ASUMBI GIRLS HIGH SCHOOL

PRE-MOCK

MAY-JUNE

2022

231/1 BIOLOGY PAPER 1

FORM FOUR

MAY 2022– 2 HOURS

Name..... Adm No.....

Signature.....
Date.....

Instructions to candidates.

a) *Write your name and adm number in the spaces provided above.*
b) *Sign and write the date of examination in the spaces provided above.*
c) *Answer all the questions in the spaces provided.*
d) This paper consists of 8 printed pages.
e) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
f) Candidates should answer all the questions in English.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score

A	**1-28**	**80**	
	Total		

1. A student was viewing a slide preparation of an onion cell under high power of a light microscope and observed that the features of the cell were blurred.
   a) Name the part of the microscope the student would use to obtain sharper focus of the features.
   (1mk)

   _____

   _____

   b) State the function of mirror in a light microscope.
   (1mk)

   _____

   _____

2. (a) Guard cells are specialized epidermal cells. State **two** structural features which suit them to their function.
   (2mks)

   _____

   _____

   (b) Apart from gaseous exchange, give one other function of stomata.
   (1mk)

   _____

   _____

3. The diagram below is a specialized mammalian cell.



a) Name the parts labeled B and D
(2mks)

B_____

D_____

b) State the function of the following

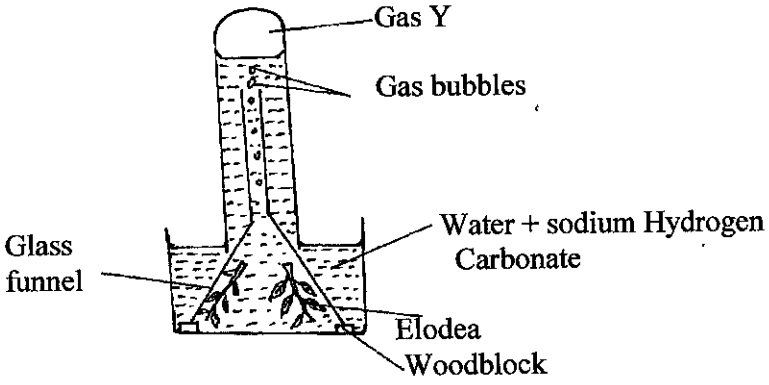
i. Part labeled A (1mk)

_____

ii. The portion marked C
(1mk)

_____

4. In an experiment to investigate a product of photosynthesis, the set up was as shown in the diagram below. The apparatus was placed in the sun.



a) State the confirmatory test for gas Y.

(1mk)

_____

b) Explain why Elodea is the most suitable plant for this experiment.

(2mks)

_____

_____

_____

c) State the function of the sodium hydrogen carbonate in the experiment.

(1mk)

_____

_____

5. (a) Name **one** hormone involved in insect metamorphosis.

(1mk)

_____

(b) State the importance of metamorphosis to the life of insects.

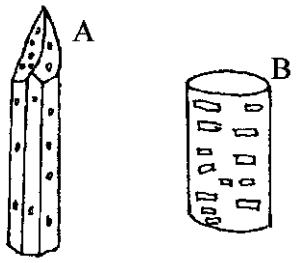
(2mks)

_____

_____

6. A student measured the diameter of a mitochondrion on a photomicrograph whose magnification was
X50, 000 to be 1mm. What was the actual size of the mitochondrion in micrometers? (2mks)

7. The diagrams below are of two conducting elements of the xylem tissue.



a) Identify each of them

(2mks)

A_____ B_____

b) What makes the cellulose side wall of both A and B impermeable to water and solutes? (1mk)

_____

_____

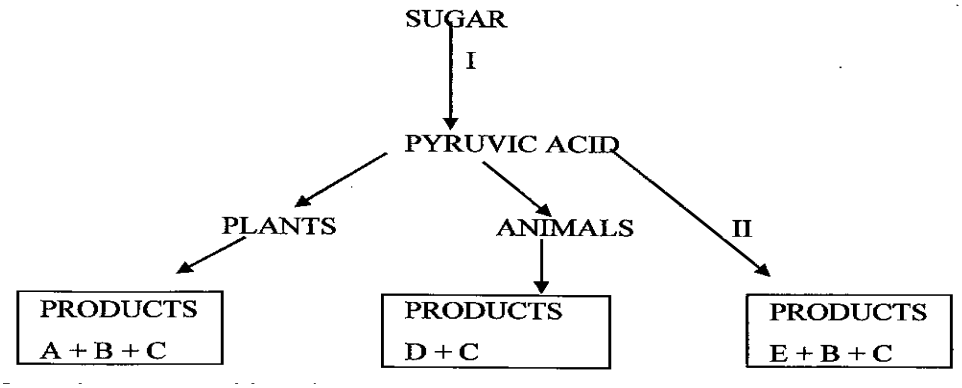
_____

8. State **two** advantages of natural selection to organisms.
(2mks)

_____

_____

9. Study the flow chart below and answer the questions that follow.



a) Name the process taking place in step labeled I
(1mk)

_____

b) Give **two** reasons why accumulation of substances D in the body leads to an increase in the heart beat.
(2mks)

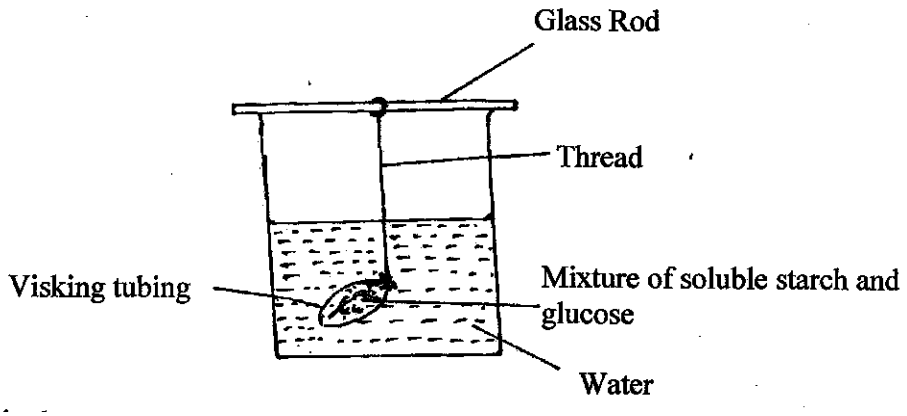
_____

_____

c) Identify substance E (1mk)

_____

10. In an experiment to investigate certain physiological process, a student had his experiment set up as shown below.



To ascertain the occurrence of the physiological process investigated he carried out food test on the water in the beaker. Both starch test and reducing sugar test at the beginning of the experiment were negative. After the set up was left undisturbed for 20 minutes, starch test was still negative but that of reducing sugar was positive.

a) State the physiological process which takes place in the human body illustrated by the set up above.
(1mk)

_____

b) Name the part of the human body where the processes stated in (10) (a) above takes place.
(1mk)

_____

11. A group of students were walking in the forest and they came across two organisms A and B showing the following characteristics

A	B
- two pairs of walking legs per segment - one pair of antennae - jointed appendages	- one pair of walking legs per segment - one pair of antennae - jointed appendages

State the class to which each organism belongs
(2mks)

_____

_____-

12. (a) Name the principal site of gaseous exchange in the lungs of humans
(1mk)

_____-

(b) State **two** ways in which the structure named in (12) (a) above is adapted to its function
(2mks)

_____

_____

13. An investigation was carried out on a terrestrial ecosystem. The population sizes and species biomass were determined and recorded as shown in the table

Species	Population size	Species biomass
A	1×10^{3}	1×10^{3}
B	1×10^{3}	1×10^{-1}
C	1×10^{5}	1×10
D	1×10	1×10^{4}

a) If these organisms had feeding relationships, construct a simple food chain involving all the organisms
(1mk)

b) Construct pyramid of numbers using the data provided above.
(2mks)

c) State **one** disadvantage of using pyramid of numbers in expressing feeding relationships in ecological ecosystem.
(1mk)

_____

14. Why is excretion of nitrogenous wastes more of a problem to animals than plants? (2mks)

_____

_____

15. (a) Give **two** possible ways of establishing the genotype of an organism whose genotype is unknown.
(2mks)

_____

_____

_____

(b) Why is that a father can only transmit hemophilia to his daughter but not to his son? (1mk)

_____

_____

16. (a) Explain why swallowing and breathing in cannot occur at the same time.
(2mks)

_____

_____

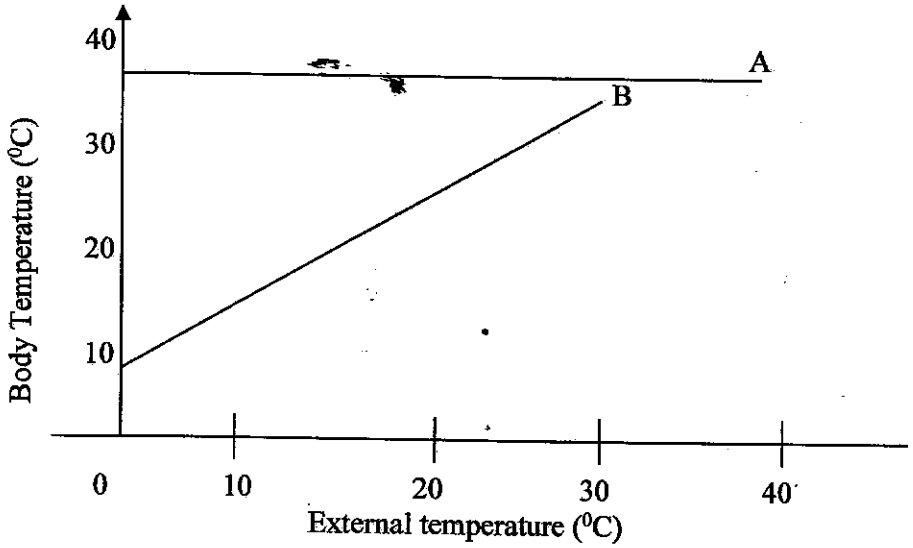
(b) Why is it necessary that pepsin be produced in its inactive forms?
(1mk)

_____

17. (a) Name the part of the brain which deals with regulation of body temperature. (1mk)

_____

(b) The graph below shows the temperature of two organisms A and B under different external temperature. Study it and answer the questions that follow.



Give the terms used to describe organisms A and B

(2mks)

_____

_____

(c) What advantage does organism A have over B

(1mk)

_____

_____

18. State **two** distinguishing features used in separating members of the phylum Arthropoda into various classes.

(2mks)

_____

_____

19. (a) Name **two** kinds of nuclei found in a mature pollen grain.

(2mks)

_____

_____

(b) State what is meant by double fertilization in flowering plants.
(2mks)

_____

_____

20. Carbon (iv) oxide can be transported from the tissues t the lungs within the red blood cells. Give **two** advantages of this mode of transport.
(2mks)

_____

_____

21. (a) Differentiate between the primary growth and secondary growth in woody plants. (2mks)

_____

_____

(b) Name **two** tissues responsible for secondary growth in flowering plants.
(2mks)

_____

_____

22. (a) State **two** significance of myelin sheath.
(2mks)

_____

_____

(b) Name the cell that secretes the myelin sheath.
(1mk)

_____

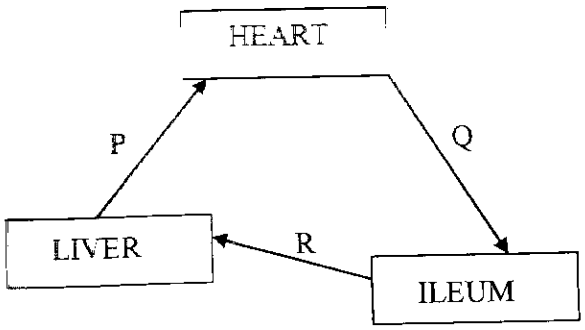
_____

(c) List the following in order in which they are involved in a simple reflex action. Motor neurone, effectors, stimulus, intermediate (relay) neurone, sensory neuron, impulse, receptor.
(1mk)

_____

_____

23. The diagram below shows part of the mammalian circulatory system.



a) Identify the blood vessel marked Q
(2mks)

_____

_____

b) State **two** differences in the composition of blood in vessel R and P
(2mks)

_____

_____

24. Name **two** strengthening tissues in woody plants.
(2mks)

_____

_____

25. State **three** structural adaptations of a thoracic vertebra to its function (3mks)

_____

_____

_____

26. (i) Name the type of response exhibited by the growth of pollen tube towards the ovary in a flowering plant. (1mk)

_____

(ii) State **two** importance of response named in 26 (i) above to the plants. (2mks)

_____

_____

27. Explain why sweat accumulates on a person's skin in a hot humid environment. (2mks)

_____

_____

_____

28. Name the deficiency disease caused by lack of vitamin A in human. (1mk)

_____