

X- Biology Chapter-1. Life Process

Exercise Solution (Part-2)

MCQs Level 1

21. (b) Hemoglobin, or Hb, is a protein molecule found in red blood cells (erythrocytes) made of four subunits: two alpha subunits and two beta subunits. Each subunit surrounds a central heme group that contains iron and binds one oxygen molecule, allowing each hemoglobin molecule to bind four oxygen molecules.
22. (c) The epiglottis is a leaf-shaped flap in the throat that prevents food from entering the windpipe and the lungs. It stands open during breathing, allowing air into the larynx. So it guards the opening of larynx.
23. (c) The respiratory passage starting from alveoli in lungs:
Alveoli → bronchioles → bronchi → trachea → larynx → pharynx → Nostril.
24. (b) There are about 300 million alveoli in each of the lungs. These tiny air sacs provide an ideal site for the diffusion of the gases into and out of the blood (gas exchange). The alveoli have a very large surface area. This large surface area is the result of all the alveoli being small spheres.
25. (a) Pharynx connects the nasal cavity and mouth to the larynx and esophagus. It is the common pathway for food and air.
26. (b) The cells of the human body require a constant stream of oxygen to stay alive. The respiratory system provides oxygen to the body cells while removing carbon dioxide, a waste product that can be lethal if allowed to accumulate. There are 3 major parts of the respiratory system: the airway, the lungs, and the muscles of respiration. The airway, which includes the nose, mouth, pharynx, larynx, trachea, bronchi, and bronchioles, carries air between the lungs and the body exterior. The lungs act as the functional units of the respiratory system by passing oxygen into the body and carbon dioxide out of the body. Finally, the muscles of respiration, including the diaphragm and intercostal muscles, work together to act as a pump, pushing air into and out of the lungs during breathing.
So answer is- nasal cavity, pharynx, larynx, trachea, bronchi, bronchiole, and lungs.
27. (b) The exchange of gases in the alveoli of the lungs takes place by simple diffusion. The exchange of gases between the alveoli and blood in the lung is the result of difference in partial pressure of respiratory gases.
28. (c) A bronchus, also known as a main or primary bronchus, is a passage of airway in the respiratory tract that conducts air into the lungs. There is a right bronchus and a left bronchus and these bronchi branch into smaller secondary and tertiary bronchi which branch into smaller tubes, known as bronchioles. No gas exchange takes place in the bronchi. The trachea (windpipe) divides into two main or primary bronchi, the left and the right, at the level of the sternal angle and of the fifth thoracic vertebra or up to two vertebrae higher or lower, depending on breathing, at the anatomical point the carina of trachea. An alveolus is an anatomical structure that has the form of a hollow cavity.
29. (a) The diaphragm separates the thoracic cavity, containing the heart and lungs, from the abdominal cavity and performs an important function in respiration. As, the diaphragm contracts, the volume of the thoracic cavity increases and air is drawn into the lungs. It is a dome-shaped sheet of muscle that is inserted into the lower ribs.
30. (c) The epiglottis moves back and forth to prevent the passage of food and liquids into the lungs. The usual upright position of the epiglottis allows air to flow into the lungs and the larynx. When you swallow, the epiglottis flattens backward to cover the entrance to your larynx and prevent food from entering the lungs and windpipe. The epiglottis returns to its usual position after swallowing.
31. (d) Alveoli are an important part of the respiratory system whose function is to exchange oxygen and carbon dioxide molecules to and from the bloodstream.
Alveoli are tiny, balloon-shaped air sacs present at the very end of the respiratory tree and are arranged in clusters throughout the lungs.
A typical pair of human lungs contain about 480 million alveoli. Hence, In humans, the alveoli are the functioning units of external respiration.
32. (c) When the columnar epithelial tissues have cilia, then they are ciliated epithelium. They are present in the lining of the trachea, respiratory tract, kidney tubules etc. The rhythmic movement of the cilia helps in the movement of material in one direction. In humans, the trachea is lined by pseudostratified ciliated mucous epithelium. The mucus keeps the tracheal surface moist. The cilia sweep the bacteria and dust particles and protect the respiratory tract from infection.
33. (c) Amphibians and fishes have two and three-chambered heart respectively and mammals have a four-chambered heart.
34. (c) The pulmonary artery carries deoxygenated blood from the right ventricle to the lungs.
35. (d) Atrial systole results in the active pumping of blood from the left atrium into the left ventricle to fill the ventricle completely. The left ventricle contracts a few milliseconds after the left atrium, forcing the bicuspid valve to close and pumping blood into the dorsal aorta and onwards towards the body's organ systems.

36. (c) Blood is pumped by the right side of the heart to the lungs, where it passes through a capillary bed and picks up vital supplies of oxygen from the air in the lungs. This newly oxygenated blood collects in the pulmonary veins and travels to the left auricle of the heart.
37. (d) They are types of WBCs. We have two main categories of WBCs – granulocytes and agranulocytes. Neutrophils, eosinophils and basophils are different types of granulocytes, while lymphocytes and monocytes are the agranulocytes.
38. (d) Platelets or thrombocytes are the cytoplasmic fragments derived from the megakaryocytes of the Bone marrow. Platelets along with coagulation factors stop bleeding by forming a clot. When bleeding occurs the blood oozes out from an injury, the platelets disintegrate and release coagulation factor thromboplastin that initiates clotting.
39. (b) As deoxygenated blood flows into the right atrium, it passes through the tricuspid valve and into the right ventricle, which pumps the blood up through the pulmonary valve and through the pulmonary artery to the lungs.
40. (d) Urea, together with water and other waste substances, forms the urine as it passes through the nephrons and down the renal tubules of the kidney. From the kidneys, urine travels down two thin tubes called ureters to the bladder.
41. (b) Nephrons are the cells of kidney which are composed of a renal corpuscle and a renal tubule. The renal corpuscle is also known Malpighian body. It consists of cup like double walled structure known as Bowman's capsule and the bunch of capillaries present in the Bowman's capsule is known as glomerulus. It helps in filtration of blood at high pressure. So, the correct answer is option 'Malpighian body'.
42. (b) A flame cell is a specialized excretory cell found in *Planaria*. Flame cells function like a kidney and removes waste materials. Bundles of flame cells are called protonephridia. The function of these cells is to regulate the osmotic pressure of the worm and maintain its ionic balance.
43. (a) Axon is a part of a nerve cell that is, a neuron.
44. (a) The glomerular filtrate is filtered and the important components are reabsorbed in the peritubular capillaries. The urine is formed in the tubules of the kidneys. This urine is collected in the collecting duct and then filtered in the cavities of the kidneys. These cavities are cup-shaped structure called the calyces. The urine from the calyces enters the renal pelvis. This is the region from which the urine is discharged. The urine present in the renal pelvis is then transferred to the ureters.
Thus, the correct answer is option A.
45. (c) The loop of Henle is a U-shaped tube that extends from the proximal tubule. It consists of a descending limb and an ascending limb. Ascending loop is thick-walled and impermeable to water while the descending loop is thin-walled and permeable to water. The countercurrent mechanism is a crucial role of the loop of Henle.

LEVEL 2

1. (b) The most effective wavelength of light participating in photosynthesis is 660-700 nm. Maximum photosynthesis takes place in red and blue light of the visible spectrum and minimum photosynthesis takes place in green light.
2. (d) The events occurring in the light reaction of the photosynthesis are:
Absorption of sunlight by the chlorophyll and release of the electron to the carriers.
Photolysis of water to provide the electron to the chlorophyll.
The release of molecular oxygen due to the photolysis of water.
Assimilatory powers are synthesized in the form of ATP and NADPH
Reduction of NADP⁺ occurs to form NADPH
The oxidation of NADPH and reduction of CO₂ occurs during the dark reaction.
3. (a) Photosynthesis is a redox process. It uses two substrates - water and carbon dioxide. During photosynthesis, water is oxidised into oxygen and carbon dioxide is reduced to sugars. The oxidation of water occurs during the light reaction and reduction of carbon dioxide occurs during the dark reaction.
4. (d) The rate of photosynthesis is maximum in blue (420-480 nm) and red (640-670 nm) region of light which are absorbed by chlorophyll. There is minimum/no photosynthesis in green and other parts of light which are not absorbed by photosynthetic pigments.
The increase in the light intensity increases the photosynthetic absorption of CO₂ and release of oxygen gas in turn balances the gaseous exchange through cellular respiration and thereby bringing the plant to the light compensation point. Beyond this point increases in light intensity increases the photosynthetic release of oxygen.
Duration: The longer the plant is exposed to light, the longer the process of photosynthesis will continue.

5. (a) The oxygen during photosynthesis comes from split water molecules. During photosynthesis, the plant absorbs water and carbon dioxide. After the absorption, the water molecules are disassembled and converted into sugar and oxygen.
6. (b) Lipase enzymes break down fat into fatty acids and glycerol. Digestion of fat in the small intestine is helped by bile, made in the liver. Bile breaks the fat into small droplets that are easier for the lipase enzymes to work on.
7. (a) Pancreatic juice is secreted by the pancreas, which contains a variety of enzymes, including trypsinogen, chymotrypsinogen, pancreatic lipase, nucleases, and amylase. Pepsin is found in gastric juice that is released in stomach.
8. (b) The breathing rate of aquatic animals is faster than that of terrestrial animals because the amount of dissolved oxygen in the water is much less than the amount on land, so they have to breathe more in order to get more oxygen.
9. (c) Alcoholic fermentation is a type of anaerobic respiration in which the respiratory substrate is converted to carbon dioxide and alcohol along with the production of ATP.
10. (b) Red Blood Cells of human beings who live in high altitude regions increase in number. As a person moves to a higher altitude from a lower elevation, the air becomes thinner as we move up. It is because as the height increases the partial pressure of the oxygen in the air decreases. As the pressure of air reduces in the lungs, the hemoglobin in the red blood cells decreases and the tissues become deprived of oxygen. This phenomenon leads to the release of erythropoietin, a hormone from the kidneys that compels the bone marrow in the body to produce extra red blood cells.
11. (b) Alveoli are the primary sites of exchange of gases. Exchange of gases also occurs between blood and tissues. Oxygen and carbon dioxide are exchanged in these sites by simple diffusion mainly based on pressure/concentration gradient.
12. (d) When you breathe in, or inhale, your diaphragm contracts and moves downward. This increases the space in your chest cavity, and your lungs expand into it. The muscles between your ribs also help enlarge the chest cavity. They contract to pull your rib cage both upward and outward when you inhale.
13. (d) Cellular respiration is the process cells use to make energy. Cells in our body combine glucose and oxygen to make ATP and carbon dioxide. Cellular respiration starts with glycolysis, where glucose enters the cell, is converted to pyruvate, and makes a few ATP and NADH.
14. (d) Nasal hair functions include filtering foreign particles from entering the nasal cavity, and collecting moisture. The ciliated epithelium is an epithelial tissue which possesses tiny hair-like structures on the surface called cilia. The cilia show back and forth movement which helps to move the particles. The ciliated epithelial tissue present in the respiratory tract helps to propel the mucus that covers the air tracts. The mucus layer traps the microorganisms and other foreign particles that have entered the respiratory tract and prevents it from reaching the lungs.
15. (d) If the rate of respiration is more than the rate of photosynthesis, the energy consumed will be more than the energy produced. Since, plants are autotrophs and they don't have external source of nutrition for gaining this energy. It will gradually die of starvation.
16. (d) Emphysema is a lung disease that results in shortness of breath is caused by collapse and inflammation of bronchioles that obstruct them. Symptoms include coughing, wheezing, shortness of breath.
17. (c) Thromboplastin is a plasma protein aiding blood coagulation through catalyzing the conversion of prothrombin to thrombin. It is a complex enzyme that is found in brain, lung, and other tissues and especially in the blood platelets.
Heparin is released by the mast cells and blood basophils.
Fibrinogen is produced by the hepatic parenchymal cell. It is converted by thrombin into fibrin during the blood clot formation.
Prothrombin is stored in the parenchymal cells of the liver.
18. (d) The arteries divide to form arterioles that further divide to form capillaries. These capillaries supply oxygen-rich blood to the cells. The capillaries leave the cell to form venules that unite to form veins.
19. (b) Fibrinogen is a glycoprotein present in blood, which is involved in blood clot formation. Plasma is a pale yellow colored fluid that remains after red blood cells, white blood cells and platelets are removed.

Plasma contains the clotting factors like fibrinogen. Whereas the serum is blood plasma without blood clotting factors like fibrinogen. After blood clotting, a clear straw coloured fluid comes out of the site, called serum.

20. (a) The heart is covered by a double-layered membrane called as pericardium. The outer layer is called as parietal pericardium while the inner layer is called visceral pericardium. The space between the two layers is filled with pericardial fluid which reduces the friction while pumping of the heart.
21. (C) Bicuspid valve (Mitral valve) is a form of heart disease resulting in a two-leaflet valve(bicuspid valve) instead of the normal three-leaflet valve(tricuspid). It is located between the left auricle and the left ventricle.
22. (c) The main nitrogenous wastes are urea and uric acid. Urea is formed from metabolism of amino acids, while uric acid is formed from metabolism of nucleotides. As urea is the main nitrogenous waste of the body which is formed by the breakdown of amino acid.
23. (a) The glomerulus is a network of capillaries, located at the beginning of a nephron in the kidney. The afferent arteriole brings blood to the glomerulus and the efferent arteriole takes blood away from the glomerulus. The glomerulus filters blood and produces the glomerular filtrate. This filtrate contains water, glucose, salts and urea. Large molecules such as protein are too large to fit through the blood capillary walls. The Bowman's capsule collects the filtrate and it enters the tubules of the nephron.
24. (c) If one kidney is removed from the body of a human being nothing will happen, the person will survive, and remain normal with some minute difficulties because the body's ability to adapt, a single kidney will grow larger in size in order to filter the blood all on its own.
25. (d) In humans, the Kidney is the excretory organ. Nephron or uriniferous tubule is the structural and functional unit of the kidney. On an average, 25-30 gm of urea is excreted out per day through urine. Hence uriniferous tubules are mainly concerned with removal of urea from the blood.
26. (b) The renal vein takes blood away from the kidney. The process starts with the renal artery which enters the kidney as afferent arteriole. It carries the urea loaded blood into the glomerulus of the kidney.
27. (d) PCT is lined by simple cuboidal brush border epithelium which increases the surface area for reabsorption. Nearly all of the essential nutrients, and 70-80 per cent of electrolytes and water are reabsorbed by this segment.
28. (c) The process of expelling waste from the organism is called excretion. Ammonia, urea and uric acid are the major forms of nitrogenous wastes excreted by the animals.
29. (c) *Amoeba* is a unicellular organism found in fresh water. In *Amoeba* carbon dioxide and ammonia are the main waste materials. These waste materials are excreted out by the process of diffusion through general body surface. In amoeba, contractile vacuoles also play some role in the removal of waste materials. The waste materials present in the cytoplasm of amoeba enters the contractile vacuole. Then, the contractile vacuole moves close to the plasma membrane, come in contact with plasma membrane and burst to release its contents in the surrounding. Thus the correct answer is option C.
30. (b) The proximal convoluted tubule is the continuation of Bowman's capsule. It helps in the reabsorption of most part of NaCl, water, glucose and amino acids due to the presence of many transporters and aquaporins. Glomerulus contains podocytes that help in the filtration of blood and formation of glomerular filtrate. Glomerular filtration rate is maintained by the rate of blood flow through the afferent arterioles but doesn't depend on proximal convoluted tubule. Proximal convoluted tubule helps in reabsorption of not only salts but also water, glucose, amino acids.
31. (b) The pH of gastric acid is 1.5 to 3.5. Parietal cells (also known as oxyntic cells) secrete gastric acid. Gastric acid is a digestive fluid, formed in the stomach. The acid plays a key role in digestion of proteins. Bile juice has PH in between 7-8.saliva has PH of 6.2 to 7.6. The pancreatic juice has PH in between 7.5-8.2. So,only gastric juice have the minimum PH in given options.
32. (a) The Calvin cycle and Hatch-Slack cycles are the two carbon dioxide fixation pathways. The Calvin cycle is also called as C₃ cycle because the first stable product is a three carbon compound, called as phosphoglyceric acid.
33. (a) Bundle of His is a part of heart; it is collection of heart muscles cells and specialized for electrical conduction. So option (A) Heart is correct answer.
34. (d) Urea is a nitrogenous compound produced by the metabolism of proteins. The protein metabolism produces urea in liver in ornithine cycle. The urea is filtered in kidneys to form urine. As protein intake is

zero in case of prolonged fasting and surviving only on water, urea will not be produced in the body. Thus, the correct answer is option D.

35. (b) The physiology of water uptake and transport is not so complex. The main driving force of water uptake and transport into a plant is transpiration of water from stomata present in the leaves. Transpiration is the process of water evaporation through specialized openings in the leaves, called stomata. The evaporation creates a negative water vapor pressure, developed in the surrounding cells of the leaf. Once this happens, water is pulled into the leaf from the vascular tissue, the xylem, to replace the water that has transpired from the leaf. This pulling of water, or tension, that occurs in the xylem of the leaf, will extend all the way down through the rest of the xylem column of the tree and into the xylem of the roots due to the cohesive forces holding together the water molecules along the sides of the xylem tubing. (Remember, the xylem is a continuous water column that extends from the leaf to the roots.) Finally, the negative water pressure that occurs in the roots will result in an increase of water uptake from the soil. Now if transpiration from the leaf decreases, as usually occurs at night or during cloudy weather, the drop in water pressure in the leaf will not be as great, and so there will be a lower demand for water (less tension) placed on the xylem. The loss of water from a leaf (negative water pressure, or a vacuum) is comparable to placing suction to the end of a straw. If the vacuum or suction thus created is great enough, water will rise up through the straw. If you had a very large diameter straw, you would need more suction to lift the water. Likewise, if you had a very narrow straw, less suction would be required. This correlation occurs as a result of the cohesive nature of water along the sides of the straw (the sides of the xylem). Because of the narrow diameter of the xylem tubing, the degree of water tension, (vacuum) required to drive water up through the xylem can be easily attained through normal transpiration rates that often occur in leaves.

HOTS

- (a) (i) Bacteria (ii) Acid (b) (i) Enamel (ii) Dentine (c) Dental caries (d) Pulp cavity (e) Inflammation and infection will occur leading to severe pain.
- (a) W is Dental Plaque. (b) (i) X is Saliva (ii) Y is Salivary Glands. (c) Z are Bacteria. (d) Layer W can be removed by brushing teeth after eating.
- (a) (i) Salivary glands (A) present in the mouth and secrete saliva.
(ii) Salivary glands(A) secrete saliva (B) which contains an enzyme called salivary amylase (C).
(b) D is Oesophagus. Oesophagus is a long, thin and muscular tube that connects the throat (pharynx) to the stomach.
(c) Peristaltic movement (E) is a wave of contraction and expansion which occurs in the alimentary canal and helps to push the food forward.
(d) (i) Hydrochloric acid (ii) Mucus (iii) Enzyme pepsin
The stomach wall secretes gastric juice which contains three substances: Hydrochloric acid (F), the enzyme pepsin (G) and mucus (H).
- (a) Small intestine (A).
(b) Bile (B) is a alkaline fluid which is stored in the gall bladder (C).
(c) Pancreatic juice contains three digestive enzymes: Pancreatic amylase (D), Trypsin (E) and Lipase (F).
(d) The inner wall of small intestine (A) has millions of finger-like projections called Villi (G).
(e) (i) The undigested food passes from the small intestine (A) into a wide tube called Large intestine (H).
(ii) The last part of large intestine is Rectum (I).
(iii) The opening by which undigested food is passed out is Anus (J).
(iv) The process by which undigested food is thrown out from the body is Egestion (K).
- (a) Amoeba (P) is a unicellular animal which has no mouth for ingestion of food.
(b) (i) Amoeba (P) engulfs the food particles by forming finger-like projections called pseudopodia (Q).
(ii) The food is engulfed with little water to form a food vacuole (R).
(c) (i) Enzymes (S) breaks down food into small soluble molecules.
(ii) The digested food is absorbed directly into the cytoplasm by diffusion (T).

- (d) (i) The undigested food is thrown out of the body by rupturing the cell membrane (U) (ii) Egestion (V) is the process of throwing the undigested food out of the body.
6. (a) (i) B is omnivore. (ii) D is herbivore (iii) A is carnivore.
 (b) C is autotroph because it can make its food.
 (c) A, B and D are heterotrophs because they cannot make their food.
 (d) Organism C can be a producer because it can make own food.
 (e) A, B and D are consumers because they cannot make their own food and depend on other organisms for their food.
 (f) (i) Tiger (ii) Human beings (iii) Green Plants (iv) Goat
7. (a)
 (i) The mode of nutrition of organism A is parasitic nutrition.
 (ii) The mode of nutrition of organism B is holozoic nutrition.
 (iii) The mode of nutrition of organism C is saprophytic nutrition
 (b) The organism D is called host of organism A.
 (c) The process by which undigested food is thrown out of the body is known as egestion (E).
 (d) (i) Plasmodium (ii) Amoeba (iii) Fungi
 (e) Heterotrophic nutrition
8. (a)
 (i) Green plant (A) cannot move from one place to another.
 (ii) Green plant makes food glucose (B).
 (iii) Glucose (B) gets converted into a complex food, starch (H).
 (b) Plant can make own food from the simple substances carbon dioxide (C) and water (D).
 (c) Green pigment called chlorophyll (E) present in the leaves of the plant.
 (d) The process by which green plants make their own food is called photosynthesis (G).
9. (a) Carnivores
 (b) Herbivores
 (c) Animal (Y) has a longer small intestine. Y is an herbivorous animal which eats grass. Grass contains cellulose which is a carbohydrate and gets digested with difficulty. A longer small intestine facilitates complete digestion of cellulose.
 (d) Lion
 (e) Cow
10. Organism B
 (b) Organism A
 (c) Organism A can convert glucose into alcohol by anaerobic respiration.
 (d) Yeast behaves like organism A
 (e) Man, fish behave like organism B
11. (a) Organisms (i) Yeast (ii) Amoeba (iii) Mosquito
 (b) (i) Ethanol (C_2H_5OH) (ii) Cell membrane (iii) Spiracles and (iv) Tracheae
 (c) Organism B (Amoeba) and organism C (mosquito) undergo aerobic respiration.
 (d) Organism A (yeast) undergoes anaerobic respiration and produce ethanol and carbon dioxide.
12. (a) Animal T could be Amoeba because it lives in water and breathes through its cell membrane.
 (b) Animal Q could be frog because it can stay in water as well as on land and can breathe both, through moist skin and lungs.
 (c) Animal P could be fish because it lives in water and has gills for breathing.
 (d) Animal S could be grasshopper because lives on land and breathes through spiracles and tracheae.
 (e) Animal R could be earthworm because it lives in soil and breathes only through its skin.

13. (a) (i) Yeast (ii) Ethanol (iii) Carbon dioxide
(b) Fermentation is the process by which sugar converts into ethanol by the action of Yeast.
(c) Fermentation is an example of anaerobic respiration which is done by yeast (X) in the above experiment.
14. (a) Yeast.
(b) Human beings
(c) Such kind of respiration occurs in animal's muscles, when the animal needs more energy for doing heavy physical exercises.
(d) Chemical reaction (ii) represents the aerobic respiration.
(e) Chemical reactions (i) and (iii) represent the anaerobic respiration.
(f) Chemical reaction (ii) represents the aerobic respiration. In aerobic respiration, maximum amount of energy is produced.
15. A = Nose; B =Nostrils; C =Trachea (Windpipe); D =Bronchi; E =Lungs; F =Bronchioles; G =Alveoli
16. (a) Organism X could be man. Man (X) have the lungs (A) as breathing organ.
(b) Organism Y could be Fish. Fish has the gills (B) as breathing organ.
(c) Organism Z could be frog. Frog has lungs (C) and skin (D) as breathing organs.
(d) (i) Organism Z (ii) Organism Y (iii) Organism X
17. (a) (i) Phloem (X)
(ii) Sieve tube (A) (iii) Companion cell (B)
(b) (i) Xylem (Y) (ii) Xylem Vessel (C) (iii)Tracheids (D)
18. (a) (i) Diffusion (A) (ii) Xylem (B) (iii)Transpiration (C)
(iv) Photosynthesis (D)
(v) Phloem (E)
(vi) Translocation (F)
(b) E (c) E (d) B
19. (a) (i) Blood (A) (ii) Haemoglobin (B) (iii)Red (C)
(b) (i) White blood cells (D) (ii) Platelets (E) (iii)Plasma (F) (iv) Red Blood Cells (G)
(c) Digested Food
(d) E (Platelets) and G (Red Blood Cells)
(e) Amoeba and Grasshopper
20. (a) Heart (A)
(b) (i) Pulmonary Vein (B) (ii) Aorta (E) (iii) Vena cava (F)
(iv)Pulmonary artery (I)
(c) (i) Left atrium (C) (ii) Left ventricle (D)
(d) (i) Right atrium (G) (ii) Right ventricle (H)
21. (a) (i) Lymph (X) (ii) Light yellow (Y)
(b) Lymphocytes (Z)
(c) Plasma (C)
(d) Lymph (X) does not contain red blood cells having the red pigment called haemoglobin.
22. (a) (i) Kidneys (P) (ii) Urea (Q)
(b) (i) Renal artery (R) (ii) Renal vein (T)
(c) Nephrons (S)
(d) (i) Urine (U) (ii) Bladder (V) (iii) Ureters (W) (iv)Urethra (X)

23. (a) Organs A is Kidney.
(b) Waste substance (B) is urea.
(c) (i) Cellulose (E)
(ii) Dialysing solution (F)
(d) Water (G), Glucose (H) and Salts (I)
(e) Dialysis

