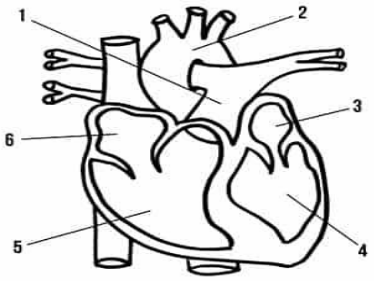
**M.M.: 65** **Time: 90 min**

1. What are the components of respiratory system in humans? Write their functions. **[2]**
2. Differentiate between Pepsin and Trypsin? **[1]**
3. What will happen if
   a. Mucus is not secreted by gastric glands
   b. Diaphragm gets punctured
   c. Xylem of a plant is removed
   d. A plant is waterlogged
   e. Platelet level falls **[5]**
4. What are the adaptations of a leaf for photosynthesis? **[2]**
5. Why is bile essential for digestion? **[2]**
6. What is the product of anaerobic respiration in yeast? Under what circumstances does anaerobic respiration take place in human beings? What does it produce? **[2]**
7. Draw a labelled diagram for the functional unit of kidney? Mark the area where filtration takes place. **[3]**
8. How is blood different from lymph? What are the functions of lymph? **[2]**
9. Why is our circulation called double circulation? What is its advantage? **[2]**
10. Why is it a matter of concern if the haemoglobin level falls? **[2]**
11. List the 3 steps of photosynthesis in correct order. Are these steps always followed? Explain **[3]**
12. With a labelled diagram explain opening and closing of stomata. **[3]**
13. Differentiate between--
    a. Cellular respiration and breathing
    b. Artery and vein
    c. Small intestine and large intestine
    d. Intracellular digestion and extracellular digestion (1 point and 1 example) **[8]**
14. What is the role of resins and gums in a plant's body? Explain. **[3]**
15. What is the common step of respiration that converts glucose to a three carbon molecule? Name the product and discuss its fate with the help of a flow chart. **[3]**
16. Label all the parts of heart in the given diagram. Explain the function of 2. **[4]**




17. Why is the rate of breathing higher in a fish than in a rabbit? **[1]**
18. On what factors does the amount of urine produced depend? **[1]**
19. Explain how water enters the roots and rises up in tall trees. **[2]**

20. How is haemodialysis different from the normal kidney function? **[2]**

**Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:**

(a) If both assertion and reason are true and reason is the correct explanation of assertion.

(b) If both assertion and reason are true, but reason is not the correct explanation of assertion.

(c) If the assertion is true, but the reason is false.

(d) If the assertion is false, but the reason is true.

21. (A) Lungs always contain a residual volume of air.

(R) It provides sufficient time for oxygen to be absorbed and carbon dioxide to be released. **[1]**

22. (A) The purpose of making urine is to filter out undigested food.

(R) Kidneys filter the waste and produce urine. **[1]**

23. (A) Left atrium possesses the thickest muscles.

(R) Left atrium receives oxygenated blood from the lungs. **[1]**

24. 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,

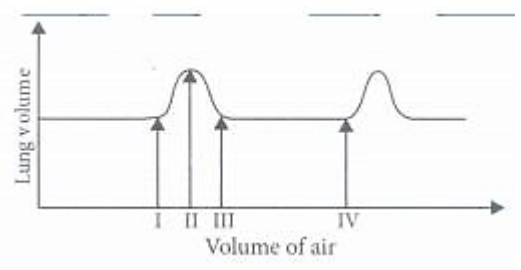
(a) people eat more nutritive food, therefore more RBCs are formed

(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?

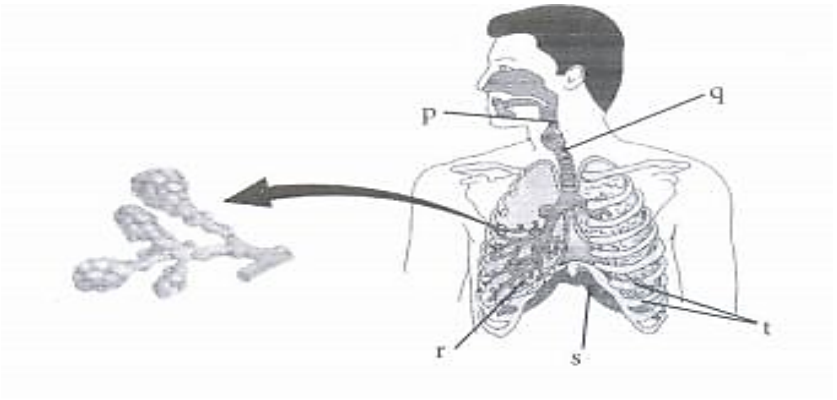
(a) One can breathe out air totally without oxygen.

(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 not 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

(c) (I) - t, (II) - q, (III) - r, (IV) - s, (V) – P

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

(d) (I) - p, (II) - q, (III) - r, (IV) - s, (V) – t **[5]**