

KALA TRIAL EXAMINATION-2026

Kenya Certificate of Secondary Education

231/1 - BIOLOGY -

Paper 1

JULY 2026 2 HOURS



Name: **Admission No:**

Class: **HOUSE:**

Date:

School: **Signature:**

INSTRUCTIONS

- Write your name, index number and class in the spaces provided.
- Answer ALL the questions in the spaces provided.

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Questions	Maximum Score	Candidate's Score
1 - 24	80	

1. Name the branch of biology that deals with

i) Study of development from egg to adult.

(1mark)

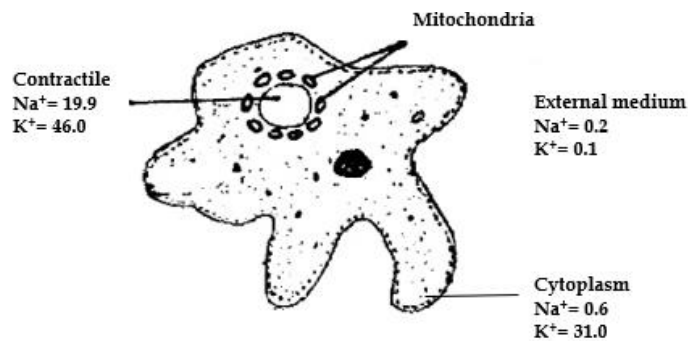
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ii) Study of internal structure of living organisms.

(1mark)

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2. The diagram below represents a single celled organism. The concentration of Na^+ and K^+ are given in mmol^{-3}



(a) **Name** the Kingdom in which the organism is classified

[1 mark]

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(b) Other than cell organization give three differences between the kingdom above and kingdom Monera

.....(3marks]

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3. **State** the role of the following parts of the alimentary canal

i) Zymogen cells(chief cells)

[1 mark]

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ii) Crypts of lieberkuhn

[1 mark]

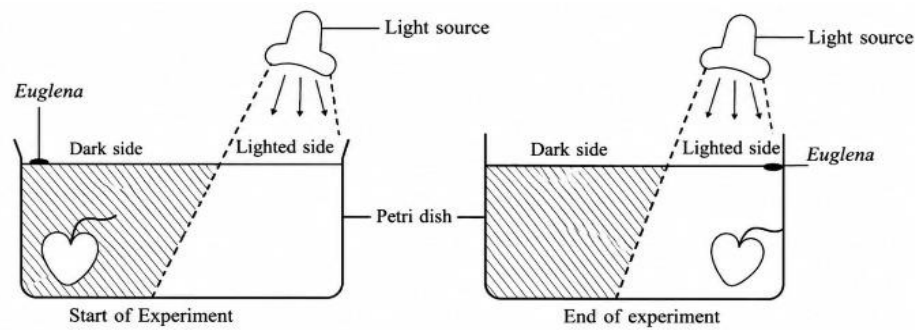
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iii) Name the enzyme found in the caecum of herbivores.

(1 mark)

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4. In an experiment to establish Euglena behaviour under different set of conditions experiment below was set up.



a) What response was exhibited by the Euglena in the setup above?

(1mark)

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b) What was the significance of the response you have named above to the euglena ?

(1 mark)

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c) A bean plant shoot will also respond to light. Give **two** differences between a bean plant shoot response to light and the response observed in Euglena above.

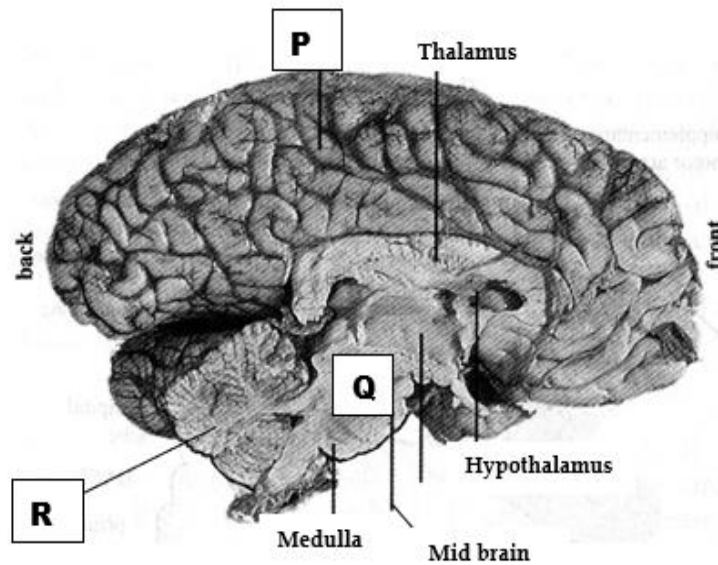
(2marks)

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5. The diagram below shows a section of the human brain cut in half vertically through the middle.



- (a) **Identify** the parts labeled **P** and **Q**. [2 mark]

P

Q

- (b) **What** would happen if the part labeled **R** was damaged? [2 marks]

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6. The dark variety of peppered moth is predominantly found in industrial cities while the speckled white variety is predominantly found in rural areas in Europe.

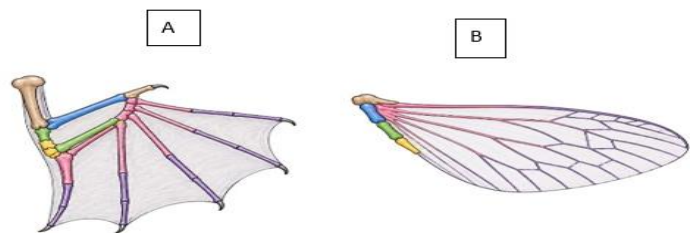
- a) Name the phenomenon illustrated above. (1mark)

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- b) What is the significance of the phenomenon above to the organism? (1mark)

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7. During a lesson a student observed the structures below to determine their evolutionary relationship.



a) i) Identify the type of evolution illustrated by the structures above. (1mark)

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ii) What evidence of evolution illustrated. (1mark)

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iii) Name the type of skeleton found in organism with structure labeled B above. (1mark)

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b) Name the hormone that has an effect on the skeleton from which the part of organism B was obtained at the adult stage. (1mark)

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8. **Explain** the significance of the following changes during seed and fruit development

(i) Retention of a small pore in the testa. [1 mark]

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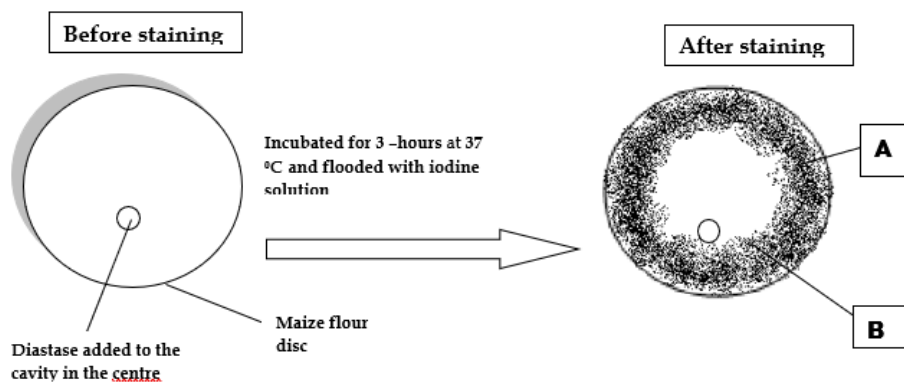
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(ii) Reduction in the water content of the seed from the normal levels of the plant tissues of about **90 %** to about **10-15 %** by mass. [1 mark]

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9. The figure below shows a maize flour disc before and after staining with Iodine solution.



a) **Account** for the appearance of part **B** after staining with iodine. [2 marks]

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b) Name the physiological process illustrated above. (1mark)

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10. In humans,presence of a dimple in the chin is controlled by a dominant gene. The first child of a couple, each with a dimple does not have a dimple but the second child does have a dimple.

(a) Use alleles **D** and **d** to **show** the genotypes corresponding to the phenotype of the parents and the child without a dimple.

(i) Genotypes of the parents [1 mark]

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(ii) Genotype of the child without a dimple and calculate the percentage. [2 marks]

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(b) Aside from the trait mentioned in (a) above **name** four types of discontinuous variations in man. (.....)(2marks

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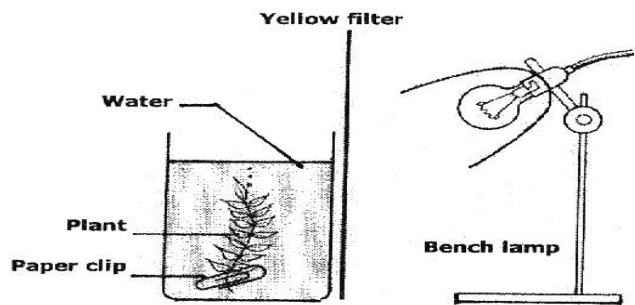
11. State two functions of the pericardium. (2marks)

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11. The set up below was used by a form 1 student to investigate an aspect of photosynthesis.



(a) **Name** two conditions necessary for photosynthesis that can be investigated in this experiment[1 mark]

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(b) **State** two ways of increasing the rate of evolution of bubbles. [2marks]

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12. What characteristics do gills of a fish and mouth cavity of a frog have in common that enable them to be efficient in gaseous exchange? (3marks)

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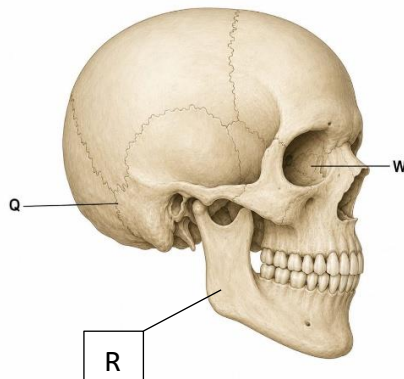
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13. Identify site of formation of red blood cells in. (2marks)

i) Adults -

ii) Embryo -

14. The diagram below represent a mammalian skeleton, use it to answer the questions that follow.



- i) Name the part labeled Q. (1mark)

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- ii) Give the role of the part W (1 mark)

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- iii) Write down the dental formula for the organism above. (1mark)

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iv) Give the modification of structure R in herbivores. (2 marks)

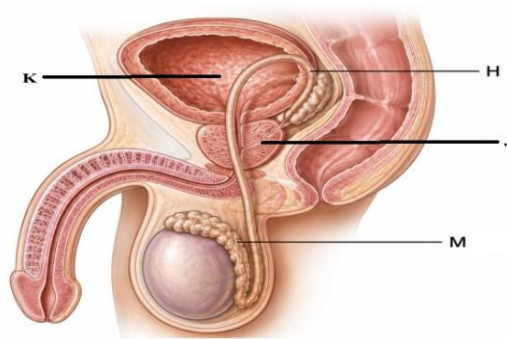
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15. The diagram show part of the mammalian male reproductive system use it to answer the questions.



i) Name the parts labeled K and H (2 marks)

K

H.....

ii) Give the role of the part labeled M (1 mark)

iii) Identify the part labeled J and give its role (2 marks)

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16. i) Name the organism that oxides ammonia to nitrites. (1mark)

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ii) Give the differences between scavengers and detritivores in an ecosystem. (2marks)

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17. Define the following terms (1mark)

a) Excretion -.....

.....

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b) **Name** the nitrogenous waste product excreted by

- Birds-.....[1 mark]

- Marine bony fish -.....[1 mark]

c) What is Oxygen debt- (1 mark)

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18. State **any** structural modifications of the kidneys of deserts animals like kangaroo rat. (1mark)

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20 . a) Why is seed dispersal important? (2 marks)

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(b) **What** is an

- Inflorescence?.....1 mark]

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- Epigynous ovary?..... [1 mark]

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21. What part of the light microscope would be used to:

- i) Regulate the amount of light reaching the stage. (1 mark)

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- ii) Change from one objective lens to another. (1 mark)

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- (b) Give a reason as to why specimen in electron microscope are dead. (1 mark)

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22. (a) **Name** the

- (i) Process by which homologous chromosomes pair up during **prophase II**. [1 mark]

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- (ii) Pair of homologous chromosomes formed in (a) (i) above. [1 mark]

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(b) **Give** one difference between mitosis and meiosis during:

- (i) Metaphase [1 mark]

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- (ii) Anaphase [1 mark]

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23. Explain how smoke and fumes cause

- i) Green house effect (1mark)

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- ii) Respiratory poisoning. (1mark)

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24. The oxidation of a certain food substrate is represented by a chemical equation shown below.



- a) Calculate the respiratory quotient of the food substance. (2marks)

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- b) Name the class of food substance being oxidized. (1mark)

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- c) Give three reasons why lipids are not the main respiratory substrates. (3marks)

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