

THE SHOOTING STARS EDUCATIONAL CONSULTANCY

Kenya Certificate of Secondary Education

231/1

Biology – (Theory)

June. 2023 – 2 hours

Paper 1



Name..... Index Number.....

Candidate’s Signature..... Date.....

Instructions to candidates

497

- a) Write your name and index 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 section A 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 the questions in English**

For Examiner’s Use Only

A011

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24	25

Grand Total



317804



Turn Over

1. a) State the functions of the following cell organelles. (2 marks)

i) Ribosomes

.....

ii) Lysosomes

.....

b) Name the only epidermal cell in plants that contain chloroplast. (1 mark)

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2. a) Name the causative agents of the following diseases. (2 marks)

i) Amoebic dysentery

.....

ii) Tuberculosis

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3. a) What is the importance of the counter current flow in the exchange of gases in a fish. (2 marks)

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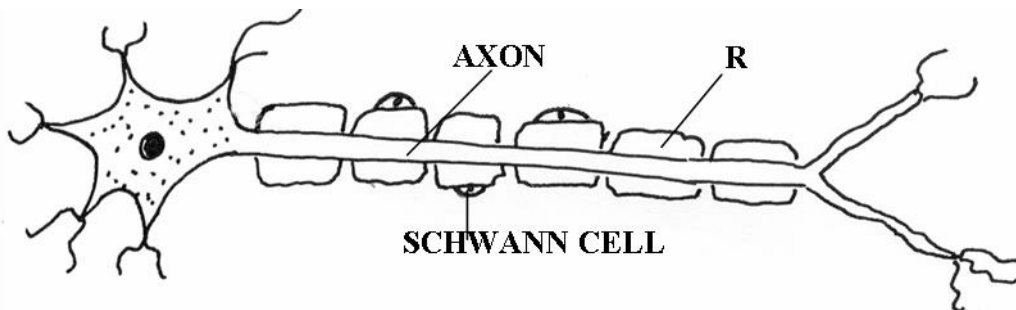
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b) State **two** ways in which the tracheoles of an insect are adapted to their functions. (2 marks)

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4 The diagram below shows a type of a neurone.



a) Identify the neurone above. (1 mark)

.....

b) Give a reason for your answer in 4(a) above. (1 mark)

.....

- c) State the function of the part labeled R (1 mark)

.....

- d) Use an arrow on the diagram to show the direction of the impulse transmission along the neurone. (1 mark)

5. The equation below represents a reaction that occurs during respiration in a cell.



- a) Identify the compound K. (1 mark)

.....

- b) State **two** differences between K and ATP. (2 marks)

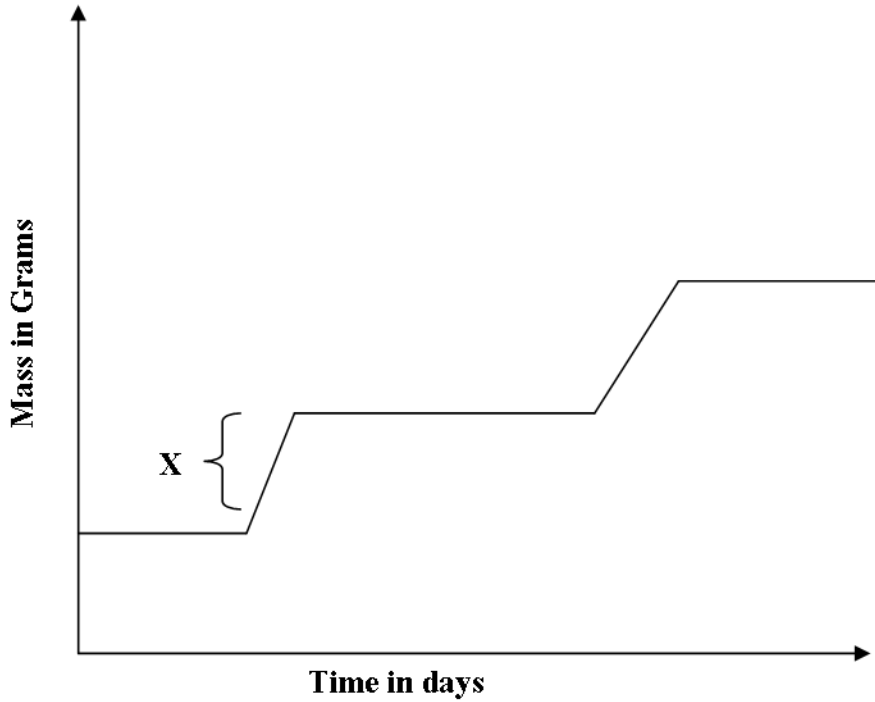
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- c) Name the organelle responsible for the production of energy in a cell muscle (1 mark)

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6. The graph below represents the growth pattern of animals in a certain phylum.



a) Name the type of growth curve shown above. (1 mark)

.....

b) i) Identify the process represented by x. (1 mark)

.....

ii) Name the hormone responsible for the process in b(i) above.

.....

c) State the importance of the growth of a pollen tube to a plant. (1 mark)

.....

7. State **three** factors that affect absorption of mineral ions by plant roots. (3 marks)

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 .....

8. Explain how crops grown along roads can be a source of lead poisoning to human beings. (2 marks)

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 .....

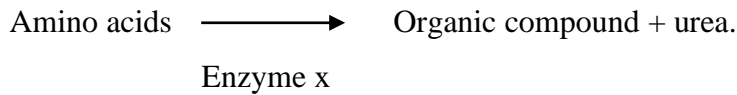
9. Name the type of responses exhibited by.

a) Tendrils when they twine on a support object. (1 mark)

.....

- b) Butterflies and moths fly into wind currents in order to detect scent of flowers. (1 mark)
- .....

10. The equation below represents a metabolic process that occurs in the mammalian liver.



- a) Name the process that represents the above equation. (1 mark)
- .....

- b) Identify the enzyme represented by x. (1 mark)
- .....

- c) What is the importance of the process to the mammal (1 mark)
- .....

11. A scientist carried out blood sugar test for a given patient at three different times of the day. He obtained the results shown below for glucose and glycogen level.

Time	6 a.m.	1.30 p.m.	4 p.m.
Glucose	90mg	100mg	90mg
Glycogen	20mg	40mg	60mg

Account for:

- a) Presence of glycogen in blood. (2 marks)
- .....

- b) Rise in glucose and glycogen levels at 1.30p.m (2 marks)
- .....
- .....
- .....

12. a) What is the meaning of alternation of generations. (2 marks)
- .....
- .....
- .....
- .....

- b) Name one plant division which displays alternation of generation. (1 mark)
- .....

13. Explain why plants growing in low altitude areas grow faster than those in high altitudes. (3 marks)

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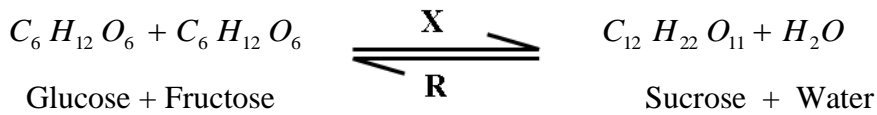
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14. a) What is the function of Sodium hydrogen Carbonate that is added to test solution of non-reducing sugar. (1 mark)

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b) The equation below represents a process X which is controlled by enzymes .



i) Name the process X and enzyme R

Process X ..... (1 mark)

Enzyme R ..... (1 mark)

15. State **two ways** through which plants eliminate their metabolic wastes from their bodies (2 marks)

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16. a) What is double fertilization in flowering plants? (1 mark)

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b) Name any two types of placentations found in ovaries. (2 marks)

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17. List down **four** phenotypic characteristics that have been selected for the production of strains suitable for modern agricultural purposes. (4 marks)

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- .....  
 .....  
 .....  
 18. a) Name any **two** accessory glands in the male urinogenital system. (2 marks)  
 .....  
 .....  
 b) What structural modification do human sperm cell have that:  
 i) Facilitate energy use. (1 mark)  
 .....  
 ii) Facilitate movement. (1 mark)  
 .....  
 19. Name the type of eye defects that can be corrected by;  
 i) Use of bifocal lens (1 mark)  
 .....  
 ii) Use of artificial lens (1 mark)  
 .....  
 iii) Use of concave lens (1 mark)  
 .....  
 20. a) The length from the tail tip to the anus of a certain tilapia fish is 10cm. The length from the tail tip to the mouth is 35cm. Calculate the tail power of the fish. (Show all your working). (2 marks)  
 .....  
 .....  
 b) What is the significance of high tail power in fish? (1 mark)  
 .....  
 .....  
 21. State the roles of each of the following hormones in the process of reproduction in human male.  
 i) Follicle stimulating hormone. (1 mark)  
 .....  
 ii) Luteinizing hormone. (1 mark)  
 .....

22. List down three differences between the endocrine system and nervous system. (3 marks)

Endocrine system	Nervous system
i. ....	i. ....
ii ..... .....	ii ..... .....
iii ..... .....	iii ..... .....

23. Distinguish between the struggle for existence and survival for the fittest as used in the theory of natural selection. (2 marks)

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 .....  
 .....

24. State **three** structural feature of the placenta which facilitates the diffusion of substance between the maternal and foetal blood. (3 marks)

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 .....  
 .....

25. Give one functional difference between a tendon and a ligament in a mammal. (1 mark)

.....

26. State the functions of the following parts of a light microscope. (2 marks)

- i) Diaphragm.....
- ii) Objective lens.....

27. Explain how the following adaptations minimizes rate of transpiration.

- i) Sunken stomata (2 marks)  
 .....
- ii) Leaf dropping (1 mark)  
 .....

28. State **one** structural difference between mature red blood cells and white blood cells. (1 mark)

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