



परमाणु ऊर्जा शिक्षण संस्था
Atomic Energy Education Society

ATOMIC ENERGY CENTRAL SCHOOL NO. 2, ANUSHAKTINAGAR, MUMBAI - 400094
ANSWER KEY: Class 10: Science: WORKSHEET: CHAPTER- LIFE PROCESSES: MARKS-80

I. Choose the correct answers:**(10 x 1M=10M)**

1. (a) Starch breaking down into sugars.
2. (b) Small intestine.
3. (c) peristaltic movement
4. (b) mitochondria
5. (a) Cytoplasm
6. (a) artery
7. d) hippocampus, exocoetus, anabas
8. (a) Tubule
9. (d) Kidney → ureter → urinary bladder → urethra
10. (c) Shedding of yellow leaves

II. Answer the following questions :**(10 x 1M=10M)**

11. Saprophytic nutrition
12. The two stages in photosynthesis are
 - (i) Light reaction and
 - (ii) Dark reaction.
13. Amoeba engulfs its food by extending pseudopodia. This process is known as Phagocytes.
14. Gastric glands are present in the wall of the stomach. They secrete gastric juices containing mucus, protein digesting enzymes pepsin and hydrochloric acid (HCl).
15. In desert plants, stomata open at night and take in carbon dioxide (CO₂). Stomata remain closed during daytime to prevent the loss of water by transpiration. They make an intermediate compound and it gets converted into carbohydrate during the daytime.
16. Due to higher metabolic rate and the volume of human body is so large that oxygen cannot diffuse into all cells of the body quickly as oxygen will have to travel large distances to reach each and every cell. So diffusion is insufficient to meet the oxygen demand of multicellular organisms.
17. Pulmonary vein carries oxygenated blood from lungs to left atrium of heart.
18. The biological process involved in the removal of wastes, produced during various metabolic activities in the body from the body of an organism is called excretion. The wastes are non-

gaseous nitrogenous wastes like ammonia, urea, uric acid, etc., along with excess of water, salts and pigments.

19. Two human excretory organs other than kidneys are:

(i) Lungs : They help to eliminate carbon dioxide.

(ii) Liver : It is an excretory organ as it converts harmful amino acids to harmless urea and haemoglobin of worn out RBCs to bilirubin and biliverdin that can be excreted out of the body.

20. When blood is pumped, valves prevent back flow of blood between ventricles and atria. They open and allow the right amount of blood to flow from one chamber to the other.

III Answer the following questions in brief:

(10 x 2M=20M)

21. (i) Enzyme trypsin: This enzyme is produced by the pancreas in an inactive form called trypsinogen. Trypsin converts remaining proteins into peptones and the peptones into peptides and amino acids.

(ii) Enzyme lipase: It is secreted by pancreas and small intestine. Lipase converts fats into fatty acids and glycerol.

22.

Autotrophs	Heterotrophs
(i) These organisms are able to form organic substances from simple inorganic substances such as CO ₂ and H ₂ S and water.	They cannot produce organic compounds from inorganic sources and therefore completely rely on consuming other organisms for its food requirement.
(ii) They have chlorophyll to trap solar energy.	Chlorophyll is absent, so they cannot trap solar energy.
(iii) They can be chemoautotroph and photoautotroph.	They can be saprophytic, parasitic and holozoic in mode of nutrition.
(iv) Autotrophs are placed at the bottom of the food chain as producers.	Heterotrophs are placed above autotrophs in the food chain as consumers.
(v) Green plants, some bacteria and some protists like Euglena are examples of autotrophs.	Mushrooms, Euglena, cow, goat, etc., are examples of heterotrophs.

23. Herbivores eat plants which is rich in cellulose. Cellulose takes longer time for complete digestion by the enzymes present in symbiotic bacteria. Therefore, they have longer small intestine. Carnivores, feed on flesh which is easier to digest and do not contain cellulose also. Therefore, they have shorter intestine for digestion of food eaten by the

24. (i) Unused carbohydrates in plants are stored in the form of complex sugar known as starch. They are later broken down into simple sugars (glucose) when energy is needed.

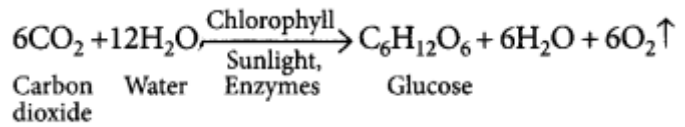
- (ii) The assimilated food molecules hold energy in their chemical bonds. Their bond energy is released by oxidation in the cell. This energy is trapped by forming bonds between ADP (adenosine diphosphate) and inorganic phosphate (Pi) to synthesise ATP (Adenosine triphosphate) molecules. These bonds are later broken by enzymatic hydrolysis and the energy released is utilised for cellular processes.
25. Functions of alveoli are :
- (i) They increase the surface area for exchange of gases.
- (ii) The thin walls of alveoli facilitate rapid exchange of oxygen and carbon dioxide between alveolar air and blood.
26. Aquatic animals like fishes obtain oxygen from water present in the dissolved form through their gills. The amount of dissolved oxygen is quite small as compared to the amount of oxygen in the air. Therefore, to obtain required oxygen from water, aquatic animals have to breathe much faster than the terrestrial organisms.
27. (i) Lungs always contain residual volume so that during the breathing cycle, when air is inhaled and exhaled, there must be sufficient time for oxygen to be absorbed and for the carbon dioxide to be released. It is also important as it prevents the lungs from collapsing.
- (ii) Mucus and hair present in nostrils help in filtration of inhaled air. It traps harmful substances and germs present in air.
28. Plants are autotrophic and do not have to move from one place to another in search of their food. Movements in a plant are usually at the cellular level and hence they required less amount of energy. Whereas animals are heterotrophic and locomote in search of food and other activities, hence require higher amount of energy than of plants.
29. Since ventricles have to pump blood into various organs with high pressure, they have thicker walls than atria.
30. Fishes have only two chambers in their heart, the blood is pumped to the gills to get oxygenated blood and from there it passes directly to rest of the body. Thus, the blood goes only once through the heart during one cycle of passage through the body. This type of circulation is termed as single circulation.

IV. Answer the following questions:

(5 x 3M=15M)

31. Photosynthesis is important for a number of reasons:
- (i) Food: By photosynthesis, green plants synthesise food from simple raw materials like CO₂ and H₂O. Thus, it sustains life on earth.
- (ii) Oxygen: Oxygen released during the process of photosynthesis is needed by animals and humans for respiration. It is also required for respiration of microbes. Oxygen also supports combustion of fuels.
- (iii) Fuels: Fossil fuels like coal, oil and natural gas are forms of stored solar energy synthesised

millions of years ago through photosynthesis. Balanced chemical equation involved in the

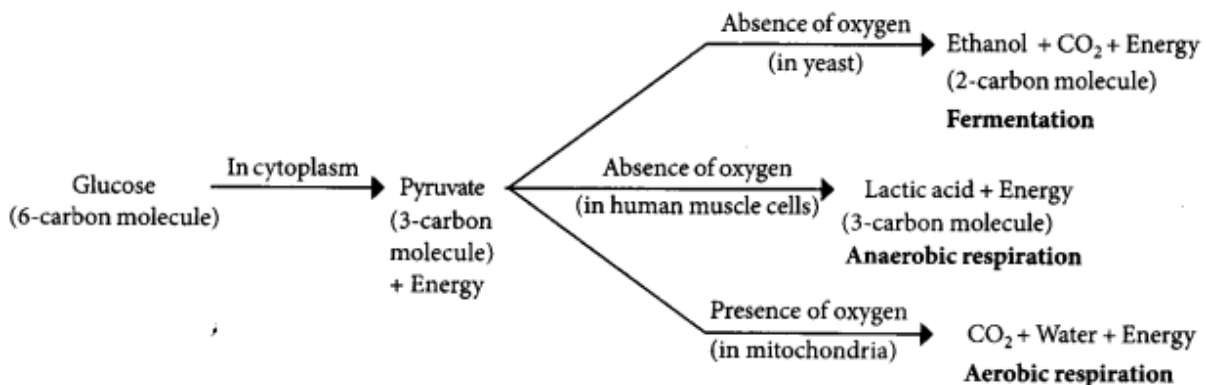


process of photosynthesis is given as :

32.

Breathing	Respiration
(i) It is a physical process. It involves inhalation of fresh air and exhalation of foul air.	It is a biochemical process. It involves exchange of respiratory gases and also oxidation of food.
(ii) It is an extracellular process.	It is both an extracellular as well as intracellular process.
(iii) It does not involve enzyme action rather two types of muscles are involved in this process.	It involves a number of enzymes required for oxidation of food.
(iv) It does not release energy, in fact it consumes energy.	It releases energy.

33.



34. Diagram as given in textbook and label.

35. The three types of blood vessels in human body are: (i) arteries, (ii) veins and (iii) capillaries.

(i) Arteries are the blood vessels which carry blood from heart to various parts of the body. The walls of arteries are thick, elastic and muscular that enables them to dilate but not rupture when the heart contracts and forces blood into them.

(ii) Veins are thin walled blood vessels which bring blood from the body back to the heart. They are larger and hold more blood than the arteries. The lumen of veins are provided with valves to prevent the backflow of blood.

(iii) Capillaries are thin walled and extremely narrow blood vessels which occur at the terminals of artery and vein. The wall of capillaries are permeable to water and dissolved substances so that the exchange of materials between the blood and body cells can take place.

36. Xylem tracheids and vessels are two water conducting tissues present in plants that help in rapid movement of water. In xylem tissue, vessels and tracheids of the roots, stems and leaves are

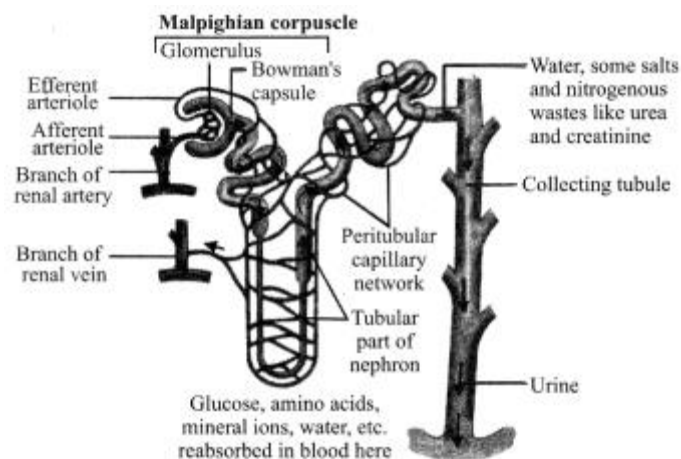
interconnected to form a continuous system of water conducting channels reaching all parts of the plant.

Minerals and water needed by the plants are absorbed by root hairs from the soil by the process of osmosis and take in minerals by the process of diffusion. Thus, a difference in concentration of ions is created between the roots and the soil which enables the water to enter into roots to compensate the difference in concentration. The water, alongwith dissolved minerals from root hairs, passes into xylem vessels through cells of the cortex, endodermis and pericycle and then ascent of sap (i.e., upward movement of water and mineral salts from roots to the aerial parts of the plant against the gravitational force) takes place from xylem of the roots to the xylem of stem and leaves through vessels and tracheids. Evaporation of water molecules from the cells of leaves creates a suction pressure which pulls the water from xylem cells.

37. In human beings, during circulation blood travels twice through the heart in one complete cycle of the body and is called double circulation. The pathway of blood from the heart to the lungs and back to the heart is called pulmonary circulation and the pathway of blood from the heart to the rest of the body and back to heart is called systemic circulation.

(b) Deoxygenated blood from the body tissues is poured into right atrium. Contraction of heart forces it into right ventricle. From right ventricle, deoxygenated blood flows to the lungs through pulmonary artery. Oxygenated blood from lungs is returned into left atrium and then into left ventricle. The left ventricle forces the oxygenated blood to the whole body. Thus, for making one complete round or circulation circuit around all body parts, the blood passes through the heart twice. This is known as double circulation of blood.

38. Structure of nephron is as follows:



The function of nephron is filtration of blood and elimination of waste material from it. Blood is filtered from the blood capillaries into Bowmans capsule and pour the filtrate into the renal tubule. In this part, large amount of water and useful substances like glucose, amino acid, minerals ions, etc., are reabsorbed. Nitrogenous waste along with little amount of water is sent to the urinary bladder, which later expels the urine to the outside through urethra.

39. (a) Excretory system (Urinary system) in human beings consists of a pair of kidneys, a pair of ureters, urinary bladder and urethra.
- (b) In the kidney, the wastes are converted to urine by three processes :
- (i) Ultrafiltration : In it, large amount of water along with certain harmful substances like urea, uric acid, K^+ , ammonium salts, creatinine, etc., and certain useful substances like glucose, amino acids, Na^+ , etc., pass through glomerular capillaries and glomerular membrane into cavity of Bowman's capsule of nephrons under pressure. The filtrate so formed is called nephric filtrate which is moved towards ureter.
- (ii) Selective reabsorption: In it, large amount of water and sodium, whole of glucose and amino acids and small amount of urea are passed back from nephric filtrate into blood capillaries. It occurs either by back diffusion (i.e., water and urea) or active transport (i.e., Na^+ , glucose and amino acids). It generally occurs in PCT (Proximal convoluted tubule) of nephrons.
- (iii) Tubular secretion : In this, certain harmful chemicals like uric acid, creatinine, K^+ , etc., are passed from blood capillaries surrounding the nephron into nephric filtrate by active transport. It generally occurs in DCT (Distal convoluted tubule) of nephrons. Now, the fluid is termed as urine and is excreted out of the excretory organs.
40. The mode of nutrition in Amoeba is holozoic. The process of obtaining food by Amoeba is called phagocytosis.
1. Amoeba ingests food by using its finger-like projections called pseudopodia.
 2. The food is engulfed with a little surrounding water to form a food vacuole inside the Amoeba. The food is digested inside food vacuole by digestive enzymes.
 3. Food is absorbed directly into the cytoplasm of Amoeba by diffusion.
 4. Food is used to obtain energy and growth of Amoeba.
 5. When considerable amount of undigested food collects inside Amoeba then its cell membrane ruptures at any place to throw out this undigested food.

Diagrammatic representation of different stages in the holozoic nutrition (feeding) of Amoeba is as follows:

