

DPP MCQ CBSE TERM I CLASS X

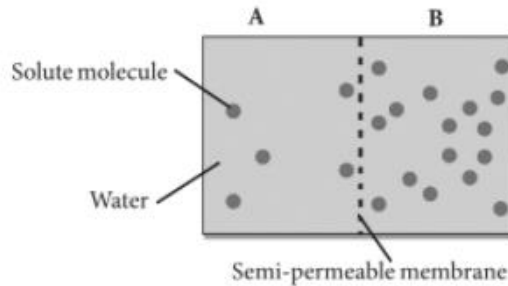
BIOLOGY LIFE PROCESSES

Read the following and answer any four questions from 1(i) to 1(v).

Water is very important chemical, required as solvent, in many biological processes. It is needed as raw material in photosynthesis, as a main substance from which plants evolve oxygen and provide hydrogen for the synthesis of carbohydrates. It helps in translocation of chemical substances and minerals and in this manner maintains internal transportation. Osmosis is a special type of transport of water molecules that occurs through semipermeable membrane. Osmosis is movement of solvent from the region of higher diffusion pressure to the lower diffusion pressure across a semipermeable membrane. It is of two types – endosmosis and exosmosis. Endosmosis is the osmotic entry of water into a cell, organ or system. Exosmosis is the osmotic withdrawal of water from a cell, organ or system.

- (i) A flowering plant is planted in an earthen pot and irrigated. Urea is added in high amounts to make the plant grow faster, but after sometime the plant died. This may be due to
- (a) exosmosis (b) endosmosis (c) water logging (d) suffocation.
- (ii) A slice of sugar beet placed in concentrated salt solution would
- (a) show no change
(b) loose water and become flaccid initially
(c) absorb small quantity of water
(d) become swollen.
- (iii) The process of diffusion is involved in
- (a) respiration (b) photosynthesis (c) transpiration (d) all of these.
- (iv) The plant cell cytoplasm is surrounded by both cell wall and cell membrane. The specificity of transport of substances is mostly across the cell membrane, because
- (a) cell membrane is impermeable
(b) cell membrane is selectively permeable
(c) cell membrane is fully permeable
(d) cell wall is impermeable.

(v) Based on the given figure which of the following statements is incorrect?



- (a) Movement of solvent molecules will take place from chamber A to B.
- (b) Movement of solute will take place from A to B.
- (c) Presence of a semi-permeable membrane is a prerequisite for this process to occur.
- (d) The direction and rate of osmosis depends on both the pressure gradient and concentration gradient.

Read the following and answer any four questions from 2(i) to 2(v).

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

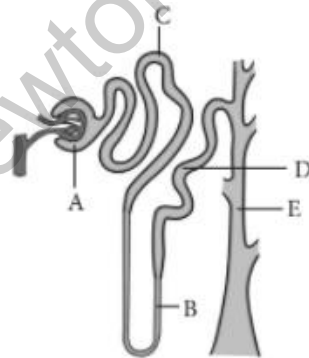


- (i) B is best defined as the vessel which
 - (a) always supply oxygenated blood to the different organs
 - (b) always carry blood away from the heart to different organs
 - (c) always break up into capillaries that reunite to form a vein
 - (d) always carry blood from one visceral organ to another visceral organ.
- (ii) In A, valves are present to check backward flow of blood flowing at
 - (a) atmospheric pressure
 - (b) high pressure
 - (c) low pressure
 - (d) all of these.
- (iii) Which of the following statements is correct regarding A?
 - (a) Carries blood from an organ towards the heart
 - (b) Always carry oxygenated blood with single exception
 - (c) Carries blood from heart towards the organ
 - (d) All of these
- (iv) Which of the following statements is incorrect?
 - (a) A has typically larger lumen than B.
 - (b) Walls of B are elastic enabling them to stretch and shrink during changes in blood pressure.
 - (c) Flow of blood is slower in A than in B.
 - (d) None of these
- (v) Blood pressure in the pulmonary artery is
 - (a) more than that of pulmonary vein
 - (b) less than that in the vena cava
 - (c) same as that in aorta
 - (d) less than pulmonary vein.

Read the following and answer any four questions from 3(i) to 3(v).

Our body needs to remove the wastes that build up from cell activities and from digestion. If these wastes are not removed, then our cells can stop working and we can get very sick. The organs of our excretory system help to release wastes from our body. The excretory system consists of a pair of kidney, a pair of ureters, a urinary bladder and a urethra. Each kidney is made up of nearly one million complex tubular structures called nephrons. The formation of urine involves various processes that takes place in the different parts of the nephron. Each nephron consists of a cup-shaped upper end called Bowman's capsule containing a bunch of capillaries called glomerulus. Bowman's capsule leads to tubular structure-proximal convoluted tubule, loop of Henle and distal convoluted tubule which ultimately joins the collecting tubule.

- (i) The following substances are the excretory products in animals. Choose the least toxic form.
 (a) Urea (b) Uric acid (c) Ammonia (d) CO₂
- (ii) The outline of principal events of urination is given below in random manner.
 (I) Stretch receptors on the wall of urinary bladder send signals to the CNS.
 (II) The bladder fills with urine and becomes distended.
 (III) Micturition
 (IV) CNS passes on motor messages to initiate the contraction of smooth muscles of bladder and simultaneous relaxation of urethral sphincter.
 The correct sequence of the events is
 (a) (I) → (II) → (III) → (IV) (b) (IV) → (III) → (II) → (I)
 (c) (II) → (I) → (IV) → (III) (d) (III) → (II) → (I) → (IV).
- (iii) A person who is not taking food or beverages will have _____ in urine.
 (a) little glucose (b) less urea (c) excess urea (d) little fat
- (iv) Glomerular filtrate is first collected by
 (a) distal convoluted tubule (b) proximal convoluted tubule
 (c) Bowman's capsule (d) loop of Henle.
- (v) The given figure represents a single nephron from a mammalian kidney. Identify the labelled parts, match them with the options (i-iv) and select the correct answer.



- (I) The site of ultrafiltration
 (II) Collect the urine and make it more concentrated
 (III) The main site for the reabsorption of glucose and amino acids
 (IV) Largely responsible for the maintenance of blood pH
- (a) (I)-A, (II)-E, (III)-C, (IV)-D (b) (I)-A, (II)-B, (III)-C, (IV)-D
 (c) (I)-B, (II)-A, (III)-C, (IV)-E (d) (I)-E, (II)-B, (III)-D, (IV)-A

Read the following and answer any four questions from 4(i) to 4(v).

All living cells need nutrients, O_2 and other essential substances. Also, the waste and harmful substances need to be removed continuously for healthy functioning of cells. So, a well developed transport system is mandatory for living organisms. Complex organisms have special fluids within their bodies to transport such materials. Blood is the most commonly used body fluid by most of the higher organisms. Lymph also helps in the transport of certain substances.

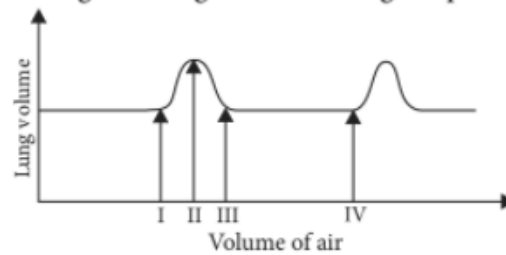
- (i) Which of the following does not exhibit phagocytic activity?
(a) Monocytes (b) Neutrophils (c) Basophil (d) Macrophage
- (ii) Amount of blood corpuscles in changed in dengue fever. One of the common symptoms observed in people infected with dengue fever is
(a) significant decrease in RBC count (b) significant decrease in WBC count.
(c) significant decrease in platelets count (d) significant increase in platelets count.
- (iii) Why are WBCs called soldiers of the body?
(a) They are capable of squeezing out of blood capillaries.
(b) They are manufactured in bone marrow.
(c) They fight against disease causing germs.
(d) They have granular cytoplasm with lobed nucleus.
- (iv) Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body.
(a) Erythrocytes (b) Neutrophils (c) Leucocytes (d) Thrombocytes
- (v) Which of the following is the correct feature of lymph?
(a) It is similar to the plasma of blood, but is colourless and contains less proteins.
(b) It is similar to the WBCs of blood, but is colourless and contain more proteins.
(c) It is similar to the RBCs of blood and red in colour.
(d) It contains more fats.

Read the following and answer any four questions from 5(i) to 5(v).

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

- (i) People living at sea level have around 5 million RBCs per cubic millimetre of their blood whereas those living at an altitude of 5400 metres have around 8 million. This is because at high altitude
(a) people eat more nutritive food, therefore more RBCs are formed
(b) people get pollution-free air to breathe and more oxygen is available
(c) atmospheric O_2 level is less and hence more RBCs are needed to absorb the required amount of O_2 to survive
(d) there is more UV radiation which enhances RBC production.

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



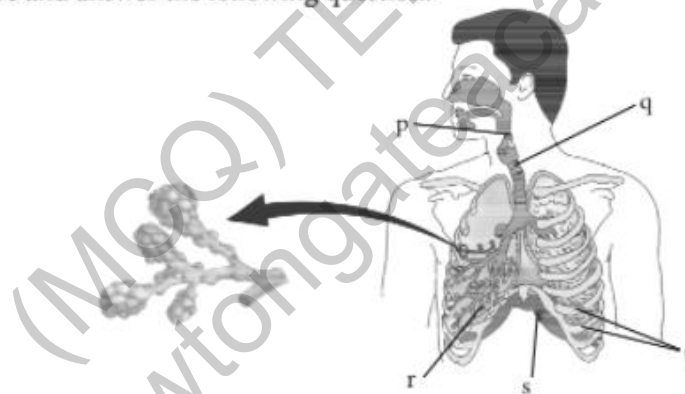
The change from II to III indicates the

- (a) movement of diaphragm away from the lungs (b) expansion of the thoracic cavity
(c) movement of air out of the lungs (d) expansion of ribs.

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

- (a) One can breathe out air totally without oxygen.
(b) One can breathe out air through Eustachian tube by closing both nose and mouth.
(c) One can consciously breathe in and breathe out by moving the diaphragm alone, without moving the ribs at all.
(d) The lungs can be made fully empty by forcefully breathing out all air from them.

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

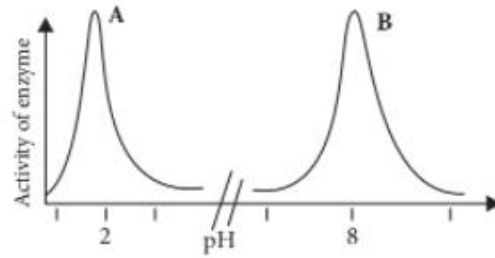


Which of these parts

- (I) are the actual sites of respiratory gas exchange?
(II) is the common passage for air and food?
(III) is provided with incomplete cartilaginous rings?
(IV) relaxes and gets back to its original shape during expiration?
(v) moves upwards and outwards during inspiration?

- (a) (I) – s, (II) – p, (III) – q, (IV) – r, (V) – t (b) (I) – r, (II) – p, (III) – q, (IV) – s, (V) – t
(c) (I) – t, (II) – q, (III) – r, (IV) – s, (V) – p (d) (I) – p, (II) – q, (III) – r, (IV) – s, (V) – t

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



- (a) A : amylase B : trypsin
 (b) A : pepsin B : trypsin
 (c) A : chymotrypsin B : rennin
 (d) A : lactate dehydrogenase B : amylase.
- (v) If the inner surface of the ileum in the human small intestine was smooth, rather than being folded and subdivided into villi, which of the following statements would be true?
- (a) The rate of absorption of digested food molecules would be higher, because the digested food would pass more easily through the digestive tract.
 (b) Digestion would not be as effective, because there would be fewer cells secreting trypsin (a protein-digesting enzyme).
 (c) Humans would have needed to evolve a much longer small intestine to absorb sufficient nutrients from their food.
 (d) Humans would not be able to survive, because the digestive tract would be more susceptible to damage.

Read the following and answer any four questions from 8(i) to 8(v).

Respiration is an energy releasing enzymatically controlled process which involves a stepwise oxidative breakdown of food substances inside living cells. The oxidative breakdown of respiratory substrates with the help of atmospheric oxygen is aerobic respiration. Glucose is completely broken down into CO_2 and H_2O by this process of oxidation and large amount of energy is produced.

- (i) Site of Krebs' cycle is
 (a) peroxisome (b) cytoplasm (c) mitochondria (d) none of these.
- (ii) The pathway of respiration common in all living organisms is X; it occurs in the Y and the products formed are two molecules of Z.

Identify X, Y and Z in the above paragraph and select the correct answer.

X	Y	Z
(a) glycolysis	mitochondrion	pyruvic acid
(b) glycolysis	cytoplasm	pyruvic acid
(c) Krebs' cycle	cytoplasm	acetyl CoA
(d) Krebs' cycle	mitochondrion	acetyl CoA

- (iii) Number of oxygen molecules utilised in glycolysis is _____
 (a) 0 (b) 2 (c) 4 (d) 6
- (iv) How many ATP molecules could maximally be generated from one molecule of glucose, if the complete oxidation of one molecule of glucose to CO_2 and H_2O yields 686 kcal and the useful chemical energy available in the high energy phosphate bond of one molecule of ATP is 12 kcal?
 (a) 1 (b) 2 (c) 30 (d) 57
- (v) The end product of aerobic respiration is
 (a) NADH (b) oxygen (c) ADP (d) $\text{CO}_2 + \text{ATP} + \text{H}_2\text{O}$.

Read the following and answer any four questions from 9(i) to 9(v).

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

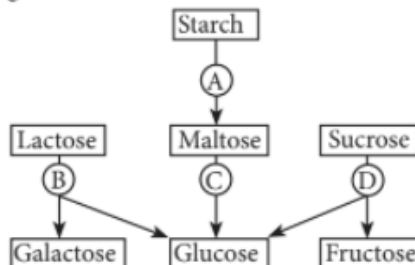
- (i) In which of the following groups of organisms food material is broken outside the body and absorbed?
 (a) Mushroom, green plants, *Amoeba* (b) Yeast, mushroom, bread mould
 (c) *Paramecium*, *Amoeba*, *Cuscuta* (d) *Cuscuta*, lice, tapeworm
- (ii) Which of the following is a parasite?
 (a) Yeast (b) *Taenia* (c) *Amoeba* (d) Earthworm
- (iii) Which of the following is an example of saprotroph?
 (a) Grass (b) Mushroom (c) *Amoeba* (d) *Paramecium*

- (iv) Heterotrophic nutrition involves
- production of simple sugar from inorganic compounds
 - utilisation of chemical energy to prepare food
 - utilisation of energy obtained by plants
 - all of these.
- (v) In *Paramecium*, food enters the body through
- mouth
 - pseudopodia
 - cilia
 - cytostome.

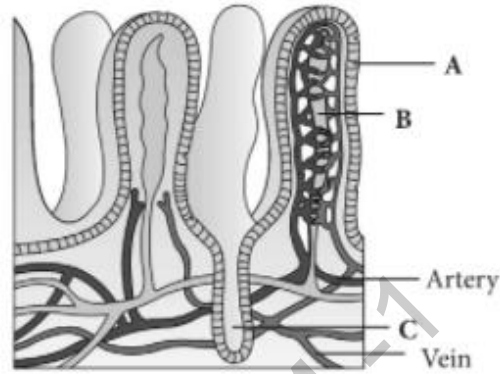
Read the following and answer any four questions from 10(i) to 10(v).

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

- (i) Which of the following is incorrect regarding intestinal villi?
- They possess microvilli.
 - They increase the surface area.
 - They are supplied with capillaries and the lacteal vessels.
 - They only participate in digestion of fats.
- (ii) Which enzymes are likely to act on the baked potatoes eaten by a man, starting from the mouth as they move down the alimentary canal?
- Pancreatic amylase → Salivary amylase → Lipases
 - Disaccharidase like maltase → Lipases → Nucleases
 - Salivary amylase → Pancreatic amylase → Disaccharidases
 - Salivary maltase → Carboxypeptidase → Trypsinogen
- (iii) After surgical removal of an infected gall bladder, a person must be especially careful to restrict dietary intake of
- starch
 - protein
 - sugar
 - fat.
- (iv) The given flow chart shows the fate of carbohydrates during digestion in the human alimentary canal. Identify the enzymes acting at stages indicated as A, B, C and D and select the correct option.



- (a) A - Amylase, B - Maltase, C - Lactase, D - Invertase
- (b) A - Amylase, B - Maltase, C - Invertase, D - Lactase
- (c) A - Amylase, B - Invertase, C - Maltase, D - Lactase
- (d) A - Amylase, B - Lactase, C - Maltase, D - Invertase
- (v) The given diagram represents a section of small intestinal mucosa. Identify A, B and C.



- (a) A-Villi, B-Lacteal, C-Capillaries
- (b) A-Lacteal, B-Villi, C-Capillaries
- (c) A-Villi, B-Lacteal, C-Crypts
- (d) A-Crypts, B-Lacteal, C-Capillaries