

CHAPTER 6

ANSWERS

Multiple Choice Questions

- | | | | |
|----------------|----------------|----------------|----------------|
| 1. (c) | 2. (b) | 3. (a) | 4. (d) |
| 5. (b) | 6. (b) | 7. (b) | 8. (d) |
| 9. (d) | 10. (d) | 11. (b) | 12. (d) |
| 13. (d) | 14. (d) | 15. (d) | 16. (b) |
| 17. (c) | 18. (a) | 19. (b) | 20. (d) |
| 21. (d) | 22. (d) | 23. (a) | 24. (a) |
| 25. (c) | 26. (c) | 27. (c) | 28. (c) |
| 29. (c) | 30. (b) | 31. (c) | 32. (c) |
| 33. (d) | 34. (c) | 35. (a) | |

Short Answer Questions

- 36.** (a) Photosynthesis
(b) Autotrophs
(c) Chloroplast
(d) Guard Cells
(e) Heterotrophs
(f) Pepsin
- 37.** During day time, as the rate of photosynthesis is more than the rate of respiration, the net result is evolution of oxygen. At night there is no photosynthesis, so they give out carbon dioxide due to respiration.
- 38.** The swelling of guard cells due to absorption of water causes opening of stomatal pores while shrinking of guard cells closes the pores. Opening and closing of stomata occurs due to turgor changes in guard cells. When guard cells are turgid, stomatal pore is open while in flaccid conditions, the stomatal aperture closes.
- 39.** Plant kept in continuous light will live longer, because it will be able to produce oxygen required for its respiration by the process of photosynthesis.

40. Release of CO_2 and intake of O_2 gives evidence that either photosynthesis is not taking place or its rate is too low. Normally during day time, the rate of photosynthesis is much more than the rate of respiration. So, CO_2 produced during respiration is used up for photosynthesis hence CO_2 is not released.

41. Fishes respire with the help of gills. Gills are richly supplied with blood capillaries and can readily absorb oxygen dissolved in water. Since fishes cannot absorb gaseous oxygen they die soon after they are taken out of water.

| 42. | <table><tr><th>Autotroph</th><th>Heterotroph</th></tr><tr><td>1. Organisms that prepare their own food.</td><td>1. Organisms that are dependent on other organisms for food.</td></tr><tr><td>2. They have chlorophyll.</td><td>2. They lack chlorophyll.</td></tr></table> | Autotroph | Heterotroph | 1. Organisms that prepare their own food. | 1. Organisms that are dependent on other organisms for food. | 2. They have chlorophyll. | 2. They lack chlorophyll. |
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| Autotroph | Heterotroph | | | | | | |
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43. Food is required for the following purposes

- (a) It provides energy for the various metabolic processes in the body.
- (b) It is essential for the growth of new cells and repair or replacement of worn out cells.
- (c) It is needed to develop resistance against various diseases.

44. Green plants are the sources of energy for all organisms. If all green plants disappear from the earth, all the herbivores will die due to starvation and so will the carnivores.

45. This plant will not remain healthy for a long time because

- (a) it will not get oxygen for respiration.
- (b) it will not get carbon dioxide for photosynthesis.
- (c) Upward movement of water and minerals would be hampered due to lack of transpiration.

| 46. | <table><tr><th>Aerobic respiration</th><th>Anaerobic respiration</th></tr><tr><td>1. Oxygen is utilised for the breakdown of respiratory substrate.</td><td>1. Oxygen is not required.</td></tr><tr><td>2. It takes place in cytoplasm (glycolysis) and inside mitochondria (Krebs cycle)</td><td>2. It takes place in cytoplasm only.</td></tr><tr><td>3. End products are carbon dioxide and water</td><td>3. End products are lactic acid or ethanol and carbon dioxide.</td></tr><tr><td>4. More energy is released.</td><td>4. Less energy is released.</td></tr></table> | Aerobic respiration | Anaerobic respiration | 1. Oxygen is utilised for the breakdown of respiratory substrate. | 1. Oxygen is not required. | 2. It takes place in cytoplasm (glycolysis) and inside mitochondria (Krebs cycle) | 2. It takes place in cytoplasm only. | 3. End products are carbon dioxide and water | 3. End products are lactic acid or ethanol and carbon dioxide. | 4. More energy is released. | 4. Less energy is released. |
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47. (a) (ii) (b) (i) (c) (iv) (d) (iii)

48.

| Artery | Vein |
|---|--|
| 1. Have thick elastic, muscular walls. 2. Lumen is narrow. 3. Carry blood from heart to all body parts. 4. Carry oxygenated blood (except pulmonary artery). | 1. Have thin, non-elastic, walls. 2. Lumen is wide. 3. Carry blood from all body parts to heart. 4. Carry deoxygenated blood (except pulmonary vein). |

49. (a) Leaves provide large surface area for maximum light absorption.
(b) Leaves are arranged at right angles to the light source in a way that causes overlapping.
(c) The extensive network of veins enables quick transport of substances to and from the mesophyll cells.
(d) Presence of numerous stomata for gaseous exchange.
(e) The chloroplasts are more in number on the upper surface of leaves.
50. Digestion of cellulose takes a longer time. Hence, herbivores eating grass need a longer small intestine to allow complete digestion of cellulose. Carnivorous animals cannot digest cellulose, hence they have a shorter intestine.
51. Gastric glands in stomach release hydrochloric acid, enzyme pepsin and mucus. Mucus protects the inner lining of stomach from the action of hydrochloric acid and enzyme pepsin. If mucus is not released, it will lead to erosion of inner lining of stomach, leading to acidity and ulcers.
52. Fats are present in food in the form of large globules which makes it difficult for enzymes to act on them. Bile salts present in bile break them down mechanically into smaller globules which increases the efficiency of fat digesting enzymes.
53. The wall of alimentary canal contains muscle layers. Rhythmic contraction and relaxation of these muscles pushes the food forward. This is called peristalsis, which occurs all along the gut.
54. Maximum absorption occurs in small intestine because
(a) digestion is completed in small intestine
(b) inner lining of small intestine is provided with villi which increases the surface area for absorption.
(c) wall of intestine is richly supplied with blood vessels (which take the absorbed food to each and every cell of the body).

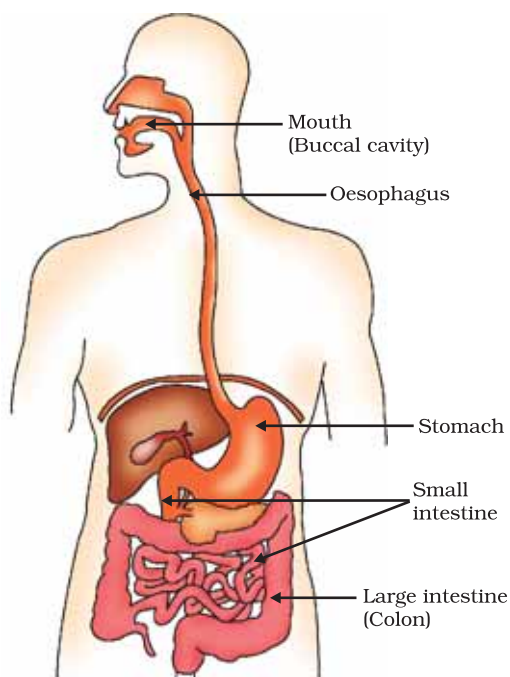
- 55.** (a) — (iv) (b) — (iii)
(c) — (i) (d) — (ii)
- 56.** Aquatic organisms like fishes obtain oxygen from water present in dissolved state through their gills. Since the amount of dissolved oxygen is fairly low compared to the amount of oxygen in the air, the rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms.
- 57.** The blood circulation in human heart is called double circulation because the blood passes through the heart twice in one complete cycle of the body – once through the right half in the form of deoxygenated blood and once through the left half in the form of oxygenated blood.
- 58.** In four chambered heart, left half is completely separated from right half by septa. This prevents oxygenated and deoxygenated blood from mixing. This allows a highly efficient supply of oxygenated blood to all parts of the body. This is useful in animals that have high energy needs, such as birds and mammals.
- 59.** The major events during photosynthesis are
(a) absorption of light energy by chlorophyll
(b) conversion of light energy to chemical energy
(c) splitting of H_2O into H_2 , O_2 and e^-
(d) reduction of CO_2 to carbohydrates
- 60.** (a) Decreases
(b) Decreases
(c) Increases
(d) Decreases
- 61.** Adenosine triphosphate (ATP) produced during respiration in living organisms and also during photosynthesis in plants.
- 62.** All are parasites, they derive nutrition from plants or animals without killing them.
- 63.** (a) Food is crushed into small pieces by the teeth.
(b) It mixes with saliva and the enzyme amylase (found in saliva) breaks down starch into sugars.
(c) Tongue helps in thorough mixing of food with saliva.
- 64.** (a) Production of pepsin enzyme that digests proteins
(b) Secretion of Mucus for protection of inner lining of stomach.
- 65.** (a) — i, (b) — iv, (c) — ii, (d) — iii

66. (a)— Protein (b)— Starch (c)— Protein (d)— Fats
67. Arteries carry blood from the heart to various organs of the body under high pressure so they have thick and elastic walls. Veins collect the blood from different organs and bring it back to the heart. The blood is no longer under pressure so the walls are thin with valves to ensure that blood flows only in one direction.
68. In the absence of platelets, the process of clotting will be affected.
69. Plants do not move. In a large plant body there are many dead cells like schlerenchyma as a result it requires less energy as compared to animals.
70. Cells of root are in close contact with soil and so actively take up ions. The ion-concentration, increases inside the root and hence osmotic pressure increases the movement of water from the soil into the root which occurs continuously.
71. Transpiration is important because
- (a) it helps in absorption and upward movement of water and minerals from roots to leaves
 - (b) it prevents the plant parts from heating up.
72. Many plants store waste materials in the vacuoles of mesophyll cells and epidermal cells. When old leaves fall, the waste materials are excreted along with the leaves.

Long Answer Questions

73. **Hints—** Finger like projections
Food vacuoles
Diffusion of simpler substances.
74. **Hints—** Mouth cavity
Oesophagus
Stomach
Intestine
75. **Hints—** 1. Passage of air
2. Gaseous exchange
3. Role of diaphragm
4. Function of rib muscles and alveoli
76. **Hints—** 1. Anchoring the plant
2. Source of water and minerals
3. Availability of oxygen for respiration of root cells
4. Symbiotic association with microbes

77.



Alimentary canal of man

78. **Hints—** Mouth cavity

Stomach

Intestine

79. **Hints—** Absorption of light energy by chlorophyll

Conversion of light energy into chemical energy

Reduction of CO_2 into carbohydrates.

80. **Hints—** Pyruvate to ethanol, CO_2 and energy

Pyruvate to lactic acid and energy

Pyruvate to CO_2 , H_2O and energy

81. **Hints—** Atrium

Ventricles

Oxygenated blood

De-oxygenated blood

82. **Hints—** Nephrons

Filtration

Selective reabsorption