

SC5041  
WASSCE 2024  
BIOLOGY 1  
Objective  
50 minutes

1

Answer all the questions.

Each question is followed by four options lettered A to D. Find the correct option for each question and shade in pencil on your answer sheet, the answer space which bears the same letter as the option you have chosen. Give only one answer to each question. An example is given below.

Which part of the gill of fish is involved in gaseous exchange? Gill

- A. slits
- B. bars
- C. covers
- D. filaments

The correct answer is filaments, which is lettered D and therefore answer space D would be shaded.

[ A ]      [ B ]      [ C ]      [ **D** ]

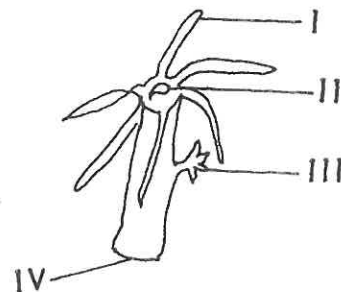
Think carefully before you shade the answer spaces; erase completely any answer(s) you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

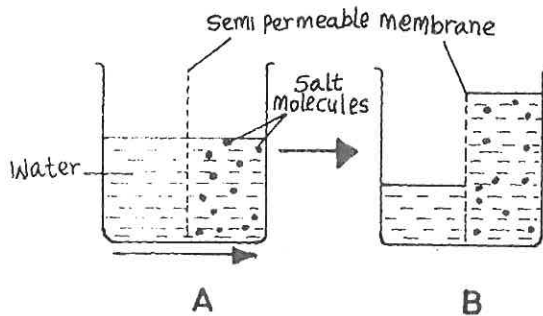
1. Which of the following scientists was the first to describe a cell?
  - A. Theodore Schwann
  - B. Felix Dujardin
  - C. Robert Hooke
  - D. Charles Darwin
2. Auxins in living organisms are
  - A. digestive enzymes.
  - B. coenzymes.
  - C. plant hormones.
  - D. plant metabolites.
3. Protozoa engulf bacteria by a process known as
  - A. exocytosis.
  - B. leucocytosis.
  - C. phagocytosis.
  - D. pinocytosis.
4. Which of the following statements best describes a tissue? A
  - A. group of similar cells which perform the same function.
  - B. group of organelles that perform a particular function within a cell.
  - C. number of organelles which work together to perform a major function in living organisms.
  - D. collection of systems forming an organism which exhibits specific characteristics.

The diagram below is an illustration of an organism. Study it and answer questions 5 and 6.



5. The part labelled I is the  
 A. tentacle.  
 B. hand.  
 C. foot.  
 D. endoderm.
6. The part that develops into a new organism is  
 A. I.  
 B. II.  
 C. III.  
 D. IV.
7. The function of lysosomes in cells is  
 A. storage of substances.  
 B. protein synthesis.  
 C. intracellular digestion.  
 D. formation of basal bodies.

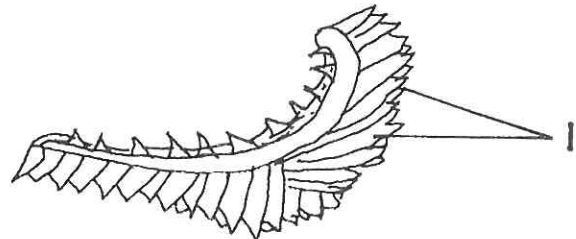
The diagram below is an illustration of a biological process. *Study it and answer questions 8 and 9.*



8. The biological process illustrated is  
 A. active transport.  
 B. osmosis.  
 C. plasmolysis.  
 D. aerobic respiration.
9. Which of the following statements about diagram B is correct? It  
 A. is the control.  
 B. shows the movement of solvent through a semi-permeable membrane to a region of higher concentration of solutes.  
 C. shows the movement of solutes through a semi-permeable membrane to a region of higher concentration of solutes.  
 D. does not take place in plants.

10. The end products of anaerobic respiration in yeast cells are  
 A. carbon dioxide and ethanol.  
 B. carbon dioxide and lactic acid.  
 C. carbon dioxide and water.  
 D. ethanol and lactic acid.
11. Which of the following plants undergoes epigeal germination?  
 A. Rice  
 B. Maize  
 C. Yam  
 D. Orange
12. Which of the following statements about the protrusions on bones of mammals is correct? They  
 A. increase the surface area of the bone.  
 B. are covered with cartilage to reduce friction.  
 C. enhance attachment of muscles on bones.  
 D. strengthen the bones.
13. Which of the following groups of mammals have an open circulatory system?  
 A. Arthropods  
 B. Aves  
 C. Annelids  
 D. Amphibians

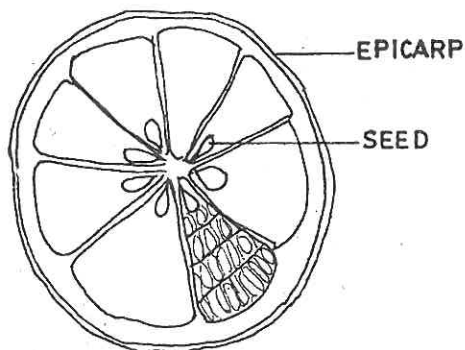
The diagram below is an illustration of a structure in organisms. *Study it and answer questions 14 and 15.*



14. The structure is a  
 A. scale.  
 B. pinna.  
 C. wing.  
 D. gill.

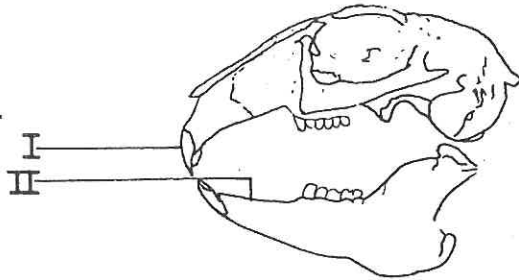
15. The part labelled I is used for
- sieving particles in flowing water.
  - gaseous exchange.
  - shielding against sunlight.
  - preventing desiccation.
16. The kidney will produce less amount of urine when
- a large volume of fruit juice is drunk.
  - a large volume of water is drunk.
  - the temperature of the environment rises above 38°C.
  - antidiuretic hormone is not secreted.
17. Impulses are transmitted across synapses through
- synaptic sparks.
  - electronic waves.
  - electrical currents.
  - chemical transmitters.
18. A boxer got knocked down during a contest but stood up after 20 seconds. What part of the ear malfunctioned? The
- semi-circular canals.
  - ossicles.
  - cochlea.
  - Eustachian tube.

The diagram below is an illustration of a section of a fruit. *Study it and answer questions 19 and 20.*



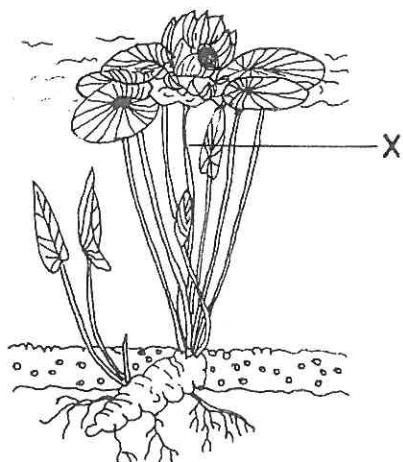
19. The epicarp is drawn in double lines to show that it
- has been badly drawn with HB pencil.
  - was cut through by a scalpel.
  - has started rotting and the fruit is spoilt for practical.
  - was succulent and ripe before plucking.
20. The arrangement of placenta and ovules in the fruit shows that the
- fruit is dispersed by wind.
  - placentation is axile and section is transverse.
  - section of fruit is longitudinal and placentation is basal.
  - type of fruit is dry indehiscent.
21. Which of the following compounds is a **primary** product of photosynthesis?
- Vitamin
  - Protein
  - Lipid
  - Glucose
22. What is the function of a bent glass tube inserted into the gas jar for water culture? To
- stabilize the air inside the jar.
  - provide sunlight for the plant.
  - blow air into the jar.
  - prevent entry of microbes into the jar.
23. Which of the following food tests does **not** require heating to get results?
- Benedict's test
  - Fehling's test
  - Millon's test
  - Biuret test

The diagram below is an illustration of the skeletal part of an animal. *Study it and answer questions 24 to 26.*



24. The part labelled II is characteristic of
- carnivorous animals.
  - herbivorous animals.
  - omnivorous animals.
  - holozoic animals.
25. The function of the part labelled II is
- it represents the absence of canine.
  - it allows the tongue to roll food.
  - it is used by carnivores for removing flesh.
  - for effective grinding of bones.
26. The part labelled I is the
- molar.
  - premolar.
  - incisor.
  - canine.
27. Which of the following processes is **not** for surviving unfavourable conditions?
- Migration
  - Hibernation
  - Aestivation
  - Swarming
28. The following consequences are as a result of bushfires in some countries **except** that
- strong winds result from destroyed wind breaks.
  - timber from forests are destroyed.
  - fertile soil is lost as humus is burnt off.
  - young trees gradually build up to form forest cover.
29. In a food chain, the **highest** percentage of energy will be in the
- grass.
  - goat.
  - lion.
  - mushroom.
30. Which part of the marine habitat has the **least** amount of light penetration?
- Littoral zone
  - Euphotic zone
  - Splash zone
  - Abyssal zone
31. The **main** function of decomposers in an ecosystem is to
- accumulate waste products.
  - provide energy for consumers.
  - recycle mineral nutrients.
  - provide energy for producers.

The diagram below is an illustration of a plant. Study it and answer questions 32 and 33.



32. What is the adaptation of the part labelled X?
- Stem is long for growth
  - Flower stalk is long to reach pollinators
  - Flowers are numerous for pollination
  - Flowers and leaves are on the same level to get sunlight
33. The organism illustrated is a water
- lettuce.
  - lily.
  - fern.
  - hornwort.
34. Which of the following instruments is used for collecting small insects from soil litter and crevices?
- Anemometer
  - Barometer
  - Pooter
  - Quadrat
35. Houseflies are vectors of the following diseases **except**
- typhoid.
  - dysentery.
  - cholera.
  - malaria.
36. The excretion of uric acid by *Agama* lizard is an adaptation for
- excreting more water.
  - conserving more water.
  - living on land.
  - laying shelled eggs.
37. What is the consequence of killing rare animal species to the ecosystem?
- Extinction of animals
  - Availability of meat for the people
  - Reduction in the number of predators
  - Outbreak of diseases
- Use the statements below to answer questions 38 and 39.*
- I** - Turning off the tap when water is not in use
- II** - Burning bushes to kill mosquito larvae
- III** - Allowing farmlands to fallow
- IV** - Making rare animals reproduce in large numbers
38. Which of the following statements are ways of conserving natural resources?
- I, II and III**
  - I, II and IV**
  - I, III and IV**
  - II, III and IV**
39. Which of the following resources in the statements is conserved through a biological cycle?
- Water
  - Soil
  - Wildlife
  - Forest
40. An example of discontinuous variation is
- blood group.
  - skin colour.
  - shape.
  - height.

41. The antibodies present in the blood of humans with blood group A is
- a and b.
  - a.
  - b.
  - o.
42. Which of the people in the following blood groups could donate blood to a patient with blood group A? People with blood groups
- AO and AB.
  - AO and BO.
  - AO, AA and OO.
  - AB, AO and OO.
43. The structure of a *DNA* molecule may be changed through
- variation.
  - evolution.
  - heredity.
  - mutation.
44. Mendel's second law of inheritance is also known as the law of
- dependent segregation of genes.
  - dependent assortment of genes.
  - independent segregation of genes.
  - independent assortment of genes.
45. Observable expression of transmitted traits is referred to as
- genotype.
  - variation.
  - phenotype.
  - hybrid.
- Two plants were crossed and the genotypes of the  $F_1$  generation were SS, Ss, Ss and ss. The allele for smooth is S and wrinkled is s. Use the information to answer questions 46 and 47.
46. The phenotypes of the offspring are
- one smooth, one wrinkled.
  - one smooth, three wrinkled.
  - two smooth, two wrinkled.
  - three smooth, one wrinkled.
47. The genotype of the parent plants would be
- SS and ss.
  - SS and Ss.
  - Ss and Ss.
  - Ss and ss.
48. The evidence of evolution is further strengthened by
- the extinction of horses.
  - increase in the weight of boys.
  - studying the behaviour of members in a family.
  - the uniformity of embryonic stages of vertebrates.
49. The evolution of a species is based on the sum total of adaptive changes preserved by
- natural selection.
  - isolation.
  - speciation.
  - conservation of life.
50. The Theory that new organs develop when there is the need for them was postulated by
- Jean Lamarck.
  - Charles Darwin.
  - Gregor Mendel.
  - Louis Pasteur.