9. Match the words of Column (A) with that of Column (B).

Column (A)	Column (B)
(*a*) Phloem	(*i*) Excretion
(*b*) Nephron	(*ii*) Translocation of food
(*c*) Veins	(*iii*) Clotting of blood
(*d*) Platelets	(*iv*) Deoxygenated blood

10. What are the adaptations of leaf for photosynthesis ?
11. Why is small intestine in herbivores longer than in carnivores ? [*HOTS*]
12. What will happen if mucus is not secreted by the gastric glands ?
13. What is the significance of emulsification of fats ?[*HOTS*]
14. What causes movement of food inside the alimentary canal ?
15. Why does absorption of digested food occur mainly in the small intestine ?
16. Match Group (A) with Group (B).

Group (A)	Group (B)
(*a*) Autotrophic nutrition	(*i*) Leech
(*b*) Heterotrophic nutrition	(*ii*) *Paramecium*
(*c*) Parasitic nutrition	(*iii*) Deer
(*d*) Digestion in food vacuoles	(*iv*) Green plant

17. Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms ?
18. What is the advantage of having four chambered heart ? [*HOTS*]
19. In each of the following situations what happens to the rate of photosynthesis ? [*HOTS*]
    (*a*) Cloudy days
    (*b*) No rainfall in the area
    (*c*) Good manuring in the area
    (*d*) Stomata gets blocked due to dust.
20. Name the energy currency in the living organisms. When and where is it produced ?
21. What is common for cuscuta, ticks and leeches ?
22. What are the functions of gastric glands present in the wall of the stomach ?
23. Match the terms in Column (A) with those in Column (B).

Column (A)	Column (B)
(*a*) Trypsin	(*i*) Pancreas
(*b*) Amylase	(*ii*) Liver
(*c*) Parasitic nutrition	(*iii*) Gastric glands
(*d*) Pepsin	(*iv*) Saliva

24. Name the correct substrates for the following enzymes
    (*a*) Tryspin (*b*) Amylase
    (*c*) Pepsin (*d*) Lipase
25. Why do veins have thin walls as compared to arteries
26. What will happen if platelets were absent in the blood
27. Plants have low energy needs as compared to animals Explain.
28. Why and how does water enter continuously into the roo xylem ?
29. How do leaves of plants help in excretion ?

LONG ANSWER TYPE QUESTIONS

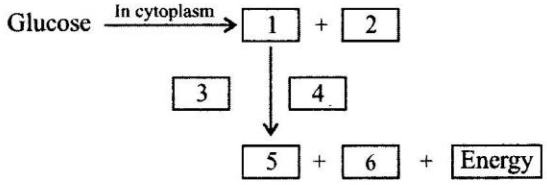
30. Explain the importance of soil for plant growth.
31. What is the function of epiglottis in man ? Draw a labelled diagram showing the human respiratory system.
32. Explain the three pathways of breakdown in livin organisms.

VALUE BASED QUESTIONS

1. Your family has a plot of land in the city where your father wants to construct a house. The area has few trees which are very dear to your father. By way of photosynthesis trees provide oxygen which is essential for living organisms. Your father therefore, does not want to cut the trees. At the same time, he desperately needs a house for his family.
   (*a*) Should your father construct the house after cutting the trees ?
   (*b*) How can you compensate for the loss in terms of oxygen supply ?
   (*c*) Will simply planting the trees ensure supply of oxygen ?
   (*d*) What values are shown by your father ?
2. You were standing on the roadside, when you saw a famil travelling in a car. An ambulance carrying a patient fo dialysis was travelling behind the car. The driver of th car brought his car to one side of the road and allowed th ambulance to overtake.
   (*a*) What value was shown by the driver ?
   (*b*) What is dialysis ?
   (*c*) What are the vehicles whom we should give pass whil driving ?
3. An organ donation camp was organized by Governmer in your locality to encourage people for organ donatio But the camp was not very successful. The camp hardl received any response.

14. Plants absorb water from the soil. How does this water reach the tree tops ? Explain in detail.
[*CBSE Sample Paper 2009*]

15. (*a*) Complete the glucose breakdown pathway in case of aerobic respiration by filling the blanks.



(*b*) Name the molecule in the cell which stores the energy produced at the end of the pathway.

(*c*) Why do we get cramps during vigorous muscular activity ? [*HOTS, CBSE Sample Paper 2009*]

16. (*a*) What is meant by breathing ? What happens to the rate of breathing during vigorous exercise and why?

(*b*) Define translocation with respect to transport in plants. Why is it essential for plants ? Where in plants are the following synthesised ?

(*i*) Sugar

(*ii*) Hormone [*Delhi 2009C*]

17. (*a*) Draw the structure of a nephron and label the following on it :

Glomerulus, Bowman's capsule, Renal artery, Collecting duct.

(*b*) What happens to glucose that enters the nephron along with filtrate ? [*AI 2009*]

Important Questions

18. Explain the process of 'photosynthesis' in plants. List four factors which influence this process and describe how each of them affects the rate of the photosynthesis process. [*HOTS*]

19. How is 'respiration' different from 'breathing' ? Explain the processes of 'aerobic' respiration and 'anaerobic' respiration. [*HOTS*]

20. (*a*) Name the blood vessel that brings oxygenated blood to the human heart.

(*b*) Which chamber of human heart receives oxygenated blood ?

(*c*) Explain how oxygenated blood from this chamber is sent to all parts of the body. [*HOTS*]

21. (*a*) Name the blood vessel that brings deoxygenated blood to the human heart.

(*b*) Which chamber of the human heart receives deoxygenated blood ?

(*c*) Describe how deoxygenated blood from this chamber is sent to lungs for oxygenation. [*HOTS*]

22. Name the main organs of the human digestive system in the order they participate in the process of digestion. Describe how digestion of carbohydrates and proteins take place in our body. [*HOTS*]

23. Explain with a schematic representation the exchange of gases in tissues. [*HOTS*]

24. Write a note on lymphatic system in human beings stating two major functions of lymph.

25. Give the differences between blood and lymph.

NCERT Question

26. Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning. [*HOTS*]

NCERT Exemplar Problems

SHORT ANSWER TYPE QUESTIONS

1. Name the following :
   (*a*) The process in plants that links light energy with chemical energy.
   (*b*) Organisms that can prepare their own food.
   (*c*) The cell organelle where photosynthesis occurs.
   (*d*) Cells that surround a stomatal pore.
   (*e*) Organisms that cannot prepare their own food.
   (*f*) An enzyme secreted from gastric glands in stomach that acts on proteins.

2. "All plants give out oxygen during day and carbon dioxide during night". Do yo agree with this statement ? Give reason. [*HOTS*]

3. How do the guard cells regulate opening and closing of stomatal pores ?

4. Two green plants are kept separately in oxygen free containers, one in the dark and the other in continuous light. Which one will live longer ? Give reasons.[*HOTS*]

5. If a plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring ? Justify your answer.

6. Why do fishes die when taken out of water ?

7. Is 'nutrition' a necessity for an organism ? Discuss.

8. What would happen if green plants disappear from earth ?

64. What are the components of the transport system in highly organised plants ? What are the functions of these components ?

65. What are the methods used by plants to get rid of excretory products ?

66. How is the amount of urine produced regulated ?

[3 MARKS]

SHORT ANSWER TYPE QUESTIONS(II)

Previous Years' Questions

1. In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion. [*CBSE (CCE) 2012*]

2. List in tabular form, three differences between arteries and veins. [*CBSE (CCE) 2012*]

3. List the three kinds of blood vessels of human circulatory system and write their functions in tabular form. [*CBSE (CCE) 2012*]

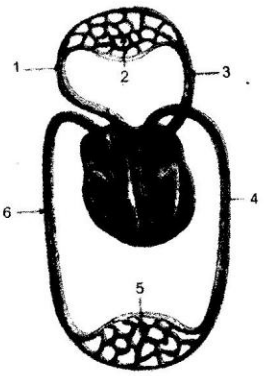
4. (*a*) "The breathing cycle is rhythmic whereas exchange of gases is a continuous process". Justify this statement.
   (*b*) What happens if conducting tubes of circulatory system develops a leak ? State in brief, how could this be avoided ?
   (*c*) How opening and closing of stomata takes place ? [*CBSE (CCE) 2011*]

5. Draw a diagram of the front view of human heart and label any six parts including at least two, that are concerned with arterial blood supply to the heart muscles. [*CBSE (CCE) 2011*]

6. Describe in brief the function of kidneys, ureters, urinary bladder and urethra. [*Foreign 2010*]

7. Explain the process of breakdown of glucose in a cell
   (*i*) in the presence of oxygen,
   (*ii*) in the absence of oxygen. [*HOTS, Foreign 2010*]

8. (*i*) Label any 4 parts in the given diagram.
   (*ii*) What are the two functions represented in this diagram?
   [*HOTS, CBSE Sample Paper 2009*]



9. What is double circulation in human beings ? Why is it necessary ? [*HOTS, NCERT, Delhi 2008C*]

10. (*a*) Name two different ways in which glucose is oxidised to provide energy in various organisms.
    (*b*) Write any two differences between the two ways of oxidation of glucose in organisms. [*AI 2008*]

11. Write any three differences between aerobic and anaerobic respiration. [*HOTS, NCERT Exemplar, NCERT, AI 2008*]

12. (*a*) Name the process by which autotrophs prepare their own food.
    (*b*) List the three events which occur during this process.
    (*c*) State two sources from which plants obtain nitrogen for the synthesis of proteins and other compounds. [*Foreign 2008*

Important Questions

13. (*a*) Describe the mechanism of breathing in human beings.
    (*b*) (*i*) Under normal conditions, what is the rate of breathing per minute ?
    (*ii*) Why does the rate of breathing increase by 20 to 25 times during vigorous exercise ?[*HOTS*]

14. Explain the process by which inhalation occurs during breathing in human beings. [*HOTS*]

15. What are stomata and lenticels ? What is their role in respiration ?

16. Differentiate between tracheoles and bronchioles.

17. What are the different salivary glands present in man ? Mention their main functions.

18. How does gaseous exchange take place in *Amoeba* ?

19. How does gaseous exchange take place in fish ?

20. Describe the structure of chloroplast with a diagram.

21. Distinguish between intracellular and extracellular digestion.

22. With a schematic diagram, explain the overall process o respiration. [*HOTS*

23. Differentiate between left lung and right lung of human

24. Where does digestion begin in humans ? What is the en product of digestion ? Where is the digestive juic produced ?

25. What are villi ? Where are they present ? What is the function ?

26. What is blood pressure ? How it is measured ? Give o difference between systolic pressure and diastolic pressu [*HOT*

27. What is the need of special tissues or organs for transp of substances in plants and animals ?

28. Differentiate between lymphatic capillaries and blo capillaries.

29. Draw a sieve tube and label the various parts. Name dead elements of the phloem.

30. Distinguish between photosynthesis and respiration.

Important Questions

12. Describe the mechanism of blood clotting. [*HOTS*]
13. State the two vital functions of the human kidney. Name the procedure used in the working of artificial kidney. [*HOTS*]
14. Write any two points of difference between respiration in plants and respiration in animals. [*HOTS*]
15. What is the role of HCl in protein digestion ? [*HOTS*]
16. Name the passage in sequence through which urine passes from kidneys to the outside in humans. How is urine prevented from flowing back into the ureters ? [*HOTS*]
17. How would digestion of food be affected if the bile duct is completely blocked ? Explain. [*HOTS*]
18. How would it affect the digestion of proteins and carbohydrates in the duodenum of man if there is a blockage in the pancreatic duct ? Explain. [*HOTS*]
19. Why do the walls of a trachea not collapse when there is less air in it ? [*HOTS*]
20. Explain the mechanism of gaseous exchange between tissues and blood. [*HOTS*]
21. Why does leaf appear green ?
22. What is the significance of photosynthesis ?
23. Why is the inner wall of alimentary canal not digested although the digestive enzyme can digest all the materials that make cells ? [*HOTS*]
24. Distinguish between saprozoic and holozoic nutrition.
25. Name the different types of teeth and give their functions.
26. What is the difference between ingestion and egestion ?
27. Where are salivary glands situated in man ? What are their functions ?
28. Write any two functions of large intestine in man.
29. Why have lungs replaced skin for gaseous exchange ?
30. Give two overall chemical equations representing aerobic and anaerobic respiration.
31. Name two animals having cutaneous respiration. What special features of the skin make cutaneous respiration effective ?
32. Explain with reasons why the alveoli are covered with blood capillaries ?
33. Show with a schematic diagram the different products of photosynthesis.
34. Explain the process of photosynthesis occurring during Hill reaction.
35. 'Structure of leaf is complementary to its function'. Explain the statement.
36. What is bile ? What are its constituents ?
37. Draw a schematic diagram to show the opening and closing of stoma.
38. Which enzyme initiates the digestion of proteins ? Name the other enzyme produced by the same gland.
39. How is carbon dioxide obtained by (*a*) aquatic plants and (*b*) terrestrial plants ?
40. Differentiate between excretion and osmoregulation.
41. Draw a neat labelled diagram of the structure of a chloroplast.
42. Name the first digestive organ that is associated with the breakdown of proteins in humans. What are its three releases ?
43. Why leaves become yellow in the absence of light ?
44. How are inspiration and expiration brought about in human beings ?
45. If one holds his breath after expiration for about 30 sec., would there still be occurring any exchange of respiratory gases in the lungs during this period ? Explain.
46. Bile juice does not contain any digestive enzymes, yet it is essential for digestion, why so ? Explain.
47. Name two proteases in pancreatic juice. What are their specific roles ?
48. Why are white blood corpuscles called 'soldiers' of the body ? [*HOTS*]
49. What happens to glucose which enters the nephron along with the filtrate ?
50. Which part of the human heart is considered as pace-maker ? Why is it so called ? [*HOTS*]
51. Differentiate between ureter and urethra.
52. What are the functions of circulatory system ?
53. Why there is no mixing of deoxygenated and oxygenated blood in the human heart normally ? [*HOTS*]
54. Why does the left ventricle possess a thicker wall than the right ventricle ? [*HOTS*]
55. Why are the walls of ventricles thicker than the auricles ? [*HOTS*]
56. What is the structural difference between the auricles and ventricles ?
57. What is the path of translocation of food in plant ?
58. Name the water and mineral conducting element of non-flowering plants. Mention how conduction takes place in it.
59. Give a schematic diagram to show absorption of water through root hairs.

NCERT Questions

60. How is the small intestine designed to absorb digested food ?
61. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration ?
62. What are the different ways in which glucose is oxidised to provide energy in various organisms ?
63. How are the lungs designed in human beings to maximise the area for exchange of gases ? [*HOTS*]

55. Name the system responsible for transportation of materials in human beings.

56. Which pigment is responsible for the transport of nutrients, respiratory gases, metabolites, hormones and waste products ?

57. Name the process which helps in artificial removal of wastes from the body.

58. Why is plasma of blood straw-coloured ?

59. Why is urine yellow in colour ?

60. Why is right kidney slightly lower in position compared to the left kidney ?

61. Arrange the terms in correct sequence :
Glomerulus, renal vein, efferent arterioles, renal artery, afferent arterioles, secondary capillaries.

62. Give one functional difference between RBC and WBC.

63. Why is blood called a 'liquid connective tissue' ? *[HOTS]*

NCERT Questions

64. The kidneys in human beings are a part of the system for
(*a*) nutrition (*b*) respiration
(*c*) excretion (*d*) transportation

65. The xylem in plants are responsible for
(*a*) transport of water (*b*) transport of food
(*c*) transport of amino acids (*d*) transport of oxygen

66. The autotrophic mode of nutrition requires
(*a*) carbon dioxide and water (*b*) chlorophyll
(*c*) sunlight (*d*) all of these

67. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in
(*a*) cytoplasm (*b*) mitochondria
(*c*) chloroplast (*d*) nucleus

68. Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like us ?

69. What are outside raw materials used by an organism ?

70. What processes would you consider essential for maintaining life ?

71. From where does the plant get each of raw materials for photosynthesis ?

72. What would be the consequences of a deficiency of haemoglobin in our bodies ?

SHORT ANSWER TYPE QUESTIONS(I) [2 MARKS]

Previous Years' Questions

1. **What** are the final products after digestion of **carbohydrates** and proteins ? *[CBSE (CCE) 2011]*

2. **What** is saliva ? State its role in the digestion of food. *[CBSE (CCE) 2011]*

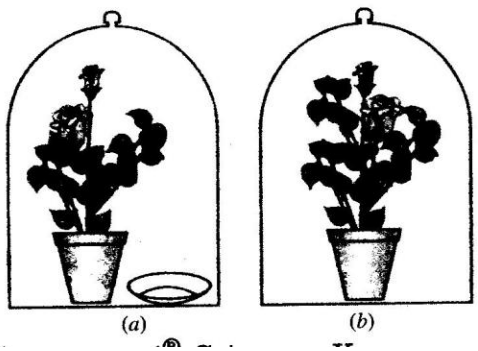
3. Explain the process of nutrition in *Amoeba*. *[CBSE (CCE) 2011]*

4. State two differences between arteries and veins. *[CBSE (CCE) 2011, HOTS]*

5. How are the alveoli designed to maximise the exchange of gases ? *[CBSE (CCE) 2011, NCERT]*

6. How is transportation of water in xylem tissue different from translocation of food in phloem tissue? *[NCERT, CBSE Sample Paper 2009]*

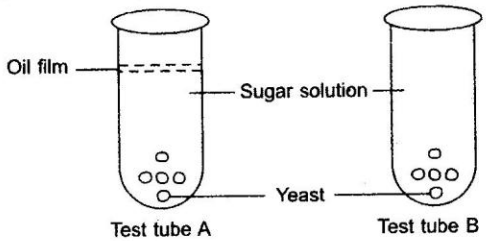
7. Given below is the experimental set-up to establish that one of the atmospheric gases is essential for photosynthesis in plants.



(*a*) (*b*)

(*a*) Name the atmospheric gas which is essential for photosynthesis.
(*b*) What is kept in watch-glass in figure '*a*' and why ? *[CBSE Sample Paper 2009]*

8. In the test tube A and B shown below, yeast was kept in sugar solution. Which products of respiration would you expect in tubes A and B ? *[CBSE Sample Paper 2009]*



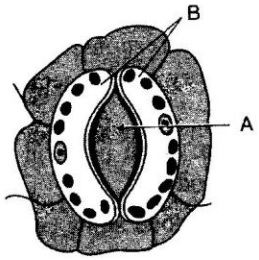
9. Write one feature which is common to each of the following pairs of terms/organs.
(*i*) glycogen and starch
(*ii*) chlorophyll and haemoglobin
(*iii*) gills and lungs
(*iv*) arteries and veins *[CBSE Sample Paper 2009]*

10. Write one function each of the following components of the transport system in human beings :
(*a*) Blood vessels (*b*) Blood platelets
(*c*) Lymph (*d*) Heart *[AI 2008]*

11. How are fats digested in our body ? Where does this process take place ? *[HOTS, NCERT, Foreign 2008]*

after putting iodine solution ? [*HOTS, Foreign 2010*]

9. Name the component of blood that helps in the formation of blood clot in the event of a cut. [*Foreign 2010*]
10. Mention how organisms like bread moulds and mushrooms obtain their food. [*Foreign 2010*]
11. Why do aquatic animals breath faster than the terrestrial animals ? [*CBSE Sample Paper 2009*]
12. What will happen to a plant if its xylem is removed ? [*Delhi 2009*]
13. Name the tissue which transports soluble products of photosynthesis in a plant. [*Delhi 2008*]
14. Where does digestion of fat take place in our body ? [*AI 2009*]
15. What is the mode of nutrition in human beings ? [*AI 2009*]
16. State the function of digestive enzymes. [*NCERT, AI 2008C*]
17. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration ? [*HOTS, AI 2008C*]
18. Name the two ways in which glucose is oxidised to provide energy in various organisms. [*AI 2008C*]
19. Study the following diagram :



Name the parts labelled 'A' and 'B' and state one function of each [*AI 2008C*]

20. Where do plants get each of the raw materials required for photosynthesis ? [*AI 2008C*]
21. What process in plants is known as transpiration ? [*Delhi 2008*]
22. Name the tissue which transports water and mineral in a plant. [*Delhi 2008*]
23. How do autotrophs obtain CO_2 and N_2 to make their food? [*AI 2008*]
24. Which pancreatic enzyme is effective in digesting proteins ? [*Foreign 2008*]
25. Which enzyme present in saliva breaks down starch ? [*Foreign 2008*]
26. What is the role of acid in our stomach ? [*HOTS, NCERT, Foreign 2008. Delhi 2008C*]

Important Questions

27. Which is the food constituent that bile helps to digest and absorb ?
28. Name one accessory pigment and one essential pigment in photosynthetic plants.
29. Mention two structural features of small intestine which add to the absorptive capacity.
30. Name the phase of the cardiac cycle in which both auricles and ventricles are relaxed simultaneously.
31. Normally a vein opens into a large vein or into the heart, but does not end in capillaries. Which one or more veins in humans is/are exception(s) to this rule ?
32. Specify two conditions in which photo-respiration may take place in green plants.
33. In which kind of respiration more energy is released ?
34. Respiration is a vital process for all organisms. Explain.
35. All life on earth would come to an end if there were no green plants. Give reason.
36. Name one gland in human body which secretes digestive enzyme as well as hormone.
37. Name the different parts of the small intestine in proper sequence.
38. Name the substance that is oxidised in the body during respiration.
39. Name the respiratory pigment of blood in mammals.
40. What is the main function of Adam's Apple ?
41. Name the fundamental process in which living organisms release energy within their cytoplasm.
42. Give one point which is common for both aerobic and anaerobic respiration.
43. Why is anaerobic respiration less efficient ?
44. Why are lungs divided into very small sac-like structures called alveoli ?
45. Why do mammals require more extensive respiratory surface ?
46. What will happen if the diaphragm of a person gets ruptured in an accident ?
47. Find the odd one out :
    (*i*) Trachea, Bronchus, Alveolus, Diaphragm.
    (*ii*) Epiglottis, Trachea, Malpighian corpuscles, Alveoli.
48. Name the ultimate end parts of respiratory passages in mammalian lungs.
49. Why do the divers carry oxygen for artificial respiration ?
50. Which cartilage of larynx forms "adam's apple" in man ?
51. What is normal breathing rate in an adult man at rest ?
52. What are the end products of fat digestion ?
53. Why are the digestive enzymes called as hydrolases ?
54. Why is the rate of photosynthesis more during a bright sunny day as compared to a cloudy day ?

VERY SHORT ANSWER TYPE QUESTIONS [1 MARK]

Previous Years' Questions

1. 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 ? [*HOTS, Delhi 2010*]
2. State any one difference between autotrophic and heterotrophic modes of nutrition. [*AI 2010*]
3. Give one reason why multicellular organisms require special organs for exchange of gases between their body and their environment. [*HOTS, AI 2010*]
4. Name the process in plants where water is lost as water vapour. [*AI 2010*]
5. What is 'translocation' in plants ? [*AI 2010*]
6. State the basic difference between the process of respiration and photosynthesis. [*Foreign 2010*]
7. Name the intermediate and the end products of glucose breakdown in aerobic respiration. [*Foreign 2010*]
8. In the experiment "Light is essential for photosynthesis", why does the uncovered part of the leaf turn blue-black

3. Name the largest artery in our body.
   (*a*) Aorta
   (*b*) Pulmonary artery
   (*c*) Superior vena cava
   (*d*) Pulmonary vein
4. Basic filtration unit of kidney is
   (*a*) Urethra
   (*b*) Ureter
   (*c*) Glomerulus
   (*d*) Collecting tubule

Solve the Puzzle

Oral Questions

Fill in the blanks :

1. Energy rich compound generated during photosynthesis is _____ . [ATP]
2. _____ are regarded as complete photosynthesis units of plants. [Chloroplasts]
3. The entry of food into the respiratory tract is checked by _____ . [epiglottis]
4. Pressure in the arteries during ventricular relaxation is called _____ pressure. [diastolic]

State True/False :

1. Stomata close when guard cells lose water and shrink. [True]
2. Red blood cells carry carbon dioxide from body tissues to lungs. [True]
3. Translocation occurs in plants through xylem vessels. [False]
4. Blood platelets stop bleeding by clot formation when there is an injury. [True]
5. Circulatory system maintains the body temperature constant by distributing heat. [True]

Science Quiz

1. Which is the pacemaker of heart ?
   (*a*) Coronary artery
   (*b*) Superior vena cava
   (*c*) Sino-atrial node
   (*d*) Inferior vena cava

   [Ans. (*c*)]
2. The normal blood pressure is
   (*a*) 160/120 mm Hg
   (*b*) 110/70 mm Hg
   (*c*) 140/90 mm Hg
   (*d*) 120/80 mm Hg

   [Ans. (*d*)]

   (*a*) What values are possesed by people who wish to donate their organs ?
   (*b*) Will organ donation agreement affect the donor ?
   (*c*) Why did the organ donation camp failed ?
4. You were in a party where people were dancing on the dancing floor. A person on the floor suddenly felt severe pain on chest. He also felt dizziness. Some people were mentioning that he might have a heart attack.
   (*a*) What are the causes of a heart attack ?
   (*b*) What are the symptoms of a heart attack ?
   (*c*) What should you do when you see a person who may have suffered from a heart attack ?
5. You were travelling with your family in your car. The car was driven by your father. On your way, you saw a biker on the road who met an accident and is bleeding profusely. Your mother wanted to stop and help the accident victim. Your father however did not want to stop as he felt police may harass them if they stop ?
   (*a*) What values were shown by your mother ?
   (*b*) What happens if a person bleeds profusely ?
   (*c*) What will you do if the hospital refuses to provide treatment unless the accident case is registered by police ?