

BIOLOGY S.4

1. Which one of the following is true of both photosynthesis and respiration?
 1. Occur in all organisms.
 2. Need light energy.
 3. Involve enzymes.
 4. Are exothermic.

2. A student wanted to determine the percentage of air in soil sample. The following measurements were obtained.
Volume of dry soil = 250cm³
Volume of water added = 160 cm³
Volume of mixture of soil + water = 380 cm³

What was the percentage of air in the soil sample?

1. 12
 2. 34
 3. 7.9
 4. 25
3. Which one of the following characteristics of respiratory surfaces is true of humans but not of insects?
 1. Have large surface area.
 2. Thin walled.
 3. Highly vascularised.
 4. Moist
4. The tapeworm *Taenia solium* has a primary and a secondary host. Which of the following are the primary and secondary hosts in that order?
 1. Pig and man.
 2. Man and pig.
 3. Man and cow.
 4. Cow and man.
5. The following are products of tissue respiration in living organisms.
 - (i) energy
 - (ii) carbon dioxide
 - (iii) water
 - (iv) ethanol
 - (v) lactic acid

Which of them are common to both aerobic and anaerobic and anaerobic respiration in plants?

1. (ii), (iv) and (v)
 2. (i) and (ii)
 3. (i), (ii) and (iii)
 4. (ii) and (iii)
6. When round seeded bean plants and long - seeded bean plants were crossed, all the offspring were oval-seeded plants. This is an example of
 1. mutation.
 2. incomplete dominance

3. complete dominance
 4. recessive genes
7. Which one of the following statements is not correct about photosynthesis?
1. Energy is released.
 2. Water is required.
 3. Oxygen is a by-product.
 4. Sugar is a product.
8. The reason why urine of healthy person does not contain glucose is that
1. the glomerulus is impermeable to glucose.
 2. the kidney converts glucose to urea.
 3. glucose passes back into the blood stream.
 4. glucose is used for respiration before reaching the collecting duct.
9. When a seedling is fixed on a clinostat and placed in a horizontal position, the shoot continues to grow horizontally, but without the clinostat it bends upwards. Which one of the following is true about the role of the clinostat?
1. Causes auxins to accumulate on the lower side of the seedling.
 2. Causes auxins to accumulate uniformly on all sides.
 3. Causes auxins to accumulate on the upper side of the seedling.
 4. Enables the seedling to receive uniform light.
10. The rapid elongation of the hypocotyls during germination causes.
1. cotyledons to grow above the ground.
 2. early emergence of photosynthesis.
 3. cotyledons to remain below the ground.
 4. delay in emergence of photosynthesis leaves.
11. Figure 2 below shows the cycling of oxygen between the atmosphere and living cells.

Which process is represented by letter X?

1. Excretion.
 2. Decay
 3. Photosynthesis
 4. Respiration.
12. A student noted the following characteristics on a vertebra.
- (i) long neural spine.
 - (ii) wide neural canal.
 - (iii) short transverse process.

The vertebra was

1. cervical
2. atlas
3. thoracic

4. lumbar
13. Which of the following is characteristic of a soil with low capillarity?
1. Poor aeration.
 2. Poor water retention.
 3. Poor drainage.
 4. Small particles.
14. Which part of a flowering plant is represented by figure 1 below?
1. Dicotyledonous root.
 2. Dicotyledonous stem.
 3. Monocotyledonous root.
 4. Monocotyledonous stem.
15. Which one of the following is the correct reason for the thickness of the walls of atria and ventricles?
1. Atria are thicker because they have to generate higher pressure.
 2. Atria are thicker because they have to resist higher pressure.
 3. Ventricles are thicker because they have to generate higher pressure.
 4. Ventricles are thicker because they have to resist higher pressure.
16. Which one of the following controls the rate of heartbeat in mammal?
1. Pituitary.
 2. Cerebrum
 3. Medulla Oblongata.
 4. Cerebellum.
17. Which one of the following fins provides a major propulsion force in a fish?
1. Pelvic
 2. Caudal
 3. Dorsal
 4. Pectoral
18. Which one of the following events occurs during osmosis?
1. Solute molecules move from more to less concentrated solution.
 2. Solute molecules move from less to more concentrated solution.
 3. Solvent molecules move from less to more concentrated solution.
 4. Solvent molecules move from more to less concentrated solution.
19. Which one of the following is the correct response to increased carbon dioxide in human blood? The rate of
1. heartbeat is slowed down.
 2. the pulse is slowed down.
 3. heartbeat is increased.

4. breathing is slowed.
20. The following are some features of lower plants.
- (i) reproduce by spores.
 - (ii) lack vascular tissues.
 - (iii) grow in damp places.
 - (iv) have simple stem and leaves.

Which of the features belong to both mosses and ferns?

- 1. (i) and (iii)
 - 2. (ii) and (iii)
 - 3. (iii) and (iv)
 - 4. (i) and (iv)
21. Which one of the following fruits is an example of a drupe?
- 1. Tomato
 - 2. Avocado.
 - 3. Passion
 - 4. Orange
22. Which one of the following reactions is likely to occur when a donor of blood group A gives blood to a recipient of blood group B?
- 1. Antibodies b react with antigens A.
 - 2. Antigens B react with antibodies b.
 - 3. Antibodies a react with antigens B.
 - 4. Antigens A react with antigens B.
23. Which one of the following groups of animals uses gills, skin, buccal cavity and lungs for gaseous exchange at some stage in their lifecycle?
- 1. Fish
 - 2. Amphibians
 - 3. Mammals
 - 4. Reptiles
24. The graph below shows the effect of varying pH on the time taken for an enzyme to break down food.

Which one of the following enzymes below could have given that response?

- 1. Trypsin
 - 2. Salivary amylase
 - 3. Lipase.
 - 4. Pepsin
25. Which one of the following is a possible sequence of plant succession on an undeveloped piece of land?
- 1. fungi mosses shrubs trees.

2. fungi ferns shrubs trees.
 3. mosses trees fungi ferns.
 4. Mosses herbs shrubs trees.
26. Which one of the following may results from lack of progesterone hormone in a woman?
1. Miscarriage may occur.
 2. Ovulation may not occur.
 3. Menstruation may not occur.
 4. Implantation may not occur.
 5. Non
27. Which one of the following may not be used for classifying insects?
1. type of eyes.
 2. Structure of legs.
 3. Mouth parts.
 4. Feeding habits.
28. Which one of the following blood vessels contains the lowest concentration of urea?
1. Renal artery.
 2. Renal vein.
 3. Hepatic portal vein.
 4. Hepatic vein.
29. Which one of the following would occur if a potato strip was placed in distilled water?
1. Remain unchanged.
 2. Increase in length.
 3. Strip would soften.
 4. Decrease in length.
30. To identify a substance Y, a student performed the following experiment.

Test Observation

(i) Heated Y with Benedict's Solution Solution remained blue

(ii) Heated Y with hydrochloric acid, cooled, added sodium hydrogen carbonate, benedict's solution, then heated again. Solution turned from blue to orange.

From the observations, the most likely food substance in Y is

1. Sucrose
2. Glucose
3. Maltose
4. Starch