vitamins and inorganic salts are filtered from the blood flowing under pressure in glomerular capillaries and form nephric or glomerular filtrate.
- Selective Reabsorption:** Useful substances (glucose, all amino acids, some inorganic salts and most water) are reabsorbed from nephric filtrate into the blood.
- Tubular Secretion:** The excretory products such as creatinine and potassium are secreted from the blood into the nephric filtrate by diffusion.
- This way nephric filtrate changes into urine which is a straw-coloured liquid due to presence of urochrome. It contains water and dissolved solids.

Urine is collected in the urinary bladder. It is released periodically to the exterior through urethra.

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MULTIPLE CHOICE QUESTIONS

- To differentiate a living from non-living the movement of is needed.
 - Molecular structure
 - Non-static movement
 - In organic structure
 - Movement

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- The maintenance functions of living organisms must go on even when they are not doing
 - Anything particular
 - Sleeping
 - Moving at constant speed
 - Hibernation

Sol : www.cbse.site/sc/fm102

- Life process involves:
 - Continuous process of maintaining functions of living organism.
 - All the activities being performed during life cycle of an organism.
 - Generation of energy for the purpose of metabolism.
 - Differs from individual to individual.

Sol : www.cbse.site/sc/fm103

- Various maintenance processes are needed to:
 - Survival
 - Prevent damage and break down
 - Routine process
 - Release energy

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5. If the body size of the organisms is to grow:
- Additional carbon based food or raw material is needed.
 - Needs more energy to expand.
 - Have to go through complex process which sometimes is not possible.
 - Needs lots of cell formation.

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6. Due to the complexities of carbon sources, different organism use:
- Different kinds of nutritional processes
 - Different kind of growing processes
 - Different kind of metabolism
 - Different kind of cell structure

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7. Since the environment is not under the control of the individual organism, the outside source of energy is quite:
- Varied
 - Same
 - Differ from case to case
 - Under the control of organism

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8. All the sources of energy need to be broken down in the body and converted into:
- Uniform energy
 - Molecular energy
 - Chemical reactions
 - Digestive process

Sol : www.cbse.site/sc/fm108

9. Those reactions which are most common chemical means to break-down molecules are:
- Oxidizing-reducing reactions

- Hibernation
- Chemical reaction
- Needed for well being

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10. The process of break-down of food sources for cellular needs is known as
- Respiration
 - Molecular breakup
 - Excretion
 - Molecular process

Sol : www.cbse.site/sc/fm110

11. Which statement is not correct for single celled organism:
- no specific organs for taking in food needed.
 - exchange of gases or removal of wastes may be needed.
 - single cell organisms are the newest form of life.
 - entire surface of the organism is in contact with the environment.

Sol : www.cbse.site/sc/fm111

12. The reason for single cell diffusion inefficiency in multicellular organism is
- Cell diffusion is a complex process
 - Big size and complex body designs
 - Cell diffusion requires lots of time
 - Cell diffusion is rather a simple process to be carried out in multi cell organism

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13. In multi-cellular organisms, various body parts have specialized in the functions they

perform with the help of:

- (a) Specialized cells
- (b) Multiple organs
- (c) Multiple structure
- (d) Specialized tissues

Sol : www.cbse.site/sc/fm113

14. The uptake of food and of oxygen in body is done with the help of:

- (a) Specialized tissues
- (b) Specialized cells
- (c) Multiple organs
- (d) None of the above

Sol : www.cbse.site/sc/fm114

15. Various chemical reactions in body use for energy generation.

- (a) Nitrogen and carbon
- (b) Oxygen
- (c) Carbon sources and oxygen
- (d) None of the above

Sol : www.cbse.site/sc/fm115

16. The process by which all the by products discarded from the body is known as:

- (a) Respiration
- (b) Sweating
- (c) Excretion
- (d) None of the above

Sol : www.cbse.site/sc/fm116

17. Choose the incorrect statement:

- (a) We don't need energy while not doing any activity
- (b) We release energy and feel tired while doing various activities
- (c) Energy is needed to maintain the

state of body

- (d) Our body need to synthesize protein to develop

Sol : www.cbse.site/sc/fm117

18. Organisms which uses simple food material obtained from inorganic sources in the form of carbon dioxide and water are:

- (a) Single cell organism
- (b) Multi cell organism
- (c) Virus
- (d) Autotrophs

Sol : www.cbse.site/sc/fm118

19. Various organism breakdown the complex substances into simpler one with the help of:

- (a) Multiple organs
- (b) Small and large intestine
- (c) Enzymes
- (d) Bacteria

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20. Bio catalysts are also known as:

- (a) Enzymes
- (b) Autotrophs
- (c) Heterotrophs
- (d) Excretory tissue

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21. The heterotrophs survival depends directly

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or indirectly on:

- (a) Surroundings
- (b) Ecology and surrounding
- (c) Autotrophs
- (c) Molecular structure

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22. Heterotrophic organisms include

- (a) Animals and fungi
- (b) Plants
- (c) Bacteria and fungus
- (d) Fungus only

Sol : www.cbse.site/sc/fm122

23. Autotrophic organism requires for their survival.

- (a) only carbon dioxide
- (b) water and sunlight
- (c) both (a) and (b)
- (d) None of the Above

Sol : www.cbse.site/sc/fm123

24. The process by which autotrophic organism fulfill their energy requirement is known as

- (a) Respiration
- (b) Transpiration
- (c) Photosynthesis
- (d) Excretion

Sol : www.cbse.site/sc/fm124

25. The process by which autotrophs take in substances from the outside and convert them into stored forms of energy is known as

- (a) Photosynthesis
- (b) Respiration
- (c) Molecular breakup

(d) Cell diffusion

Sol : www.cbse.site/sc/fm125

26. Autotrophic organism converts of carbon dioxide and water into carbohydrates in the presence of

- (a) Sunlight and carbon dioxide
- (b) Sunlight and chlorophyll
- (c) Carbon dioxide and Nitrogen
- (d) Chlorophyll and carbon dioxide

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27. are utilised for providing energy to the plants.

- (a) Carbohydrates
- (b) Enzymes
- (c) Protein
- (d) Carbon dioxide

Sol : www.cbse.site/sc/fm127

28. Following form of energy acts as internal energy reserve for plants

- (a) Protein
- (b) Carbohydrates
- (c) Starch
- (d) Fructose

Sol : www.cbse.site/sc/fm128

29. Human body stores energy in form of:

- (a) Glucose
- (b) Insulin
- (c) glycogen
- (d) Fructose

Sol : www.cbse.site/sc/fm129

30. During the process of photosynthesis,

absorption of light energy is done by

- (a) Leaf
- (b) Midrib
- (c) Vein
- (d) Chlorophyll

Sol : www.cbse.site/sc/fm130

- 31.** Process of conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen in plants is known as
- (a) Photosynthesis
 - (b) Photoperiodism
 - (c) Plant nutrition
 - (d) Plant hormone functions

Sol : www.cbse.site/sc/fm131

- 32.** Which plants take up carbon dioxide at night and prepare an intermediate?
- (a) Desert plants
 - (b) Bamboo
 - (c) Coattails
 - (d) Palm tree

Sol : www.cbse.site/sc/fm132

- 33.** The green organelle on surface of leaves containing chlorophyll are known as
- (a) Xylem
 - (b) Epidermis
 - (c) Chloroplasts
 - (d) Vascular bundle

Sol : www.cbse.site/sc/fm133

- 34.** Tiny pores present on the surface of the leaves are known as
- (a) Chloroplasts
 - (b) Xylem

- (c) Guard cell
- (d) Stomata

Sol : www.cbse.site/sc/fm134

- 35.** Massive amounts of gaseous exchange takes place in the leaves through stomata for the purpose of
- (a) Photosynthesis
 - (b) Carrying carbon dioxide
 - (c) Reduction of carbon dioxide
 - (d) Generation of carbohydrates

Sol : www.cbse.site/sc/fm135

- 36.** The exchange of gases in plants can be done through
- (a) Surface of plant
 - (b) Roots
 - (c) Leaves
 - (d) All of the above

Sol : www.cbse.site/sc/fm136

- 37.** The purpose of closing the pores by the plants when it doesn't need photosynthesis is
- (a) To save the water
 - (b) To save energy
 - (c) To save food
 - (d) None of the above

Sol : www.cbse.site/sc/fm137

- 38.** The opening and closing of the leaf pores is a function of the
- (a) Guard cells
 - (b) Stomata
 - (c) Chloroplast
 - (d) Vascular bundle

Sol : www.cbse.site/sc/fm138

- 39.** The reason for swelling of guard cell is due to the presence of
- (a) Sunlight
 - (b) Food
 - (c) Water
 - (d) Carbon dioxide

Sol : www.cbse.site/sc/fm139

- 40.** is an essential element used in the synthesis of proteins and other compounds in plants.
- (a) Oxygen
 - (b) Water
 - (c) Nitrogen
 - (d) Carbon dioxide

Sol : www.cbse.site/sc/fm140

- 41.** Most of the plant's nitrogen, phosphorus, iron and magnesium are taken up from the
- (a) Aquatic sources
 - (b) Soil
 - (c) Mountains
 - (d) Sea water

Sol : www.cbse.site/sc/fm141

- 42.** Inorganic nitrates or nitrites helps the plants for the synthesis of:
- (a) Carbohydrates
 - (b) Nitrogen
 - (c) Carbon dioxide
 - (d) Protein

Sol : www.cbse.site/sc/fm142

- 43.** Atmospheric nitrogen is converted into organic matter by with plant with the help of
- (a) Bacteria

- (b) Organic compounds
- (c) Air born viruses
- (d) Fertilizers

Sol : www.cbse.site/sc/fm143

- 44.** Each organism is adapted to its environment, the type of nutrition taken by them depends on
- (a) Environment
 - (b) Availability of food
 - (c) How it is obtained by the organism
 - (d) All of the above

Sol : www.cbse.site/sc/fm144

- 45.** Organism who break down the food outside their body are
- (a) Fungi
 - (b) Virus
 - (c) Tape worm
 - (d) None of the above

Sol : www.cbse.site/sc/fm145

- 46.** Organisms which derive nutrition from plants or animals without killing them are
- (a) Ticks
 - (b) Yeast
 - (c) Mushroom
 - (d) Fungi

Sol : www.cbse.site/sc/fm146

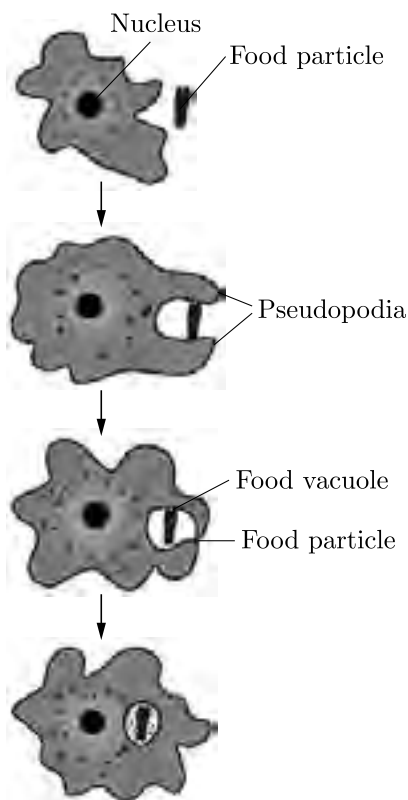
- 47.** Single cell organism take food by their
- (a) Entire surface
 - (b) Food vacuole
 - (c) Nucleus
 - (d) Pseudopodia

Sol : www.cbse.site/sc/fm148

48. The broken down food into simpler form in amoeba is diffused into
- Cytoplasm
 - Ribosome
 - DNA
 - Mesosome

Sol : www.cbse.site/sc/fm149

49. Identify the micro-organism whose nutrition type is shown below :



- Food bacteria
- Yeast
- Fungus
- Amoeba

Sol : www.cbse.site/sc/fm147

50. The undigested material is in some micro-organism.
- Absorbed in the surface
 - Thrown out

- Helps for further growth
- None of the above

Sol : www.cbse.site/sc/fm150

51. Some unicellular organism like paramoecium take food at a
- Specific spot
 - Entire surface
 - Nucleus
 - Food vacuole

Sol : www.cbse.site/sc/fm151

52. The alimentary canal in human beings is extended from:
- Small intestine to large intestine
 - Entire large intestine
 - Small intestine to anus
 - Mouth to anus

Sol : www.cbse.site/sc/fm152

53. "Water" like fluid in our mouth is secreted by
- Pancreas
 - Thyroid
 - Pituitary
 - Salivary gland

Sol : www.cbse.site/sc/fm153

54. The enzyme that break down starch into simpler form is known as
- Salivary amylase
 - Lipase
 - Maltase
 - Trypsin

Sol : www.cbse.site/sc/fm154

- 55.** The digestion in stomach is taken care by the which is present in the wall of the stomach.
- (a) Gastric glands
 - (b) Digestive juices
 - (c) Salivary amylase
 - (d) Lipase

Sol : www.cbse.site/sc/fm155

- 56.** From the mouth the food is taken to the stomach through
- (a) Bile duct
 - (b) Pancreas
 - (c) Diaphragm
 - (d) Oesophagus

Sol : www.cbse.site/sc/fm156

- 57.** Hydrochloric acid facilitates the action of
- (a) keratin
 - (b) collagen
 - (c) elastin
 - (d) pepsin

Sol : www.cbse.site/sc/fm157

- 58.** Identify the secretion inside the stomach which helps to protect the inner lining of stomach from the action of acid
- (a) Mucus
 - (b) Hydrochloric acid
 - (c) Digestive juices
 - (d) Enzymes

Sol : www.cbse.site/sc/fm158

- 59.** The function of sphincter muscle is to
- (a) Regulate digestive process
 - (b) Improves digestion

- (c) Release digestive juices
- (d) Regulate exit of food

Sol : www.cbse.site/sc/fm159

- 60.** The delivers the digestive juice to the small intestine through small tubes called ducts.
- (a) Stomach
 - (b) Pancreas
 - (c) Large intestine
 - (d) Anus

Sol : www.cbse.site/sc/fm160

- 61.** The longest part of alimentary canal in human body is
- (a) Small intestine
 - (b) Large intestine
 - (c) Food pipe
 - (d) None of the above

Sol : www.cbse.site/sc/fm161

- 62.** Which body organ is responsible for the complete digestion of carbohydrates, fats and protein?
- (a) Stomach
 - (b) Large intestine
 - (c) Liver
 - (d) Small intestine

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- 63.** The food coming from the stomach is
- (a) Alkaline
 - (b) Acidic
 - (c) Neutral
 - (d) None of these

Sol : www.cbse.site/sc/fm163

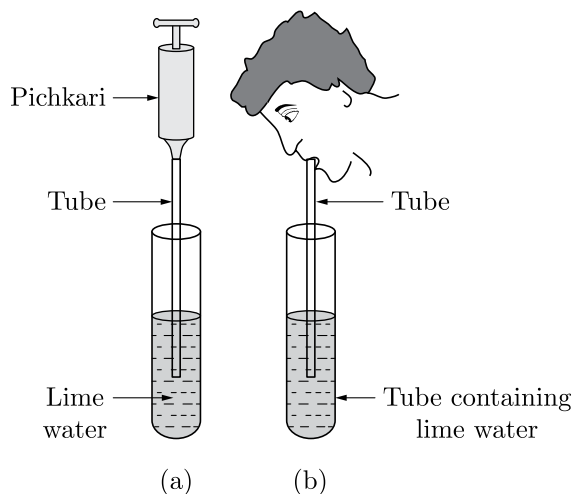
64. The inner lining of the has numerous finger-like projections called villi which increase the surface area for absorption.
- small intestine
 - large intestine
 - stomach
 - pancreas

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65. Tooth decay will NOT be prevented by
- regular brushing
 - regular flossing
 - regular visits to the dentist
 - increasing the consumption of sucrose

Sol : www.cbse.site/sc/fm165

66. In the given activity, the lime water of which test tube will get milky faster?



- Test tube (a)
- Test tube (b)
- Both test tube will take same time
- Can't say

Sol : www.cbse.site/sc/fm166

67. Which gas turns lime water milky?
- Oxygen
 - Hydrogen
 - Carbon dioxide
 - Nitrogen

Sol : www.cbse.site/sc/fm167

68. This process of break-down of glucose, a six-carbon molecule, into a three-carbon molecule pyruvate, takes place in
- Cytoplasm
 - Mitochondria
 - Golgi bodies
 - Endoplasmic reticulum

Sol : www.cbse.site/sc/fm168

69. What is "Fermentation"?
- The process of break-down of glucose, a six-carbon molecule, into a three-carbon molecule pyruvate.
 - The breakdown of organic substances by organisms to release energy in the absence of oxygen.
 - The breakdown of organic substances by organisms to release energy in the presence of oxygen.
 - None of the above

Sol : www.cbse.site/sc/fm169

70. Breakdown of pyruvate using oxygen takes place in the
- Cytoplasm
 - Mitochondria
 - Golgi bodies
 - Endoplasmic reticulum

Sol : www.cbse.site/sc/fm170

71. What causes cramps in our muscles during

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sudden activity?

- (a) The pyruvate gets converted into lactic acid to release of energy.
- (b) The pyruvate gets converted into carbon dioxide to release of energy.
- (c) The pyruvate gets converted into ethanol to release of energy.
- (d) The pyruvate gets converted into glucose to release of energy.

Sol : www.cbse.site/sc/fm171

72. Pyruvate is a-

- (a) three-carbon molecule
- (b) four-carbon molecule
- (c) five-carbon molecule
- (d) six-carbon molecule

Sol : www.cbse.site/sc/fm172

73. During the process of respiration in plants, the direction of diffusion of oxygen and carbon dioxide depends upon

- (a) the environmental conditions
- (b) the requirements of the plant
- (c) both (a) and (b)
- (d) none of these

Sol : www.cbse.site/sc/fm173

74. The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms, because-

- (a) the amount of dissolved oxygen in water is fairly high as compared to the amount of oxygen in the air.
- (b) the amount of dissolved oxygen in water is fairly low as compared to the amount of oxygen in the air.
- (c) aquatic organisms need more oxygen to breath.
- (d) aquatic organisms do not have proper

organs for breathing.

Sol : www.cbse.site/sc/fm174

75. helps in preventing the collapse of the air passage during breathing.

- (a) Nostrils
- (b) Mucus
- (c) Lungs
- (d) Rings of cartilage

Sol : www.cbse.site/sc/fm175

76. The respiratory route of air in the respiratory tract of human is:

- (a) nostrils → pharynx → larynx → trachea → alveoli.
- (b) alveoli → pharynx → larynx → trachea → nostrils.
- (c) alveoli → larynx → trachea → pharynx → nostrils.
- (d) nostrils → trachea → pharynx → larynx → alveoli.

Sol : www.cbse.site/sc/fm176

77. Normal range of haemoglobin content in human beings is-

- (a) For men, 12.0 to 15.5 grams per decilitre. For women, 13.5 to 17.5 grams per decilitre.
- (b) For men, 13.5 to 17.5 grams per decilitre. For women, 12.0 to 15.5 grams per decilitre.
- (c) For men, 10.5 to 17.5 grams per decilitre. For women, 10.0 to 15.5 grams per decilitre.
- (d) For men, 15.5 to 20.5 grams per decilitre. For women, 12.0 to 15.5 grams per decilitre.

Sol : www.cbse.site/sc/fm177

78. What type of tissue is blood?

- (a) muscle tissue
- (b) nervous tissue
- (c) fluid connective tissue
- (d) epithelial tissue

Sol : www.cbse.site/sc/fm178

79. Blood consists of a fluid medium called in which the cells are suspended.

- (a) Plasma
- (b) RBCs
- (c) Platelets
- (d) WBCs

Sol : www.cbse.site/sc/fm179

80. Oxygen is carried by the cells.

- (a) white blood cells
- (b) red blood cells
- (c) muscle cells
- (d) nerve cells

Sol : www.cbse.site/sc/fm180

81. The function of valves present in auricles and ventricles is-

- (a) It ensures that the blood flows only in one direction.
- (b) Helps in coagulation of blood
- (c) Destroy the worn out blood cells
- (d) Measure pressure of body fluids

Sol : www.cbse.site/sc/fm181

82. The vein which brings clean blood from the lungs into the heart is known as:

- (a) Pulmonary vein
- (b) Hepatic vein
- (c) Superior vena cava
- (d) Pulmonary artery

Sol : www.cbse.site/sc/fm182

83. In higher vertebrates, systemic circulation takes place between

- (a) body parts and lungs
- (b) body parts and heart
- (c) heart and body parts
- (d) lungs and heart

Sol : www.cbse.site/sc/fm183

84. The upper two chambers of the heart are called

- (a) aorta
- (b) auricles
- (c) septa
- (d) ventricles

Sol : www.cbse.site/sc/fm184

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85. Contraction of auricles of the heart is called

- (a) Systole
- (b) Diastole
- (c) Heart beat
- (d) Hypertension

Sol : www.cbse.site/sc/fm185

86. Which instrument is used to measure blood pressure?

- (a) Thermometer
- (b) Electrocardiograph

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- (c) Pulse recorder
- (d) Sphygmomanometer

Sol : www.cbse.site/sc/fm186

87. Amphibians or many reptiles have hearts.

- (a) two-chambered
- (b) three-chambered
- (c) four-chambered
- (d) five-chambered

Sol : www.cbse.site/sc/fm187

88. Cells formed in the bone marrow are

- (a) Erythrocytes only
- (b) Leucocyte only
- (c) Both erythrocytes and leucocyte
- (d) Platelets and blood cells

Sol : www.cbse.site/sc/fm188

89. The normal rate of heart beat in an adult is per minute.

- (a) 67 times
- (b) 72 times
- (c) 90 times
- (d) 100 times

Sol : www.cbse.site/sc/fm189

90. Arteries are the vessels which carry blood away from the

- (a) Various body parts to the heart
- (b) Heart to various organs of the body
- (c) Heart to lungs
- (d) Lungs to heart

Sol : www.cbse.site/sc/fm190

91. Which part of blood helps in clotting?

- (a) WBCs
- (b) RBCs
- (c) Platelets
- (d) Plasma

Sol : www.cbse.site/sc/fm191

92. Arteries and veins are connected by a network of extremely narrow tubes called:

- (a) Sieve tubes
- (b) Capillaries
- (c) Vena cava
- (d) Valves

Sol : www.cbse.site/sc/fm192

93. The pulmonary artery arises from the

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

Sol : www.cbse.site/sc/fm193

94. Heart is surrounded and protected by

- (a) Retro peritoneum
- (b) Muscles
- (c) Pericardium
- (d) Lungs

Sol : www.cbse.site/sc/fm194

95. The valve that prevents backward flow of blood from the left auricle to the right auricle is the

- (a) mitral valve
- (b) auriculoventricular valve
- (c) tricuspid valve

(d) semilunar valve

Sol : www.cbse.site/sc/fm195

96. The chief function of lymph in a mammalian body is to

(a) destroy the worn out blood cells

(b) produce leucocyte

(c) destroy pathogens

(d) produce a hormone

Sol : www.cbse.site/sc/fm196

97. The number of chambers in a human heart is

(a) 3

(b) 2

(c) 4

(d) 5

Sol : www.cbse.site/sc/fm197

98. The colour of blood plasma is:

(a) Red

(b) Pale yellow

(c) Yellowish green

(d) Pink

Sol : www.cbse.site/sc/fm198

99. The only reptile having 4 chambered heart is:

(a) Snake

(b) Turtle

(c) Lizard

(d) Crocodile

Sol : www.cbse.site/sc/fm199

100. What is normal blood pressure in humans?

(a) 120/80 mm of Hg

(b) 130/60 mm of Hg

(c) 140/70 mm of Hg

(d) 140/ 90 mm of Hg

Sol : www.cbse.site/sc/fm200

101. Thrombocytes is another name for

(a) Red corpuscles

(b) Platelets

(c) Plasma

(d) White blood corpuscles

Sol : www.cbse.site/sc/fm201

102. Vitamin helps in blood clotting.

(a) Vitamin A2

(b) Vitamin B

(c) Vitamin E4

(d) Vitamin K

Sol : www.cbse.site/sc/fm202

103. The richest natural source of minerals for plants is

(a) chemical fertilizers

(b) soil

(c) air

(d) water

Sol : www.cbse.site/sc/fm203

104. Chlorophyll-containing organs of plant are-

(a) Stem

(b) Roots

(c) Leaves

(d) Flowers

Sol : www.cbse.site/sc/fm204

105. The moves water and minerals

obtained from the soil.

- (a) phloem
- (b) xylem
- (c) parenchyma
- (d) collenchyma

Sol : www.cbse.site/sc/fm205

106. The water which is lost through the stomata is replaced by

- (a) water from the xylem vessels in the leaf
- (b) water from the phloem vessels in the leaf
- (c) water from the veins in the leaf
- (d) none of the above

Sol : www.cbse.site/sc/fm206

107. The effect of root pressure in transport of water is more important at

- (a) day time
- (b) night time
- (c) both (a) and (b)
- (d) none of these

Sol : www.cbse.site/sc/fm207

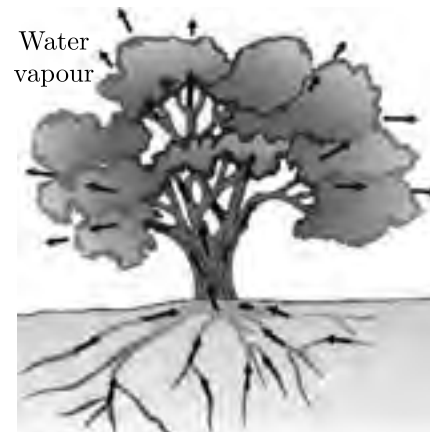
108. Transpiration helps :

- (a) in the absorption
- (b) in the upward movement of water minerals dissolved in it from roots to the leaves
- (c) in temperature regulation
- (d) All of the above

Sol : www.cbse.site/sc/fm208

109. Which process is shown by the following

picture?



- (a) Movement of food during photosynthesis in a tree
- (b) Movement of water during transpiration in a tree
- (c) Movement of minerals during in a tree
- (d) Movement of carbon dioxide during in a tree

Sol : www.cbse.site/sc/fm209

110. Trans location is the process in which plants deliver:

- (a) minerals from leaves to other parts of the plant
- (b) plant growth hormones from leaves to other parts of the plant
- (c) water and organic substance from leaves to other parts of the plant
- (d) all of the above

Sol : www.cbse.site/sc/fm210

111. The trans location of food and other substances takes place in the sieve tubes with the help of adjacent companion cells in :

- (a) upward directions
- (b) downward directions
- (c) both upward and downward directions

(d) none of these

Sol : www.cbse.site/sc/fm211

112. Which of the following substance is obtained from the soil by the plants:

- (a) oxygen
- (b) carbon dioxide
- (c) nitrogen
- (d) all of the above

Sol : www.cbse.site/sc/fm212

113. When the materials like sucrose are transferred to phloem tissue, the osmotic pressure of the tissue leading to of water into/from it.

- (a) Increases, entry
- (b) Decreases, entry
- (c) Increases, exit
- (d) Decreases, exit

Sol : www.cbse.site/sc/fm213

114. Plants use the energy stored in ATP to accomplish the process of transportation of

- (a) Water and minerals
- (b) Carbon dioxide
- (c) Oxygen
- (d) Food

Sol : www.cbse.site/sc/fm214

115. helps in trans location of food in plants.

- (a) Xylem
- (b) Phloem
- (c) Palisade cells
- (d) Root hairs

Sol : www.cbse.site/sc/fm215

116. The process of movement of solvent particles from region of less solute concentration to region of high solute concentration through semi permeable membrane is called

- (a) Diffusion
- (b) Osmosis
- (c) Transpiration
- (d) Translocation

Sol : www.cbse.site/sc/fm216

117. The biological process involved in the removal of these harmful metabolic wastes from the body is called

- (a) Photosynthesis
- (b) Respiration
- (c) Excretion
- (d) Translocation

Sol : www.cbse.site/sc/fm217

118. The excretory system of human beings includes a pair of kidneys, a pair of ureters, a urinary bladder and a urethra

- (a) a pair of kidneys, a pair of ureters
- (b) a urinary bladder and a urethra
- (c) a pair of kidneys, a urinary bladder and a urethra
- (d) a pair of kidneys, a pair of ureters, a urinary bladder and a urethra

Sol : www.cbse.site/sc/fm218

119. The purpose of making urine is to:

- (a) filter out waste products from the blood
- (b) filter out minerals from the blood
- (c) filter out water from the blood
- (d) none of these

Sol : www.cbse.site/sc/fm219

- 120.** Choose the correct pathway of urine in our body-
- Kidney → ureter → urethra → urinary bladder
 - Kidney → Ureter → urinary bladder → urethra
 - Kidney → urinary bladder → urethra → Ureter
 - Kidney → urethra → Ureter → urinary bladder

Sol : www.cbse.site/sc/fm222

- 121.** Which of the main toxic waste that kidney filters from blood?
- Ammonia
 - Uric acid
 - Urea
 - Water

Sol : www.cbse.site/sc/fm223

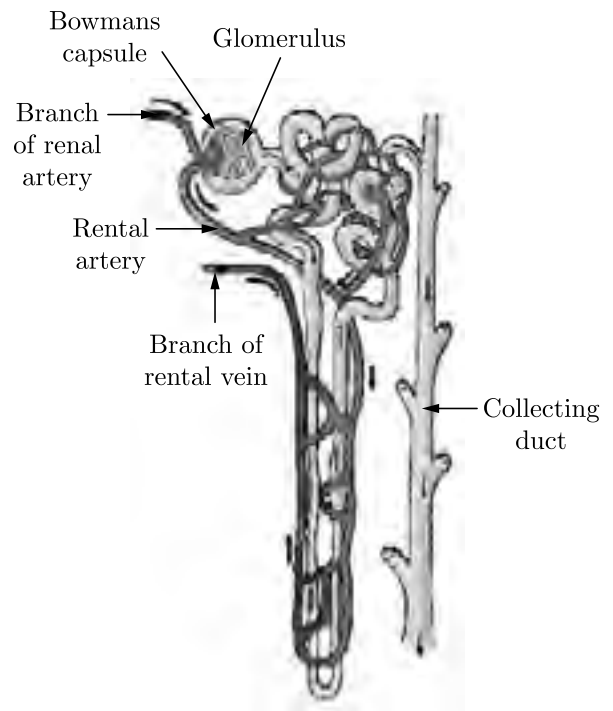
- 122.** The functional unit of kidney is:
- Nephron
 - Neuron
 - Glomerulus
 - Bowman's Capsule

Sol : www.cbse.site/sc/fm224

- 123.** Just as CO₂ is removed from the blood in the lungs, nitrogenous waste such as urea or uric acid are removed from blood in the -
- Kidney
 - Urinary bladder
 - Urethra
 - Ureters

Sol : www.cbse.site/sc/fm220

- 124.** The given diagram is the structure of a/an-



- Alimentary canal
- Respiratory tract
- Nephron
- Small intestine

Sol : www.cbse.site/sc/fm221

- 125.** An artificial kidney is a device to remove nitrogenous waste products from the blood through-
- Diaphragm
 - Dialysis
 - ECG
 - Electrolysis

Sol : www.cbse.site/sc/fm225

- 126.** Normally, in a healthy adult, the initial filtrate in the kidneys is about :
- 100 L/day
 - 150 L/day
 - 180 L/day
 - 200 L/day

Sol : www.cbse.site/sc/fm226

(d) Saprophytic

Sol : www.cbse.site/sc/fm231

127. Sweating is meant for:

- (a) Regulation of body temperature
- (b) Removal of excess salt
- (c) Removal of excess water
- (d) All of the above

Sol : www.cbse.site/sc/fm227

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

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

Sol : www.cbse.site/sc/fm232

128. Oxygen is a waste product generated during in plants.

- (a) Respiration
- (b) Photosynthesis
- (c) Both respiration and photosynthesis
- (d) None of the above

Sol : www.cbse.site/sc/fm228

133. Proteins \xrightarrow{A} Peptones

Identify the enzyme A involved in the above reaction.

- (a) Lipase
- (b) Pepsin
- (c) Bile juice
- (d) Salivary amylase

Sol : www.cbse.site/sc/fm233

129. Many-plant waste products are stored in:

- (a) Chloroplast
- (b) Mitochondria
- (c) Cellular vacuoles
- (d) Cytoplasm

Sol : www.cbse.site/sc/fm229

134. 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)	Water	Oxygen	Chlorophyll
(b)	Oxygen	Starch	Cellulose
(c)	Carbon dioxide	Water	Oxygen
(d)	Chlorophyll	Carbon dioxide	Water

Sol : www.cbse.site/sc/fm234

130. Which one of the following is the final product of photosynthesis?

- (a) Mineral salt
- (b) Starch
- (c) Fat
- (d) Protein

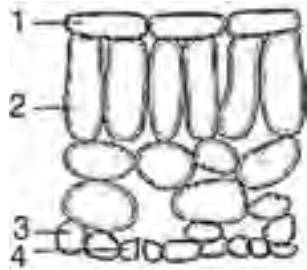
Sol : www.cbse.site/sc/fm230

131. What is the mode of nutrition in fungi?

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

135. The diagram shows the arrangement of cells inside the leaf of a green plant. (No

cell contents are shown).
Which of the following cells normally contain chloroplasts?



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

Sol : www.cbse.site/sc/fm235

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136. Choose the forms in which most plants absorb nitrogen:

- 1. Atmospheric nitrogen
- 2. Proteins
- 3. Nitrates and nitrites
- 4. Urea

Choose the correct option.

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

Sol : www.cbse.site/sc/fm236

137. 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)	Protein, amino acids and water	Water
(b)	Amino acids and water	Amino acids and water
(c)	Fatty acids, glycerol and water	Fatty acids, glycerol and water
(d)	Protein and water	Fatty acids and glycerol

Sol : www.cbse.site/sc/fm237

138. Only two of the following Statements accurately describe what happens in the mouth.

- 1. Amylase breaks down large starch molecules into smaller maltose molecules.
- 2. Chewing increases the surface area of food for digestion.
- 3. Saliva emulsifies fats into smaller droplets.
- 4. 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

Sol : www.cbse.site/sc/fm238

139. The process of conversion of glucose into pyruvic acid occurs in

- (a) chloroplast
- (b) mitochondria
- (c) outside the cell
- (d) cytoplasm

Sol : www.cbse.site/sc/fm239

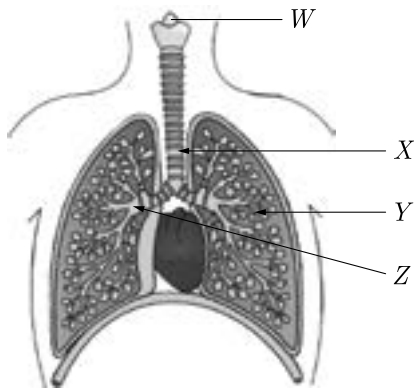
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140. During vigorous physical exercise, lactic acid is formed from glucose inside the muscle cells because
- there is excess of carbon dioxide
 - there is lack of water
 - there is lack of oxygen
 - none of the above

Sol : www.cbse.site/sc/fm240

141. The diagram shows part of the human gas exchange system.



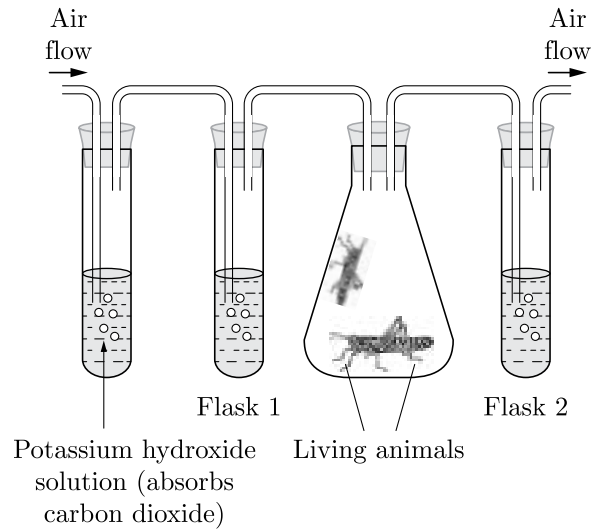
Here, W, X, Y and Z are?

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

Sol : www.cbse.site/sc/fm241

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142. 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

Sol : www.cbse.site/sc/fm242

143. Which of the following is the correct route for blood flow in a human?
- Right atrium → Right ventricle → Lungs → Left atrium → Left ventricle
 - Right atrium → Right ventricle → Left ventricle → Left atrium → Lungs
 - Left atrium → Left ventricle → Right ventricle → Right atrium → Lungs
 - Left atrium → Left ventricle → Lungs → Right ventricle → Right atrium

Sol : www.cbse.site/sc/fm243

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

Sol : www.cbse.site/sc/fm244

145. The waste product from skin is known as?

- (a) Salts
- (b) Urine
- (c) Sweat
- (d) Urea

Sol : www.cbse.site/sc/fm245

146. What happens if a person has one kidney removed?

- (a) They will accumulate excess urea
- (b) They will die
- (c) They will continue as normal
- (d) They will stop making urine

Sol : www.cbse.site/sc/fm246

147. A terrestrial animal must be able to?

- (a) Excrete large amount of water
- (b) Actively pump salts through skin
- (c) Excrete large amount of salts in urine
- (d) Conserve water

Sol : www.cbse.site/sc/fm247

148. Conversion of excess of amino acids into urea is done in?

- (a) Lungs
- (b) Large intestine
- (c) Liver
- (d) Cloaca

Sol : www.cbse.site/sc/fm248

149. The best long term solution for kidney failure is?

- (a) Dialysis
- (b) Kidney transplant
- (c) Surgery
- (d) Both (a) and (b)

Sol : www.cbse.site/sc/fm249

150. Flame cells are the excretory structures in

- (a) Arthropods
- (b) Platyhelminthes
- (c) Annelids
- (d) Crustaceans

Sol : www.cbse.site/sc/fm250

151. Main excretory organ of humans is?

- (a) Lungs
- (b) Skin
- (c) Kidney
- (d) Liver

Sol : www.cbse.site/sc/fm251

152. The excretory system of human beings includes?

- (a) A pair of kidneys
- (b) A pair of ureters
- (c) A urinary bladder and a urethra
- (d) All of the above

Sol : www.cbse.site/sc/fm252

153. Which of the following harmful products is not produced in the biochemical reactions of the cell of living organisms?

- (a) Urea
- (b) Uric acid
- (c) Ammonia
- (d) Lymph

Sol : www.cbse.site/sc/fm253

154. The blood vessel that begins and ends in capillaries?

- (a) Renal vein
- (b) Renal artery
- (c) Hepatic artery
- (d) Hepatic portal vein

Sol : www.cbse.site/sc/fm254

155. In our body which organ is responsible for conversion of ammonia into urea?

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

Sol : www.cbse.site/sc/fm255

156. What is the name of the blood vessels that provide nutrition of the heart wall?

- (a) Pulmonary arteries
- (b) Pulmonary veins
- (c) Coronary arteries
- (d) Descending aorta

Sol : www.cbse.site/sc/fm256

157. Which of the following is the correct features of 'lymph'?

- (a) It is similar to the plasma of blood, colourless and contain less protein.

(b) Similar to the WBC of blood, colourless and contain more protein.

(c) Similar to the RBC of blood and red in colour.

(d) It contains more fat

Sol : www.cbse.site/sc/fm257

158. By which cell the process of opening and closing of stomata is controlled?

- (a) Epidermal Cell
- (b) Guard Cell
- (c) Accessory Cell
- (d) Leaf Cell

Sol : www.cbse.site/sc/fm258

159. Which organ is known as "Blood bank" ?

- (a) Heart
- (b) Liver
- (c) Spleen
- (d) Kidney

Sol : www.cbse.site/sc/fm259

160. Which of the following is carried by lymph which is digested and absorbed from intestine?

- (a) Fat
- (b) Protein
- (c) Minerals
- (d) Carbohydrates

Sol : www.cbse.site/sc/fm260

161. Tricuspid valve is present in ?

- (a) Right atrium and right ventricle
- (b) Left atria and left ventricle
- (c) Wall of atrium
- (d) Wall of ventricle

Sol : www.cbse.site/sc/fm261

162. Which of the following helps in maximum transport of oxygen?

- (a) Red blood corpuscles
- (b) Platelets
- (c) Plasma
- (d) White blood corpuscles

Sol : www.cbse.site/sc/fm262

163. Four chambered heart is characteristics feature of?

- (a) Fishes
- (b) Amphibians
- (c) Reptiles
- (d) Mammals

Sol : www.cbse.site/sc/fm263

164. Where does the maximum exchange of material between blood and surrounding cells occur?

- (a) Heart
- (b) Capillaries
- (c) Arteries
- (d) Veins

Sol : www.cbse.site/sc/fm264

165. Dead cells of phloem are

- (a) Companion cells
- (b) Phloem fibres
- (c) Phloem parenchyma
- (d) Sieve tubes

Sol : www.cbse.site/sc/fm265

166. Largest heart is found in

- (a) Elephant
- (b) Giraffe
- (c) Crocodile
- (d) Lion

Sol : www.cbse.site/sc/fm266

167. Choose the correct statement that describe the 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 organs of the body.
- (c) They have thick elastic walls, blood flows under low pressure, carry blood from the 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.

Sol : www.cbse.site/sc/fm267

168. For the start of respiration, a living cell requires?

- (a) Glucose
- (b) Glucose + O₂
- (c) O₂
- (d) Glucose + ATP

Sol : www.cbse.site/sc/fm268

169. Name the term which means 'taking in of air rich in oxygen into the body'.

- (a) Exhalation
- (b) Inhalation
- (c) Breathing
- (d) Respiration

Sol : www.cbse.site/sc/fm269

170. Which of the following statements is true about Trachea in a respiratory system?

- (a) It functions as passages of air to each alveolus
- (b) It functions for sound production
- (c) It Acts as passage of air to bronchi
- (d) It Lowers the surface tension

Sol : www.cbse.site/sc/fm270

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

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

Sol : www.cbse.site/sc/fm271

172. The cycle in which pyruvic acid is broken down in presence of oxygen is known as?

- (a) Glycolysis
- (b) Krebs cycle
- (c) Anaerobic respiration
- (d) None of the above

Sol : www.cbse.site/sc/fm272

173. Which of the following statements are true about respiration?

- A. Haemoglobin has greater affinity for CO_2 than O_2 .
 - B. The gaseous exchange takes place in the alveoli.
 - C. During inhalation ribs move inward and diaphragm is raised.
 - D. Haemoglobin has greater affinity for O_2 than CO_2 .
- (a) B and D
 - (b) A and C
 - (c) B and C

(d) A and B

Sol : www.cbse.site/sc/fm273

174. Breaking down of glucose in the presence of oxygen produces ?

- (a) Carbon dioxide
- (b) Energy
- (c) Water
- (d) All of the above

Sol : www.cbse.site/sc/fm274

175. During respiration exchange of gases takes place in?

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

Sol : www.cbse.site/sc/fm275

176. Opening of oesophagus is:

- (a) Gullet
- (b) Glottis
- (c) Larynx
- (d) Pharynx

Sol : www.cbse.site/sc/fm276

177. Cud chewing animals are known as:

- (a) Ruminants
- (b) Cannibals
- (c) Frugivore
- (d) Sanguivores

Sol : www.cbse.site/sc/fm277

178. Conversion of large fat droplets into smaller droplets are

- (a) Neutralisation

- (b) Assimilation
- (c) Emulsification
- (d) Anabolism

Sol : www.cbse.site/sc/fm278

179. Example of some organisms which derive nutrition from plants or animals without killing them

- (a) Cuscuta
- (b) Ticks
- (c) Leeches
- (d) All of the above

Sol : www.cbse.site/sc/fm279

180. Choose the form in which most of the plants absorb nitrogen from the atmosphere?

- (a) Proteins
- (b) Amino acids
- (c) Atmospheric nitrogen
- (d) Nitrates and nitrites

Sol : www.cbse.site/sc/fm280

181. Assertion : All the plants possess autotrophic mode of nutrition.

Reason : Due to the presence of green coloured pigment chlorophyll in them.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm281

182. Assertion : Egestion in amoeba takes place through a permanent membrane present in

them.

Reason : Cilia is absent in amoeba.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm282

183. Assertion : Ethanol is obtained during the anaerobic process of respiration.

Reason : This is due to presence of oxygen and it takes place in the mitochondria.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm283

184. Assertion : During the night the effect of root pressure in transport of water is more important.

Reason : Stomata is open during day, transpiration takes place which help in transport of water.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm284

185. monoxide is injurious to the health of the individual.

Reason : Carbon monoxide has very strong affinity for the blood.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm285

186. Assertion : In plants, water is transported through phloem.

Reason : It is because sieve tubes are absent in phloem.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm286

187. Assertion : The thickest muscles are present in left atrium.

Reason : Left atrium receives deoxygenated blood from the lungs.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm287

188. Assertion : Failure of the kidneys leads to death of the person and there is no way he can survive.

Reason : Transplant of kidneys in humans is not possible.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm288

189. Assertion : Aerobic animals are not truly aerobic.

Reason : Anaerobically they produce lactic acid.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm289

190. Assertion : Dark phase reactions take place at night.

Reason : Dark phase is independent of light, hence, called light independent phase.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

Sol : www.cbse.site/sc/fm290

191. Assertion : in the daytime, CO₂ generated during respiration is used up for photosynthesis.

Reason : There is no CO₂ release during day.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm291

192. Assertion : Amoeba is not an omnivore organism.

Reason : Lion is a carnivore organism.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm292

193. Assertion : Liver is known as the largest gland of the body.

Reason : It secretes salivary amylase.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.

(d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm293

194. Assertion : Respiration is not a biochemical process opposite to photosynthesis.

Reason : Energy is released during respiration.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm294

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

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

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm295

196. Assertion : Haemoglobin is not the respiratory pigment in human beings.

Reason : It transports oxygen in the human body.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are

true but Reason is not the correct explanation of Assertion.

- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm296

197. Assertion : Interauricular septum separates left from right atrium.

Reason : Interventricular septum separates left from right ventricle.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm297

198. 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.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm298

199. Assertion : The main organ of human excretory system is kidney.

Reason : Kidneys perform the function of adding water and nitrogenous wastes from

the body.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm299

200. 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.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Sol : www.cbse.site/sc/fm300

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

Reason : They produce urea just like humans.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

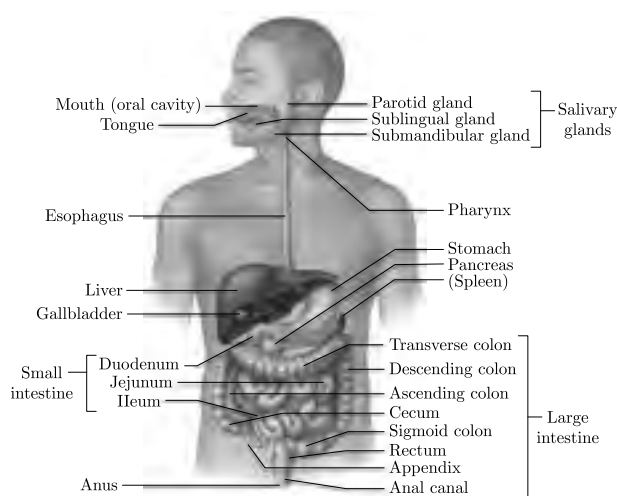
Sol : www.cbse.site/sc/fm301

COMPETENCY BASED QUESTIONS

Direction For Questions (202-206)

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 beings, the process of intake of essential nutrients in the form of food takes place through an entire system in human includes alimentary canal and its associated digestive glands.

The alimentary canal is a muscular coiled tubular structure about 9 m in length that begins from mouth and ends with anus. The various organs of the human digestive system in sequence are: Mouth, Oesophagus (or Food pipe), Stomach, Small intestine and Large intestine. The glands which are associated with the human digestive system and form a part of the human digestive system are: Salivary glands, Liver and Pancreas. The ducts of various glands open into the alimentary canal and pour the secretions of the digestive juices into the alimentary canal.



202. In which of the following organ is digested?
 (a) mouth

- (b) stomach only
 (c) large intestine
 (d) stomach and small intestine

Sol : www.cbse.site/sc/fm302

203. Which of the following is the final product of digestion of protein?

- (a) Glycerol
 (b) Amino acids
 (c) Glucose
 (d) Nitric acid

Sol : www.cbse.site/sc/fm302

204. What are peristaltic movements?

- (a) Rhythmic contraction of canal
 (b) Movement of heart
 (c) Movement of ribs
 (d) Movement of body parts

Sol : www.cbse.site/sc/fm302

205. Which of the following enzyme is present in Saliva?

- (a) Amylase
 (b) Pepsinogen
 (c) Trypsin
 (d) Lipase

Sol : www.cbse.site/sc/fm302

206. Which chemical substance is responsible for acidic medium of stomach?

- (a) Bile juice
 (b) HCl
 (c) CH_3COOH
 (d) Lactic acid

Sol : www.cbse.site/sc/fm302

Direction For Questions (207-211)

They create by-products that are not only useless for the cells of the body, but could even be harmful. These waste by-products are therefore needed to be removed from the body and discarded outside by a process called excretion. Again, if the basic rules for body design in multi-cellular organisms are followed, a specialised tissue for excretion will be developed, which means that the transportation system will need to transport waste away from cells to this excretory tissue.

- 207.** The excretory materials are temporarily stored in:
- Urethra
 - Kidneys
 - Ureters
 - Urinary bladder

Sol : www.cbse.site/sc/fm303

- 208.** The main excretory by-product in human beings is
- Creatine
 - Urea
 - Uric acid
 - None of the above

Sol : www.cbse.site/sc/fm303

- 209.** The process of removal of nitrogenous waste materials from the body is called
- Nutrition
 - Respiration
 - Excretion
 - Transportation

Sol : www.cbse.site/sc/fm303

- 210.** Which is the main excretory organ in

human beings?

- Intestine
- Kidneys
- Lungs
- Heart

Sol : www.cbse.site/sc/fm303

- 211.** Which is known as basic filtration unit in the kidneys?
- Alveoli
 - Nephron
 - Stomata
 - Guard cells

Sol : www.cbse.site/sc/fm303

Direction For Questions (212-216)

Arteries are the vessels which carry blood away from the heart to various organs of the body. Since the blood emerges from the heart under high pressure, the arteries have thick, elastic walls. Veins collect the blood from different organs and bring it back to the heart. They do not need thick walls because the blood is no longer under pressure, instead they have valves that ensure that the blood flows only in one direction.

On reaching an organ or tissue, the artery divides into smaller and smaller vessels to bring the blood in contact with all the individual cells. The smallest vessels have walls which are one-cell thick and are called capillaries. Exchange of material between the blood and surrounding cells takes place across this thin wall. The capillaries then join together to form veins that convey the blood away from the organ or tissue.

- 212.** What is importance of thin walls of blood capillaries?
- Thin walls of blood capillaries provide

them protection.

- (b) Exchange of materials between the blood and surrounding cells take place across the thin walls of blood capillaries.
- (c) Thin walls of blood capillaries help on smooth flow of blood.
- (d) All of the above.

Sol : www.cbse.site/sc/fm304

213. Write two differences between arteries and veins.

- (a) Arteries are blood vessels while veins are not.
- (b) Arteries have thick walls while veins have thin walls.
- (c) Arteries have valves while do not have valves.
- (d) All of the above.

Sol : www.cbse.site/sc/fm304

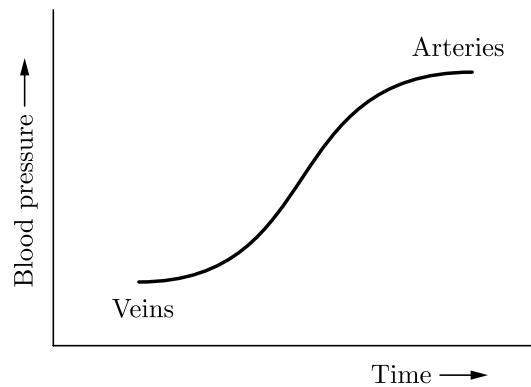
214. What is the function of valves in veins?

- (a) Valves ensure the unidirectional flow of blood.
- (b) Valves increase the oxygen carrying capacity of the blood.
- (c) Valves protect the veins from outer shocks.
- (d) Valves withstand the high pressure of blood in veins.

Sol : www.cbse.site/sc/fm304

215. Which blood vessels have high blood pressure and what they have to withstand

this high pressure?



- (a) Both arteries and veins have same pressure of blood and they are thick walled vessels.
- (b) Arteries have high blood pressure and they have elastic and thick walls to withstand this high pressure.
- (c) Veins have high blood pressure and they have to valves to withstand this high pressure.
- (d) None of the above.

Sol : www.cbse.site/sc/fm304

216. What is the function of arteries?

- (a) Arteries have high blood pressure.
- (b) Arteries are present in the body of human beings.
- (c) Arteries are thicker than veins.
- (d) Arteries are the blood vessels which carry blood away from the heart to various organs of the body.

Sol : www.cbse.site/sc/fm304

Direction For Questions (217-221)

This transport of soluble products of photosynthesis is called translocation and it occurs in the part of the vascular tissue known as phloem. Besides the products of photo-synthesis, the phloem transports amino acids and other substances. These

substances are especially delivered to the storage organs of roots, fruits and seeds and to growing organs. The translocation of food and other substances takes place in the sieve tubes with the help of adjacent companion cells both in upward and downward directions. Unlike transport in xylem which can be largely explained by simple physical forces, the translocation in phloem is achieved by utilising energy. Material like sucrose is transferred into phloem tissue using energy from ATP. This increases the osmotic pressure of the tissue causing water to move into it. This pressure moves the material in the phloem to tissues which have less pressure. This allows the phloem to move material according to the plant's needs. For example, in the spring, sugar stored in root or stem tissue would be transported to the buds which need energy to grow.

- 217.** The transportation of materials into phloem requires:
- Amino acids
 - Food
 - Water
 - Energy

Sol : www.cbse.site/sc/fm305

- 218.** The translocation of food in plants takes place in:
- Upward direction only
 - Downwards direction only
 - Leaves only
 - Both in upward and downward directions

Sol : www.cbse.site/sc/fm305

- 219.** The components which help in the translocation process in plants are:
- Amino acid

- Sieve tubes and companion cells
- Fruit
- Seeds

Sol : www.cbse.site/sc/fm305

- 220.** The phenomenon of transportation of food in plants in its dissolved form is called:
- Translocation
 - Excretion
 - Transpiration
 - Nutrition

Sol : www.cbse.site/sc/fm305

- 221.** Which of the following vascular tissue is responsible for the transportation of soluble products of photosynthesis?
- Xylem
 - Phloem
 - Both Phloem and Xylem
 - None of the above

Sol : www.cbse.site/sc/fm305

Direction For Questions (222-226)

The small intestine is the site of the complete digestion of carbohydrates, proteins and fats. It receives the secretions of the liver and pancreas for this purpose. The food coming from the stomach is acidic and has to be made alkaline for the pancreatic enzymes to act. Bile juice from the liver accomplishes this in addition to acting on fats. Fats are present in the intestine in the form of large globules which makes it difficult for enzymes to act on them. Bile salts break them down into smaller globules increasing the efficiency of enzyme action. The pancreas secretes pancreatic juice which contains enzymes like trypsin for digesting proteins and lipase for breaking down emulsified fats. The walls of the small

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intestine contain glands which secrete intestinal juice. The enzymes present in it finally convert the proteins to amino acids, complex carbohydrates into glucose and fats into fatty acids and glycerol.

- 222.** The food coming from the stomach is made alkaline by:
- (a) Bile juice
 - (b) Pancreatic juice
 - (c) Gastric juice
 - (d) Intestinal juice

Sol : www.cbse.site/sc/fm306

- 223.** In small intestine proteins are decomposed into:
- (a) fatty acids only
 - (b) glucose
 - (c) amino acids
 - (d) fatty acids and glycerol

Sol : www.cbse.site/sc/fm306

- 224.** Which enzymes are present in the pancreatic juice for digestion of proteins and fats?
- (a) Amylase and pepsin
 - (b) Amylase and lipase
 - (c) Pepsin and trypsin
 - (d) Lipase and trypsin

Sol : www.cbse.site/sc/fm306

- 225.** Which two organs release their secretions into small intestine for digestion of food?
- (a) Liver and stomach
 - (b) Oesophagus and stomach
 - (c) Pancreas and stomach
 - (d) Liver and pancreas

Sol : www.cbse.site/sc/fm306

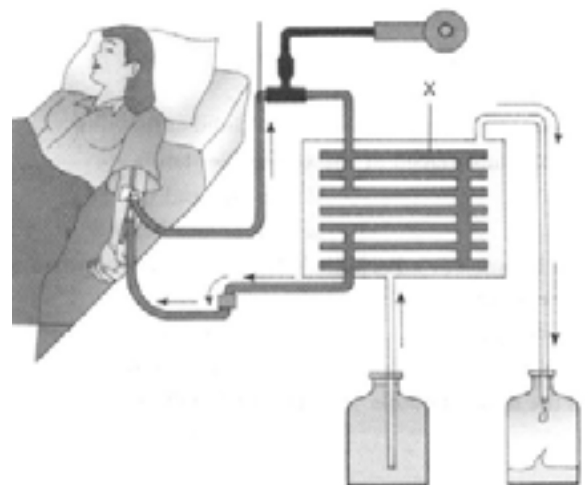
- 226.** The complete digestion of food takes place in:
- (a) small intestine
 - (b) stomach
 - (c) mouth
 - (d) large intestine

Sol : www.cbse.site/sc/fm306

Direction For Questions (227-231)

Nitrogenous materials formed due to metabolic activities are need to be removed. The biological process involved in the removal of these harmful metabolic wastes from the body is called excretion. Different organisms use varied strategies to do this. Many unicellular organisms remove these wastes by simple diffusion from the body surface into the surrounding water while complex multi-cellular organisms use specialised organs to perform the same function.

227.



Study the picture given above and choose the correct combination of plots provided in the following table.

	<i>X</i>	Process used	Function
(a)	Dialysing pump	Filtration	To draw blood from the body and send it to dialyser
(b)	Dialysate	Osmosis	To add fluid to the blood
(c)	Blood thinner	Clotting	To remove the clots from the blood
(d)	Dialyser	Diffusion	To remove the excess wastes and fluid from the blood

Sol : www.cbse.site/sc/fm307

228. Which of the following statement(s) is (are) true about excretion in human beings?

- I. Urine is stored in the urethra until the urge of passing it out.
- II. Each kidney has large numbers of filtration units called nephrons.
- III. The bladder is muscular, so it is under nervous control.
- IV. Kidneys are the primary excretory organs.

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

Sol : www.cbse.site/sc/fm307

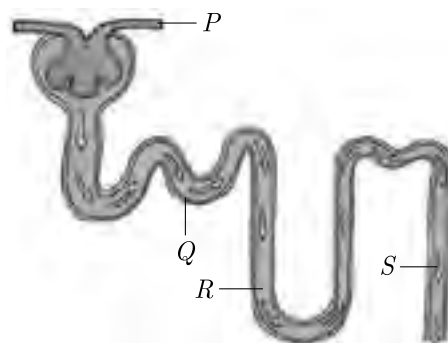
229. Study the table below and select the row

that has the incorrect information.

	Excretory Organ	Substances Excreted
(a)	Oil glands	Sebum
(b)	Skin	Sweat
(c)	Lungs	Urea
(d)	Kidneys	Nitrogenous wastes

Sol : www.cbse.site/sc/fm307

230. The given figure represents the structure of a nephron.



Which section of the nephron is responsible for concentrating the solute in the filtrate?

- (a) *P*
- (b) *Q*
- (c) *R*
- (d) *S*

Sol : www.cbse.site/sc/fm307

231. The excretory system of human beings include

- (a) a kidney, a ureter, a urinary bladder and a urethra
- (b) a pair of kidneys, a pair of ureters, a pair of urinary bladders and a urethra
- (c) a pair of kidneys, a pair of urinary bladders, a ureter, and a urethra
- (d) a pair of kidneys, a pair of ureters, a urinary bladder and a urethra

Sol : www.cbse.site/sc/fm307

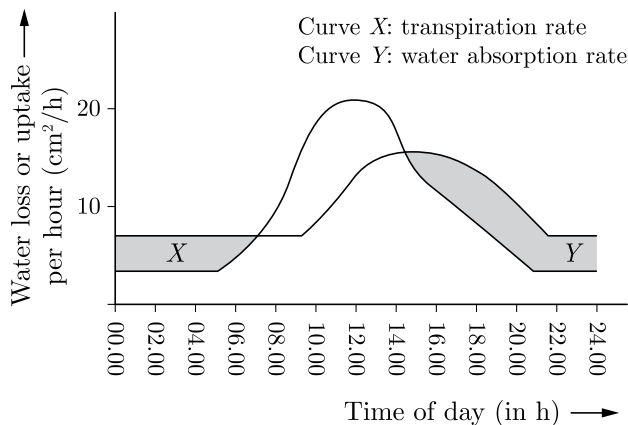
Direction For Questions (232-236)

Plants have low energy needs and can use relatively slow transport systems. The distances over which transport systems have to operate, however, can be very large in plants such as very tall trees. Plant transport systems move energy stores from leaves and raw materials from roots. These two pathways are constructed as independently organised conducting tubes.

- 232.** Force of cohesion develops due to
- attraction between similar molecules
 - attraction between different molecules
 - attraction between xylem and phloem
 - attraction between xylem and water

Sol : www.cbse.site/sc/fm308

- 233.** Given graph shows the rates of water absorption and transpiration of a plant during a 24-hour period.



The difference between the rates of transpiration and water absorption between 00:00 and 06:00 hours is due to:

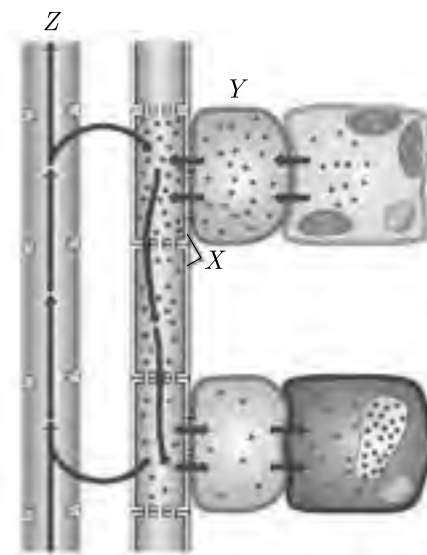
- The rate of absorption fell behind the rate of transpiration during the day, but exceeded it at night.
- Rate of absorption is always higher

than rate of transpiration.

- Rate of absorption is always equal to rate of transpiration.
- The rate of absorption is higher than the rate of transpiration during the day, but decreases at night.

Sol : www.cbse.site/sc/fm308

- 234.** The given figure represents the movement of water and minerals in xylem and movement of food in phloem.



Choose the correct combination of plots provided in the following table:

	X	Y	Z
(a)	Major conducting cells in xylem	Denucleated	Flow is bidirectional
(b)	Major conducting cells in phloem	Nucleated	Flow is unidirectional
(c)	Major conducting cells in xylem and phloem	Denucleated	Flow is unidirectional
(d)	Cells of xylem but function is not defined	Nucleated	Flow is bidirectional

Sol : www.cbse.site/sc/fm308

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235. Which of the following statement(s) is (are) true about transport in plants?

- I. Beside water, xylem also transports amino acids and other substances.
- II. The translocation in phloem is achieved by utilising energy.
- III. Transpiration helps in the absorption.
- IV. This transport of soluble products of photosynthesis occurs in phloem.

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

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236. Study the table below and select the row that has the incorrect information.

	Cell	Tissue
(a)	Vessels and tracheid	Xylem
(b)	Sieve tubes cells	Phloem
(c)	Sieve tube cells and tracheid	Xylem
(d)	Companion cell	Phloem

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Direction For Questions (237-241)

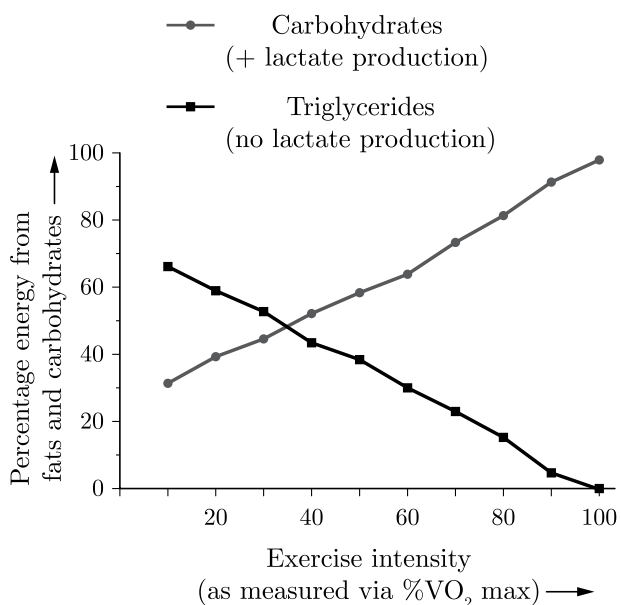
The food material taken in during the process of nutrition is used in cells to provide energy for various life processes. Diverse organisms do this in different ways - some use oxygen to break-down the food material completely, some use other pathways that do not involve oxygen. In all cases, the first step is the break-down of food material and it takes place in the cytoplasm. Further, the product of breakdown food may be converted into ethanol and carbon dioxide. Breakdown of food product using oxygen takes place in the mitochondria. Sometime food product is converted into lactic acid

which is also a three-carbon molecule.

- 237.** Athletes suffers from muscle cramps 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

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- 238.** The given graph indicates the effect of exercise intensity on carbohydrate consumption.



At high intensity of exercise

- (a) the anaerobic consumption of sugars increases
- (b) the aerobic consumption of sugars increases
- (c) the anaerobic consumption of sugars decreases
- (d) no consumption of sugars takes place

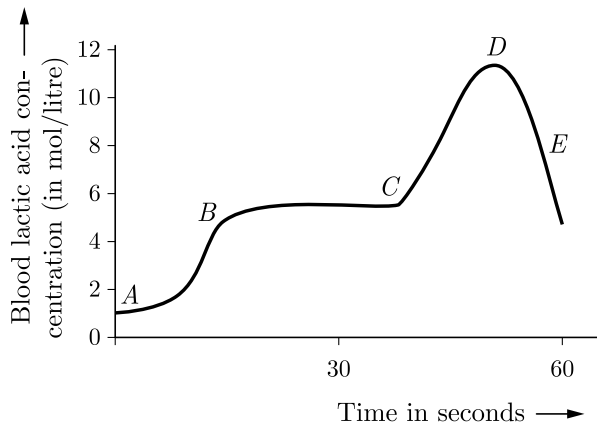
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- 239.** Study the graph below that represents the blood test reports of an athlete just before

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and after a race.



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

	Section of race	Concentration of lactic acid	Type of respiration
(a)	A-B (sprint start)	Changing high to low	Changing from anaerobic to aerobic
(b)	B-C (maintaining speed)	High to low	Anaerobic
(c)	C-D (sprint finish)	High	Aerobic
(d)	D-E (just after sprint finishing)	Low	Aerobic

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240. Which of the following statement(s) is (are) true about energy released during cellular respiration?

- I. It is used immediately to synthesise ADP.
- II. It is used to fuel all other activities in the cell.
- III. ADP is the energy currency for most cellular processes.
- IV. An ADP molecule is formed from ATP and inorganic phosphate.

- (a) I and II only
- (b) II only
- (c) I, II and III only

(d) I, III and IV only

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241. Study the table below and select the row that has the correct information.

	Break down of pyruvate in	Take place in	End products
(a)	Absence of oxygen	Yeast	Lactic acid + Energy
(b)	Lack of oxygen	Muscle cells	Ethanol + CO ₂ + Energy
(c)	Presence of oxygen	Mitochondria	CO ₂ + H ₂ O + Energy
(d)	Presence of oxygen	Mitochondria	Ethanol + CO ₂ + Energy

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Direction For Questions (242-246)

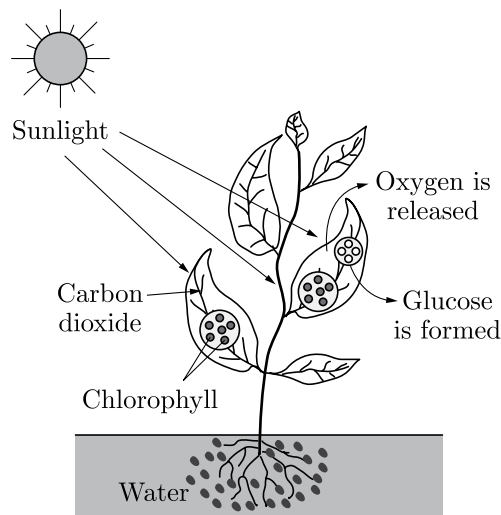
Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. This material is taken in the form of carbon dioxide and water which is converted into carbohydrates in the presence of sunlight and chlorophyll. Carbohydrates are utilised for providing energy to the plant. The carbohydrates which are not used immediately are stored in the form of starch, which serves as the internal energy reserve to be used as and when required by the plant. A somewhat similar situation is seen in us where some of the energy derived from the food we eat is

stored in our body in the form of glycogen. That means the complex substances have to be broken down into simpler ones before they can be used for the upkeep and growth of the body. To achieve this, organisms use biocatalysis.

242. Heterotrophs depend for energy on
- autotrophs
 - producers
 - herbivores
 - both (a) and (b)

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243. The picture given below represents how autotrophs take in substances from the outside and convert them into stored forms of energy.



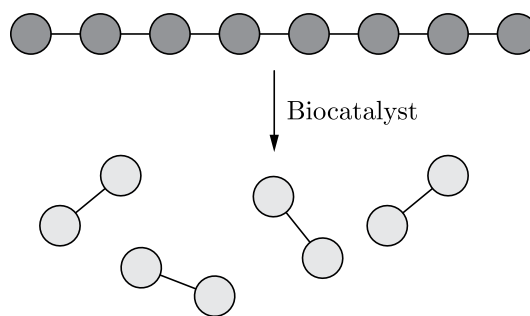
The correct equation for the given process is

- $6\text{CO}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- $6\text{O}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2$
- $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} \longrightarrow 6\text{CO}_2 + 6\text{O}_2$
- $6\text{CO}_2 + 6\text{O}_2 \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O}$

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244. Study the picture below that represents the

mode of action of a biocatalyst.



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

	Biocatalyst also termed as	Biocatalyst found in human saliva	Biocatalyst produced in human stomach
(a)	Enzymes	Amylase	Pepsin
(b)	Hormones	Amylase	Trypsin
(c)	Enzymes	Trypsin	Pepsin
(d)	Energy	Pepsin	Amylase

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245. Which of the following statement (s) is (are) true?

- Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis.
 - Carbohydrates are utilised for providing energy to the plant.
 - Chlorophyll is essential for photosynthesis.
 - Autotrophs survival depends directly or indirectly on heterotrophs.
- I and II only
 - II and III only
 - I, II and III only
 - I, III and IV only

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246. Study the table below and select the row

that has the correct information.

	Internal energy reserve in autotrophs	Internal energy reserve in humans
(a)	Glycogen	Starch
(b)	Starch	Maltose
(c)	Glycogen	Maltose
(d)	Starch	Glycogen

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Direction For Questions (247-251)

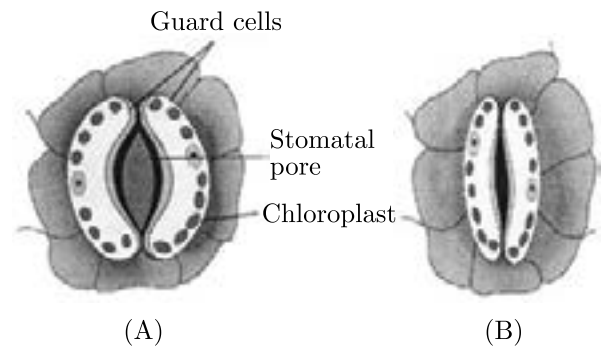
Some tiny pores are present on the surface of the leaves. Massive amounts of gaseous exchange take place in the leaves through these pores for the purpose of photosynthesis. But it is important to note here that exchange of gases occurs across the surface of stems, roots and leaves as well. Since, large amounts of water can also be lost through these, the plant closes these pores when it does not need carbon dioxide for photosynthesis. The opening and closing of the pores is a function of some specialized cells. These cells swell when water flows into them, causing the pore to open. Similarly, the pore closes if these cells get shrink.

247. The exchange of oxygen and carbon dioxide in the leaf occurs through
- phloem
 - stomata
 - xylem
 - alveoli

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248. The given figure shows two states of a pore, opening and closing of these pores is

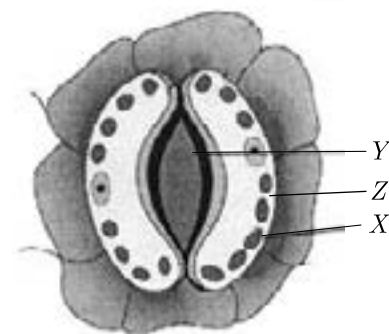
a function of



- epidermis
- chlorophyll
- guard cells
- phloem cells

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249. The labelling for the slide of leaf peel showing stomata by the four students who made the diagram and tabulated the labels, is as follows:



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

	X	Y	Z
(a)	Chloroplast	Guard cell	Stoma
(b)	Chloroplast	Stoma	Guard cell
(c)	Guard cell	Stoma	Chloroplast
(d)	Stoma	Chloroplast	Guard cell

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250. Which of the following statement(s) is (are) true about stomata?

- I. These are typically found in leaves only.
- II. Guard cells are responsible for regulating the size of the stomatal opening.
- III. These control the exchange of gases not water vapours.
- IV. These get closed at night to prevent water loss in plants.

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

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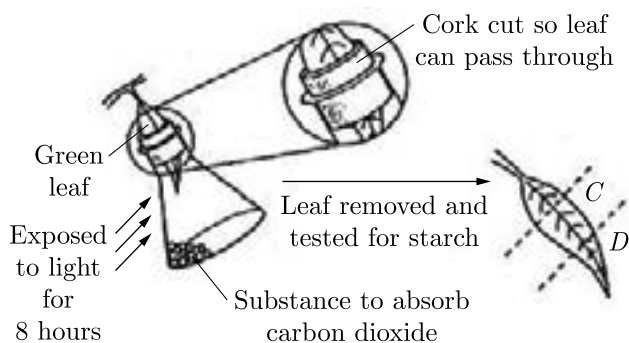
251. Study the table below and select the row that has the correct information.

	Epidermal cells	Guard cell
(a)	Bean-shaped in surface view	Irregular in shape
(b)	Can manufacture food by photosynthesis	Can't manufacture food by photosynthesis
(c)	Contain chloroplast	Doesn't contain chloroplast
(d)	Protects all parts of the plant	Control stomatal opening

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252. 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 C and D, when the leaf is tested for starch, using iodine solution?

	C	D
(a)	Brown	Blue/black
(b)	Blue/black	Blue/black
(c)	Brown	Brown
(d)	Blue/black	Brown

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□□□□□□

SELF ASSESSMENT TEST

1. Various maintenance processes are needed to:
 - (a) Survival
 - (b) Prevent damage and break down
 - (c) Routine process
 - (d) Release energy
2. All the sources of energy need to be broken down in the body and converted into:
 - (a) Uniform energy
 - (b) Molecular energy
 - (c) Chemical reactions
 - (d) Digestive process
3. The reason for single cell diffusion inefficiency in multicellular organism is
 - (a) Cell diffusion is a complex process
 - (b) Big size and complex body designs
 - (c) Cell diffusion requires lots of time
 - (d) Cell diffusion is rather a simple process to be carried out in multi cell organism
4. In multi-cellular organisms, various body parts have specialized in the functions they perform with the help of:
 - (a) Specialized cells
 - (b) Multiple organs
 - (c) Multiple structure
 - (d) Specialized tissues
5. Choose the incorrect statement:
 - (a) We don't need energy while not doing any activity
 - (b) We release energy and feel tired while doing various activities
 - (c) Energy is needed to maintain the state of body
 - (d) Our body need to synthesize protein to develop
6. The heterotrophs survival depends directly or indirectly on:
 - (a) Surroundings
 - (b) Ecology and surrounding
 - (c) Autotrophs
 - (d) Molecular structure
7. The process by which autotrophs take in substances from the outside and convert them into stored forms of energy is known as
 - (a) Photosynthesis
 - (b) Respiration
 - (c) Molecular breakup
 - (d) Cell diffusion
8. Human body stores energy in form of:
 - (a) Glucose
 - (b) Insulin
 - (c) glycogen
 - (d) Fructose
9. The green organelle on surface of leaves containing chlorophyll are knows as
 - (a) Xylem
 - (b) Epidermis
 - (c) Chloroplasts
 - (d) Vascular bundle
10. The purpose of closing the pores by the plants when it doesn't need photosynthesis is
 - (a) To save the water
 - (b) To save energy
 - (c) To save food

- (d) None of the above
11. Most of the plant's nitrogen, phosphorus, iron and magnesium are taken up from the
- Aquatic sources
 - Soil
 - Mountains
 - Sea water
12. Organism who break down the food outside their body are
- Fungi
 - Virus
 - Tape worm
 - None of the above
13. The broken down food into simpler form in amoeba is diffused into
- Cytoplasm
 - Ribosome
 - DNA
 - Mesosome
14. "Water" like fluid in our mouth is secreted by
- Pancreas
 - Thyroid
 - Pituitary
 - Salivary gland
15. Hydrochloric acid facilitates the action of
- keratin
 - collagen
 - elastin
 - pepsin
16. The delivers the digestive juice to the small intestine through small tubes called ducts.
- Stomach
 - Pancreas
 - Large intestine
 - Anus
17. The inner lining of the has numerous finger-like projections called villi which increase the surface area for absorption.
- small intestine
 - large intestine
 - stomach
 - pancreas
18. This process of break-down of glucose, a six-carbon molecule, into a three-carbon molecule pyruvate, takes place in
- Cytoplasm
 - Mitochondria
 - Golgi bodies
 - Endoplasmic reticulum
19. Pyruvate is a-
- three-carbon molecule
 - four-carbon molecule
 - five-carbon molecule
 - six-carbon molecule
20. The respiratory route of air in the respiratory tract of human is:
- nostrils → pharynx → larynx → trachea → alveoli.
 - alveoli → pharynx → larynx → trachea → nostrils.
 - alveoli → larynx → trachea → pharynx → nostrils.
 - nostrils → trachea → pharynx → larynx → alveoli.
21. Blood consists of a fluid medium called in which the cells are suspended.
- Plasma
 - RBCs
 - Platelets

- (d) WBCs
- 22.** In higher vertebrates, systemic circulation takes place between
 (a) body parts and lungs
 (b) body parts and heart
 (c) heart and body parts
 (d) lungs and heart
- 23.** Which instrument is used to measure blood pressure?
 (a) Thermometer
 (b) Electrocardiograph
 (c) Pulse recorder
 (d) Sphygmomanometer
- 24.** Arteries are the vessels which carry blood away from the
 (a) Various body parts to the heart
 (b) Heart to various organs of the body
 (c) Heart to lungs
 (d) Lungs to heart
- 25.** Heart is surrounded and protected by
 (a) Retro peritoneum
 (b) Muscles
 (c) Pericardium
 (d) Lungs
- 26.** The colour of blood plasma is:
 (a) Red
 (b) Pale yellow
 (c) Yellowish green
 (d) Pink
- 27.** Vitamin helps in blood clotting.
 (a) Vitamin A2
 (b) Vitamin B
 (c) Vitamin E4
 (d) Vitamin K
- 28.** The water which is lost through the stomata is replaced by
 (a) water from the xylem vessels in the leaf
 (b) water from the phloem vessels in the leaf
 (c) water from the veins in the leaf
 (d) none of the above
- 29.** Trans location is the process in which plants deliver:
 (a) minerals from leaves to other parts of the plant
 (b) plant growth hormones from leaves to other parts of the plant
 (c) water and organic substance from leaves to other parts of the plant
 (d) all of the above
- 30.** When the materials like sucrose are transferred to phloem tissue, the osmotic pressure of the tissue leading to of water into/from it.
 (a) Increases, entry
 (b) Decreases, entry
 (c) Increases, exit
 (d) Decreases, exit
- 31.** The biological process involved in the removal of these harmful metabolic wastes from the body is called
 (a) Photosynthesis
 (b) Respiration
 (c) Excretion
 (d) Translocation
- 32.** Just as CO₂ is removed from the blood in the lungs, nitrogenous waste such as urea or uric acid are removed from blood in the -
 (a) Kidney
 (b) Urinary bladder
 (c) Urethra

- (d) Ureters
- (d) None of the above
- 33.** Which of the main toxic waste that kidney filters from blood?
 (a) Ammonia
 (b) Uric acid
 (c) Urea
 (d) Water
- 34.** The functional unit of kidney is:
 (a) Nephron
 (b) Neuron
 (c) Glomerulus
 (d) Bowman's Capsule
- 35.** An artificial kidney is a device to remove nitrogenous waste products from the blood through-
 (a) Diaphragm
 (b) Dialysis
 (c) ECG
 (d) Electrolysis
- 36.** Normally, in a healthy adult, the initial filtrate in the kidneys is about :
 (a) 100 L/day
 (b) 150 L/day
 (c) 180 L/day
 (d) 200 L/day
- 37.** Sweating is meant for:
 (a) Regulation of body temperature
 (b) Removal of excess salt
 (c) Removal of excess water
 (d) All of the above
- 38.** Oxygen is a waste product generated during in plants.
 (a) Respiration
 (b) Photosynthesis
 (c) Both respiration and photosynthesis
- 39.** Many-plant waste products are stored in:
 (a) Chloroplast
 (b) Mitochondria
 (c) Cellular vacuoles
 (d) Cytoplasm
- 40.** How many pairs of salivary glands are found in humans?
 (a) Four
 (b) Two
 (c) Three
 (d) Six
- 41. Assertion :** Ethanol is obtained during the anaerobic process of respiration.
Reason : This is due to presence of oxygen and it takes place in the mitochondria.
 (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 (c) Assertion is true but Reason is false.
 (d) Both Assertion and Reason are false.
- 42. Assertion :** Carbon monoxide is injurious to the health of the individual.
Reason : Carbon monoxide has very strong affinity for the blood.
 (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
 (c) Assertion is true but Reason is false.
 (d) Both Assertion and Reason are false.
- 43. Assertion :** In plants, water is transported

through phloem.

Reason : It is because sieve tubes are absent in phloem.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

44. Assertion : Dark phase reactions take place at night.

Reason : Dark phase is independent of light, hence, called light independent phase.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Both Assertion and Reason are false.

45. Assertion : The main organ of human excretory system is kidney.

Reason : Kidneys perform the function of adding water and nitrogenous wastes from the body.

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion is true but Reason is false.
- (d) Assertion is false but Reason is true.

Direction For Questions (46-50)

This transport of soluble products of photosynthesis is called translocation and it occurs in the part of the vascular tissue

known as phloem. Besides the products of photo-synthesis, the phloem transports amino acids and other substances. These substances are especially delivered to the storage organs of roots, fruits and seeds and to growing organs. The translocation of food and other substances takes place in the sieve tubes with the help of adjacent companion cells both in upward and downward directions. Unlike transport in xylem which can be largely explained by simple physical forces, the translocation in phloem is achieved by utilising energy. Material like sucrose is transferred into phloem tissue using energy from ATP. This increases the osmotic pressure of the tissue causing water to move into it. This pressure moves the material in the phloem to tissues which have less pressure. This allows the phloem to move material according to the plant's needs. For example, in the spring, sugar stored in root or stem tissue would be transported to the buds which need energy to grow.

46. The transportation of materials into phloem requires:

- (a) Amino acids
- (b) Food
- (c) Water
- (d) Energy

47. The translocation of food in plants takes place in:

- (a) Upward direction only
- (b) Downwards direction only
- (c) Leaves only
- (d) Both in upward and downward directions

48. The components which help in the translocation process in plants are:

- (a) Amino acid
- (b) Sieve tubes and companion cells

- (c) Fruit
(d) Seeds
49. The phenomenon of transportation of food in plants in its dissolved form is called:
(a) Translocation
(b) Excretion
(c) Transpiration
(d) Nutrition
50. Which of the following vascular tissue is responsible for the transportation of soluble products of photosynthesis?
(a) Xylem
(b) Phloem
(c) Both Phloem and Xylem
(d) None of the above

Answer Key

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
(b)	(a)	(b)	(d)	(a)	(c)	(a)	(c)	(c)	(a)
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
(b)	(a)	(a)	(d)	(d)	(b)	(a)	(a)	(a)	(a)
21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
(a)	(c)	(d)	(b)	(c)	(b)	(d)	(a)	(d)	(a)
31.	32.	33.	34.	35.	36.	37.	38.	39.	40.
(c)	(a)	(c)	(a)	(b)	(c)	(d)	(b)	(c)	(c)
41.	42.	43.	44.	45.	46.	47.	48.	49.	50.
(c)	(b)	(d)	(c)	(a)	(d)	(d)	(b)	(a)	(b)

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