



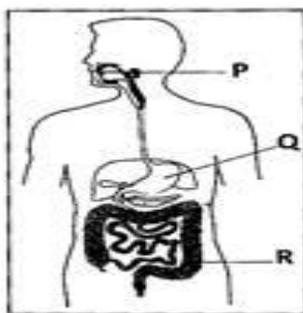
**COMPETENCY BASED QUESTIONS, 2022-23**

**CLASS- X, BIOLOGY**

**CHAPTER: LIFE PROCESSES**

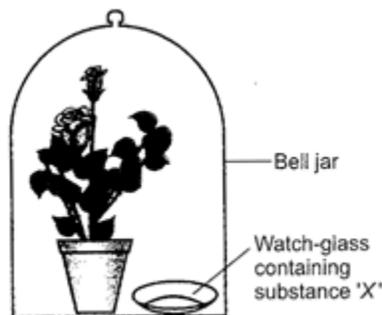
**TOPIC 1– NUTRITION**

1. Identify P, Q and R in the given figure?



- (a) P-Gastric gland, Q-Pancreas, R-Small intestine
- (b) P-Salivary glands, Q-Stomach, R-Large intestine
- (c) P-Gastric gland, Q-Pancreas, R-Large intestine
- (d) P-Salivary glands, Q-Pancreas, R-Small intestine

2. The given figure is a demonstration of an experiment to show that carbon dioxide is essential for photosynthesis. What is the substance 'X', kept in watch-glass?



- (a) Potassium hydroxide
- (b) Sodium bicarbonate
- (c) Sodium carbonate
- (d) Potassium sulphate

3. Given below are the events of photosynthesis. Identify which of the following is/are not true and select the correct option.

(i) Absorption of light energy by chlorophyll.

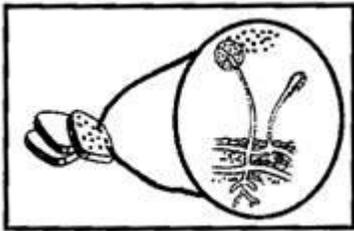
(ii) Conversion of light energy to chemical energy and splitting of carbon dioxide into carbohydrates and oxygen.

(iii) Reduction of carbon dioxide to carbohydrates.

(iv) Conversion of chemical energy to radiant energy and splitting of water molecules into hydrogen and oxygen.

- (a) (i) and (ii) only
- (b) (ii) only
- (c) (ii) and (iii) only
- (d) (ii) and (iv) only

4. Identify the type of nutrition exhibited by the given figure.



- (a) Autotrophic nutrition
- (b) Saprophytic nutrition
- (c) Parasitic nutrition
- (d) Symbiotic nutrition

### ASSERTION AND REASONING QUESTIONS

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

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

5. **Assertion:** Walls of the intestine have numerous villi.

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

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

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

7. **Assertion:** Liver is known as the smallest gland in the human body.

**Reason:** Liver secretes bile juice.

### CASE STUDY BASED QUESTIONS

8. A student was performing an activity to prove the requirements for photosynthesis. During this activity, he kept two identical healthy potted plants A and B in dark for 72 hours. After 72 hours, he covered plant

A and B by bell shaped jars separately. While covering the plants with separate bell jars, he kept KOH in the watch glass by the side of the plant in setup A and not in setup B. Both these setups were made air tight and were kept in light for 6 hours. Then, Iodine Test was performed with one leaf from each of the two plants A and B.

1. This experimental set up is used to prove essentiality of which of the following requirements of photosynthesis?

- (a) Chlorophyll                      (b) Oxygen                      (c) Carbon dioxide                      (d) Sunlight

2. The function of KOH is to absorb

- (a) Oxygen.                      (b) Carbon dioxide.                      (c) Moisture.                      (d) Sunlight

3. Which of the following statements shows the correct results of Iodine Test performed on the leaf from plant A and B respectively?

- (a) Blue - black colour would be obtained on the leaf of plant A  
(b) Blue - black colour would be obtained on the leaf of plant B  
(c) Red colour would be obtained on the leaf of plant A  
(d) Red colour would be obtained on the leaf of plant B

9. 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.

1. 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

2. Which of the following is a parasite?

- (a) Yeast  
(b) Taenia  
(c) Amoeba  
(d) Earthworm

3. Which of the following is an example of saprotroph?

- (a) Grass  
(b) Mushroom  
(c) Amoeba  
(d) Paramecium

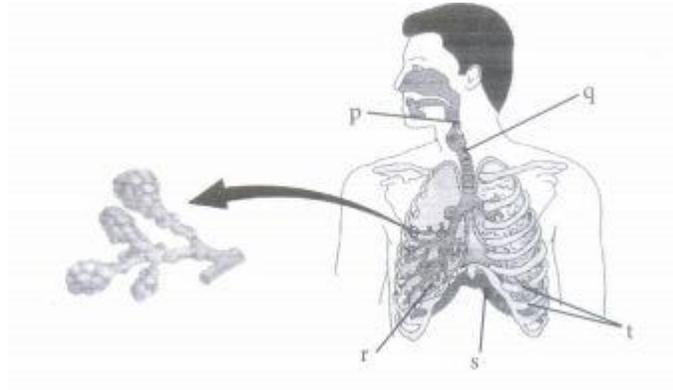
4. Heterotrophic nutrition involves

- (a) production of simple sugar from inorganic compounds  
(b) utilisation of chemical energy to prepare food  
(c) utilisation of energy obtained by plants  
(d) all of these.

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## TOPIC 2 – RESPIRATION

1. 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

2. Which of the following are parts of the human respiratory system?

- (a) Trachea
- (b) Diaphragm
- (c) The lungs
- (d) All of the above

3. Which of the following statements is true about the entry of air into the lungs?

- (a) Air enters the body and travels to the lungs through the mouth and the nose
- (b) Air enters the body and travels to the lungs through the oesophagus and gullet
- (c) Air enters the body and travels to the lungs through the windpipe and the pores
- (d) Air enters the body and travels to the lungs through the nose and the nervous system.

### ASSERTION AND REASONING QUESTIONS

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- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

**4. Assertion (A):** Aerobic respiration requires less energy as compared to anaerobic respiration.

**Reason (R):** Mitochondria is the powerhouse of the cell.

**5. Assertion (A):** Pyruvate is a six-carbon molecule

**Reason (R):** It is prepared in the cytoplasm as the first step to cellular respiration

**6. Assertion (A):** In human beings, the respiratory pigment is haemoglobin

**Reason (R):** It is a type of protein which has high-affinity carbon dioxide.

### CASE STUDY BASED QUESTION

7. 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.

1. 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.

2. Respiration is a process in which

(a) Energy is used up

(b) Energy is stored in the form of ATP

(c) Energy is released and stored in the form of ATP

(d) Energy is not released at all

3. Respiration differs from the process of combustion in the fact that

(a) All the energy stored in glucose is released at once due to combustion.

(b) All energy stored in glucose is gradually released due to combustion.

(c) Comparatively large quantity of energy is produced due to combustion.

(d) The carbohydrates act as the combustion substance.

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### TOPIC 3 – TRANSPORTATION

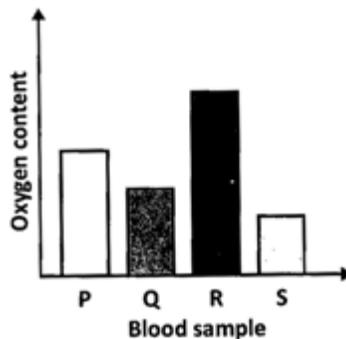
1. Choose the correct statement that describes arteries.

- (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 thick elastic walls, blood flows under low pressure; carry blood from the heart to various organs of the body
- (c) 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
- (d) 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.

2. Which of the following carries oxygenated blood only?

- A. Aorta
  - B. Pulmonary artery
  - C. Pulmonary vein
  - D. Capillary
- (a) C and D
  - (b) A and C
  - (c) A and B
  - (d) All of these

3. Which of these samples is most probably from a pulmonary artery?



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

4. 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

5. 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

### **ASSERTION AND REASONING QUESTIONS**

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- (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.

**6. Assertion:** The thickest muscles are present in left atrium.

**Reason:** Left atrium receives deoxygenated blood from the lungs.

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

**Reason:** This helps in preventing the backflow of blood.

### **CASE STUDY BASED QUESTION**

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.

1. What is the importance of thin walls of blood capillaries?

- (a) 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.

2. 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.

3. 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.

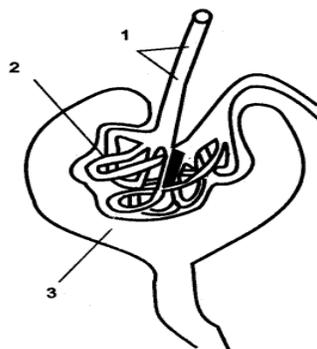
4. What is the function of arteries?

- (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.

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#### **TOPIC 4 – EXCRETION**

1. Study the diagram given below and then answer the questions that follows:



Name the parts labeled 2 and 3.

- (A) 2- Bowman capsule , 3- Glomerulus
- (B) 2 and 3- Bowman capsule
- (C) 2- Glomerulus, 3- Bowman capsule
- (D) 2- Loop of henle , 3- Glomerulus

2. Which one of the following statement is true?

Statement 1: Kidneys lie in the abdominal cavity.
Statement 2: Ureters carry urine from the kidneys to the urinary bladder.

- A) Statement 1
- B) Statement 2
- C) Both statements are correct
- D) Both statements are incorrect

3. The waste products from plants are removed through:

- A) Stomata
- B) Lenticels
- C) Felling of fruits
- D) All the above

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- (c) 'A' is true but 'R' is false.
- (d) 'A' is false but 'R' is true.

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

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

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

**Reason:** They produce wastes like urea in humans.

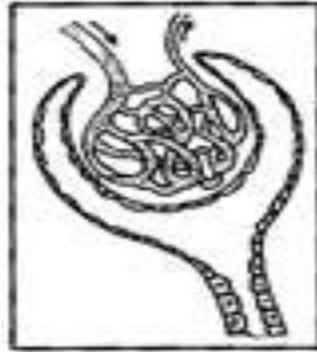
### CASE STUDY BASED QUESTION

6. Read the paragraph and answer the following:

Many unicellular organisms remove metabolic waste products by simple diffusion from body surface into the surrounding. While complex multicellular organisms have specialized organs for excretion. Kidneys remove poisonous substances such as urea, waste salts and excess water from blood and excrete them as urine. Nephron is a unit of filtration in kidneys that filters waste material. It selectively reabsorbs or excretes water with the help of capillaries that surround it. In case of kidney failure artificial kidney can be used.

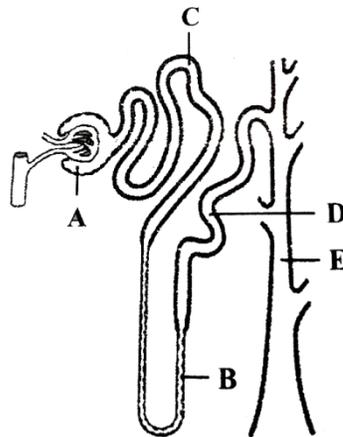
1. What is the benefit of selective absorption?
2. The excretory system of humans include:
  - a) Kidney, ureter, urinary bladder, urethra
  - b) A pair of kidneys, pair of ureters, pair of urinary bladder, urethra
  - c) A pair of kidneys, pair of ureters, urinary bladder, urethra
  - d) A pair of kidneys, ureters, urinary bladder, pair of urethra

3. Which of the following processes occur in the part shown below?



- a) Tubular secretion
- b) Tubular reabsorption
- c) Ultra filtration
- d) All of the above

4. Can nephron be compared to a filter? Which of the following represents Bowmans capsule?



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