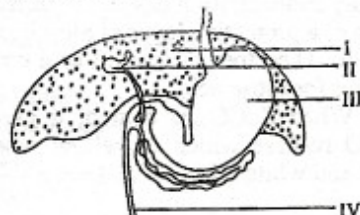


2024 UTME BIOLOGY

OBJECTIVE STRUCTURED QUESTIONS

1. Why is oxygen necessary for seed germination? A. To provide water for the seedling B. To regulate soil temperature C. To provide energy for cellular processes D. to facilitate nutrient uptake from soil.
2. Sudan Savannah is found in which part of Nigeria? A. South-South B. South-West C. North-East D. South-East
3. Which of the following organisms can be found in the mangrove swamp? A. Desert tortoise B. Freshwater fish C. Mudskippers D. Polar bear
4. The mineral required for the formation of red blood cells in animal cells is A. calcium B. sodium C. iron D. iodine
5. Antibodies are found in A. platelet B. plasma C. red blood cells D. white blood cells
6. Which type of circulation is present in arthropods and mollusks? A. Double circulation B. Single circulation C. Open circulation D. Close circulation
7. Which of the following is a mutualistic relationship? A. Tapeworm and intestine B. Plasmodium and man C. Algae and fungi D. Lion and goat
8. Birds moving away from their habitat due to unfavourable climate conditions is an example of A. structural adaptation B. behavioural adaptation C. physiological adaptation D. evolutionary adaptation
9. What part of the brain is responsible for smell? A. Cerebellum B. Cerebral cortex C. Olfactory lobe D. Medulla oblongata
10. Sharp claws and beaks are adaptations possessed by A. heron B. eagle C. ostrich D. penguin
11. Which of the following promotes abscission? A. Auxin B. Gibberellin C. Cytokinin D. Ethylene
12. Which of the following organizations promote conservation of organisms? A. WHO B. UNESCO C. NAFDAC D. WWF
13. Which of the following reduces wear and tear on bones? A. Synovial membrane B. Cartilage C. Tendon D. Muscles
14. A plant cell is plasmolyzed as a result of A. endosmosis B. endocytosis C. exosmosis D. exocytosis
15. The soldier termite differs from the worker termite by A. large abdomen and weak mandibles B. large head and strong mandibles C. small head and weak mandibles D. small abdomen and strong mandibles
16. In a monohybrid cross between a tall plant (Tt) and a short plant (tt), the phenotypic ratio of the progeny will be A. 1:1 B. 1:2:1 C. 2:2 D. 3:1
17. A character that is expressed in a female only when it is homozygous but expresses itself in the male always is known as A. chromosomal trait B. allele C. sex-linked trait D. allelomorph
18. Termites communicate by A. sound and smell B. Touch and smell C. sound and touch D. sight and touch
19. The ABO blood grouping antigens are found on the surface of A. erythrocytes B. leucocytes C. platelets D. plasma
20. The distribution of tilapia fish is primarily affected by A. temperature B. water depth C. humidity D. pressure
21. Yellow fever is transmitted by which vector? A. Female anopheles mosquito B. Flea C. Aedes mosquito D. Sandfly
22. Air spaces are found in which structure of a plant? A. Chloroplasts B. Lenticels C. Mitochondria D. Ribosome
23. The cell wall of a plant cell is made up of A. cellulose B. protein C. sucrose D. peptidoglycan
24. The membrane of a vacuole is called A. phospholipid bilayer B. cytoplasmic matrix C. cistern D. tonoplast
25. Which of the following is found in arid land? A. Cactus B. Water lettuce C. Cotton D. Shea butter
26. Which of these is a social insect? A. Ant B. Butterfly C. Ladybug D. Grasshopper
27. What is the structure and functional unit of the kidney? Nephron B. Lobule C. Glomerulus C. Tubule D. Cortex
28. Which of the following is responsible mainly for the transmission of nerve impulses? A. Cell body B. Myelin sheath C. Axon D. Dendrites
29. What is the term for the process by which an organism's genetic information is altered by external factors? A. Mutation B. Genetic drift C. Gene expression D. Heredity
30. Which of the following is responsible for regulating an organism's body temperature? A. Hypothalamus B. Pituitary gland C. Thyroid gland D. Adrenal gland
31. What is the term for the process by which an organism's cells become specialized to perform specific functions? A. Differentiation B. Mitosis C. Meiosis D. Morphogenesis
32. Which of the following types of biological molecules is responsible for storing genetic information? A. Carbohydrate B. Proteins C. Lipids D. Nucleic acids
33. Which of the following scientists is credited with the discovery of the theory of evolution through natural selection? A. Charles Darwin B. Gregor Mendel C. Albert Einstein D. Louis Pasteur
34. What is the term for the movement of molecules from an area of high concentration to an area of low concentration? A. Diffusion B. Osmosis C. Active transport D. Passive transport
35. What is the term for the process by which an organism's genetic information is altered by external factors? A. Mutation B. Genetic drift C. Gene expression D. Heredity

36. The process by which an organism maintains a fairly stable internal environment despite changes in the external environment is called A. Homeostasis B. Metabolism C. Photosynthesis D. Respiration
37. Which of the following types of biological molecules are responsible for catalyzing biochemical reactions? A. Carbohydrates B. Proteins C. Lipids D. Nucleic acids



Use the diagram above to answer the question below.

- Emulsification of fats takes place in the part labelled A. I B. II C. III D. IV
39. The most abundant group of organisms in the animal kingdom is A. mammalia B. aves C. annelida D. insecta.
 40. Insectivorous plants trap and kill their prey to derive A. phosphorous B. calcium C. nitrogen D. zinc

SOLUTIONS

1. C:
Oxygen is required for cellular respiration, which provides energy for germination. During germination, seeds undergo intense metabolic activities. These processes require energy, which is generated through cellular respiration.
2. C:
The Sudan Savannah is found in northern part of Nigeria, particularly in states like Borno, Yobe, Kano, Katsina and parts of Sokoto and Kebbi. This region is characterized by sparse vegetation and grasses scattered trees.
3. C:
Mudskippers are adapted to live in mangrove swamps and can be found in these environments.
4. C:
Iron is essential for the production of haemoglobin, a protein in red blood cells that carries oxygen.
5. B:
Antibodies are protein produced by the immune system to fight infections. They are found in the blood where they can recognize and destroy specific pathogens, helping to protect the body from disease.
6. C:
Arthropods and mollusks have an open circulatory system, where the blood is called haemolymph and bathes the internal organs directly. This open system is called a haemolymphatic system.

18. B: Termites primarily communicate through a combination of physical contact (touch) and chemical signals (smell). They use touch to interact with each other and their environment and they release pheromones (chemical signals) to convey information about food, danger and social hierarchy.

1. A: Cell differentiation is the process by which cells become specialized to perform specific functions, resulting in the formation of tissues and organs.

32. D: Nucleic acids, specifically DNA (Deoxyribonucleic acid) and RNA (Ribonucleic acid), play a crucial role in storing and transmitting genetic information in living organisms.

33. A: Charles Darwin developed the theory of evolution through natural selection. His book "on the Origin of Species" introduced the theory to the world.

34. A: Diffusion is the process by which particles or substances spread out and move from an area of higher concentration to an area of lower concentration, resulting in uniform distribution.

35. A:
Mutation is the change in the genetic make-up of an organism.

36. A: Homeostasis is the ability of an organism or system to maintain in a fairly stable internal environment despite changes in external conditions. It is a vital process that ensures the balance and stability of bodily.

37. B: Proteins that catalyze biochemical reactions are called enzymes. These enzymes speed up chemical reactions, allowing them to occur efficiently and accurately. Enzymes are highly specific, meaning each enzyme only catalyzes one specific reaction.

8. D:
Emulsification of fat takes place in the small intestine, specifically in the duodenum (the first part of the small intestine)

NB
Bile is produced in the liver but stored in the gall bladder.

9. D:
Insects are the most abundant group of organisms in the animal kingdom. They make up approximately 80% of all known animal species.

0. C: Insectivorous plants (also known as carnivorous plants) are found in bogs, marshes and other areas with low nitrogen levels. So, they trap and kill insects to obtain nitrogen.

19. A: The ABO blood grouping system is based on the presence or absence of specific antigens on red blood cells and corresponding antibodies in the plasma.

20. A: Tilapia fish are sensitive to temperature changes and are typically found in warm, tropical and subtropical waters with temperature between 15 °C and 35 °C.

21. C:
Yellow fever is an arboviral disease transmitted by the bite of an infected *Aedes aegypti* mosquito.

22. B: Lenticels are small, corky and usually oval or lens-shaped openings found on the surface of stems and roots of plants. They allow for gaseous exchange and contain air spaces.

23. A: A plant cell wall is primarily made up of cellulose. Cellulose provides structural support, strength and rigidity to the plant cell.

24. D: The **tonoplast** is the membrane that surrounds a vacuole. The tonoplast regulates the movement of materials in and out of the vacuole and maintains the vacuole's internal environment.

25. A: Cacti are plants that are well adapted to survive in arid lands, with features such as thick stems to store water, spines to reduce water loss and deep roots to access water deep in the soil.

25. A: Ants are social insects that live in colonies with a complex social hierarchy, division of labour and communication systems. They work together to gather food, care for the young ones and defend the colony.

27. A:
The nephron is the functional unit of the kidney, responsible for filtering waste and excess fluids/substances from the blood.

28. C:
The axon is the long, thin extension of a neuron that carries nerve impulses away from the cell body

29. A:
Mutation is the change in the genetic make-up of an organism

30. A: The hypothalamus is responsible for regulating an organism's body temperature. It acts as the body's thermostat by receiving temperature information from various parts of the body and initiating responses to maintain a

B: Birds migrating to a new habitat due to unfavourable climate conditions is behavioural adaptation.

9. **C:** The olfactory lobe is the part of the brain that processes sensory information related to smell. It is located in the forebrain and receives signals from the olfactory receptors in the nasal cavity.

10. B: Sharp claws and beaks are characteristic features of birds of prey, such as eagles. They use them to hunt, grasp and tear flesh. Eagles' sharp talons (claws) and hooked beaks enable them to capture and kill their prey.

11. D: Ethylene is a plant hormone that promotes fruit ripening and abscission. It stimulates the formation of the abscission layer, leading to the shedding of fruits, leaves and flower petals.

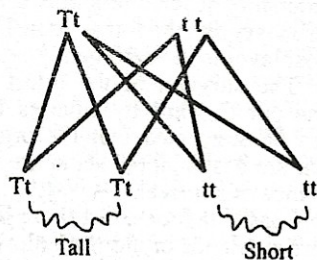
12. D: The World Wildlife Fund (WWF) plays a crucial role in global conservation efforts, working to preserve natural habitats and to conserve threatened and endangered species.

13. A: The synovial membrane is a thin layer of tissue that lines the joints and produces synovial fluid, which reduces friction and wear and tear on bones.

14. C:
Plasmolysis occurs when a plant cell loses water through osmosis, causing the cell membrane to shrink away from the cell wall. This happens when the cell is placed in a hypertonic solution, resulting in exosmosis (water leaving the cell).

15. B: Soldier termites have distinctive enlarged heads and powerful mandibles (jaws) which help them to defend the colony from predators.

16. B:



Thus, the phenotypic ratio is 1 : 1

17. C: A sex-linked trait/character is determined by a gene located on the X-chromosome. A female suffers from a sex-linked trait only when both X-chromosomes are defective.