BIOLOGY

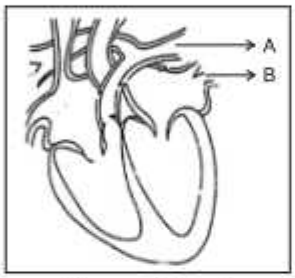
1 : Life Processes

1. How do autotrophs obtain CO_2 and N_2 to make their food? **[2008] ...[1M]**

2. What will happen to a plant if its xylem is removed? **[2009] ...[1M]**

3. Name the green dot like structures in some cells observed by a student when a leaf peel was viewed under a microscope. What is this green colour due to? **[2010] ...[1M]**

4. Consider the following statements in connection with the functions of the blood vessels marked A and B in the diagram of a human heart as shown.



(i) Blood vessel A - It carries carbon dioxide rich blood to the lungs.

(ii) Blood vessel B - It carries oxygen rich blood from the lungs.

(iii) Blood vessel B - Left atrium relaxes as it receives blood from this blood vessel.

(iv) Blood vessel A - Right atrium has thick muscular wall as it has to pump blood to this blood vessel.

The correct statements are **[2021]...[1M]**

(a) (i) and (ii) only (b) (ii) and (iii) only

(c) (ii), (iii) and (iv) (d) (i), (ii) and (iii)

5. In living organisms during respiration which of the following products are not formed if oxygen is not available? **[2021]...[1M]**

(a) Carbon dioxide + Water

(b) Carbon dioxide + Alcohol

(c) Lactic acid + Alcohol

(d) Carbon dioxide + Lactic Acid

6. The correct statements with reference to single celled organisms are

(i) Complex substances are not broken down into simpler substances.

(ii) Simple diffusion is sufficient to meet the requirement of exchange of gases.

(iii) Specialised tissues perform different functions in the organism.

(iv) Entire surface of the organism is in contact with the environment for taking in food.

[2021]...[1M]

(a) (i) and (iii) (b) (ii) and (iii)

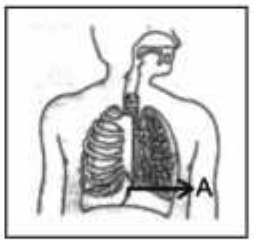
(c) (ii) and (iv) (d) (i) and (iv)

7. Which one among the following is not removed as a waste product from the body of a plant? **[2021]...[1M]**

(a) Resins and Gums (b) Urea

(c) Dry Leaves (d) Excess Water

8. Which of the following statements are correct in reference to the role of A (shown in the given diagram) during a breathing cycle in human beings?



(i) It helps to decrease the residual volume of air in lungs.

(ii) It flattens as we inhale.

(iii) It gets raised as we inhale.

(iv) It helps the chest cavity to become larger.

[2021]...[1M]

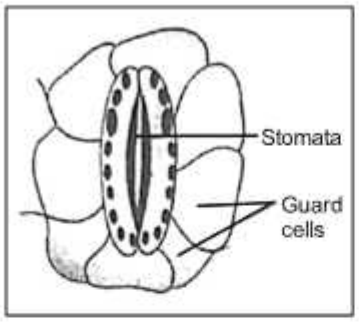
(a) (ii) and (iv)

(b) (iii) and (iv)

(c) (i) and (ii)

(d) (i), (ii) and (iv)

9. Which one of the following conditions is true for the state of stomata of a green leaf shown in the given diagram? **[2021]...[1M]**



(a) Large amount of water flows into the guard cells.

(b) Gaseous exchange is occurring in large amount.

(c) Large amount of water flows out from the guard cells.

(d) Large amount of sugar collects in the guard cells.

10. **Assertion (A) :** Nitrogen is an essential element for plant growth and is taken up by plants in the form of inorganic nitrates or nitrites.

Reason (R) : The soil is the nearest and richest source of raw materials like Nitrogen, Phosphorus and other minerals for the plants. **[2021]...[1M]**

(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(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.

11. **Assertion (A) :** Hydrochloric acid helps in the digestion of food in the stomach.

Reason (R) : Hydrochloric acid creates an acidic medium to activate protein digesting enzymes.

[2021]...[1M]

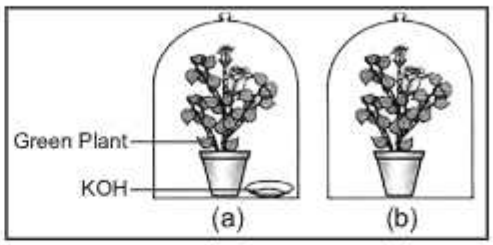
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(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.

12. A student was asked to write a stepwise procedure to demonstrate that carbon dioxide is necessary for photosynthesis. He wrote the following steps. The wrongly worded step is



[2021]...[1M]

(a) Both potted plants are kept in dark room for at least three days.

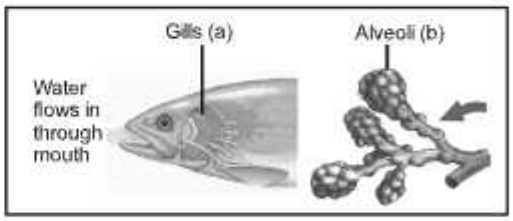
(b) Bottom of the bell jars is sealed to make them air tight.

(c) Both potted plants are kept in sunlight after the starch test.

(d) A leaf from both the plants is taken to test the presence of starch.

13. Respiratory structures of two different animals-a fish and a human being are as shown.

Observe (a) and (b) and select one characteristics that holds true for both of them.



[2021]...[1M]

(a) Both are placed internally in the body of animal.

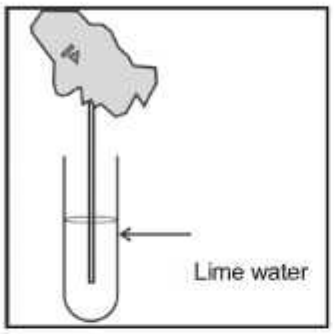
(b) Both have thin and moist surface for gaseous exchange.

(c) Both are poorly supplied with blood vessels to conserve energy

(d) In both the blood returns to the heart after being oxygenated.

14. Observe the diagram of an activity given below. What does it help to conclude, when the person exhales into the test-tube?

[2021]...[1M]



(a) Percentage of carbon dioxide is more in inhaled air.

(b) Fermentation occurs in the presence of oxygen.

(c) Percentage of carbon dioxide is more in the exhaled air.

(d) Fermentation occurs in the presence of carbon dioxide.

15. The length of small intestine in a deer is more as compared to the length of small intestine of a tiger. The reason for this is **[2021]...[1M]**

(a) Mode of intake of food.

(b) Type of food consumed.

(c) Presence or absence of villi in intestines.

(d) Presence or absence of digestive enzymes.

16. Identify the two components of Phloem tissue that help in transportation of food in plants.

[2021]...[1M]

(a) Phloem parenchyma & sieve tubes

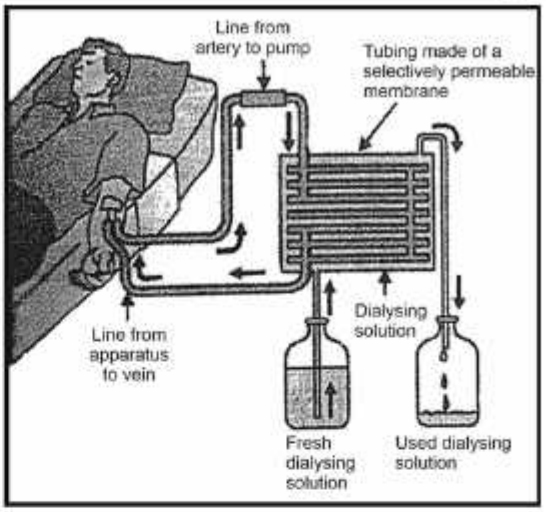
(b) Sieve tubes & companion cells

(c) Phloem parenchyma & companion cells

(d) Phloem fibres and sieve tubes

Case Study Based Questions (Q.17 to Q.20) :

The figure shown below represents a common type of dialysis called as Haemodialysis. It removes waste products from the blood such as excess salts and urea which are insufficiently removed by the kidney in patients with kidney failure. During the procedure, the patient's blood is cleaned by filtration through a series of semi-permeable membranes before being returned to the blood of the patient. On the basis of this, answer the following questions:



17. The haemodialyzer has semi-permeable lining of tubes which help **[2021]...[1M]**

(a) To maintain osmotic pressure of blood

(b) To filter nitrogenous wastes from the dialyzing solution

(c) In passing the waste products in the dialyzing solution

(d) To pump purified blood back into the body of the patient

18. Which one of the following is not a function of Artificial Kidney? **[2021]...[1M]**

(a) To remove nitrogenous wastes from the blood.

(b) To remove excess fluids from the blood.

(c) To reabsorb essential nutrients from the blood.

(d) To filter and purify the blood.

19. The 'used dialysing' solution is rich in:

[2021]...[1M]

(a) Urea and excess salts

(b) Blood cells

(c) Lymph

(d) Proteins

20. Which part of the nephron in human kidney, serves the function of reabsorption of certain substances? **[2021]...[1M]**

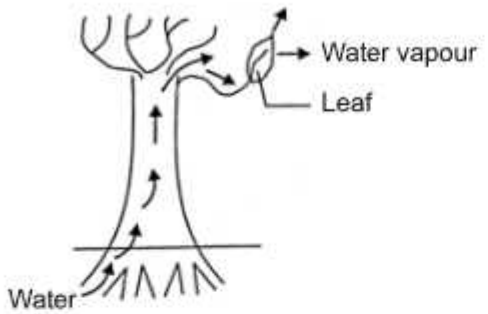
(a) Glomerulus

(b) Bowman's capsule

(c) Tubules

(d) Collecting duct

21. Observe the following diagram and identify the process and its significance from the following options: **[2023]...[1M]**



(a) Evaporation : maintains water contents in leaf cells.

(b) Transpiration : creates a suction force which pulls water inside the plant.

(c) Excretion : helps in excreting out waste water from the plant.

(d) Translocation : helps in transporting materials from one cell to another.

22. Opening and closing of stomata is due to : **[2023]...[1M]**

(a) High pressure of gases inside the cells.

(b) Movement of water in and out of the guard cells.

(c) Stimulus of light in the guard cells.

(d) Diffusion of CO_2 in and out of the guard cells.

23. **A :** The inner walls of the small intestine have finger like projections called villi which are rich in blood. **[2023]...[1M]**

R : These villi have a large surface area to help the small intestine in completing the digestion of food.

(a) Both (A) and (R) are true and (R) is the correct explanation of (A)

(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

24. Write one function each of the following components of the transport system in human beings: **[2008] ...[2M]**

(a) Blood vessels (b) Blood platelets

(c) Lymph (d) Heart

25. Write two different ways in which glucose is oxidized to provide energy in human body. Write the products formed in each case. **[2019]...[2M]**

26. In the experimental set up to show that "CO_2 is given out during respiration", name the substance taken in the small test tube kept in the conical flask. State its function and the consequence of its use. **[2019] ...[2M]**

27. Write one specific function each of the following organs in relation with excretion in human beings: **[2023]...[2M]**

(i) Renal Artery

(ii) Urethra

(iii) Glomerulus

(iv) Tubular part of nephron

28. Two green plants are kept separately in oxygen free containers, one in the dark and other in sunlight. It was observed that plant kept in dark could not survive longer. Give reason for this observation. **[2023]...[2M]**

29. How are oxygen and carbon dioxide transported in human beings? How are lungs designed to maximize the area for exchange of gases? **[2008] ...[3M]**

30. Write three types of blood vessels. Give one important feature of each. **[2019] ...[3M]**

31. (A) (i) How does *Paramecium* obtain its food?

(ii) List the role of each of the following in our digestive system:

(a) Hydrochloric acid

(b) Trypsin

(c) Muscular walls of stomach

(d) Salivary amylase **[2023]...[3M]**

OR

(B) (i) What is double circulation?

(ii) Why is the separation of the right side and the left side of the heart useful? How does it help birds and mammals?

32. (a) Draw a diagram of human alimentary canal and label on it :

Oesophagus, Gall bladder, Liver and Pancreas

(b) Explain the statement, 'Bile does not contain any enzyme but it is essential for digestion'. **[2009] ...[5M]**