

NYAHOKAKIRA CLUSTER II, 2024

Kenya Certificate of Secondary Education (KCSE)

231/1

FORM FOUR

Paper 1

-BIOLOGY- **(THEORY)**

JULY. 2024 – 2 hours.

Name _____ Admission Number _____ Stream _____

Index Number _____ Student's Signature _____ Date _____

INSTRUCTIONS TO CANDIDATES

- Write your Name, Admission number, Index Number and your Stream in the spaces provided above.*
- Sign and write the date of examination in the spaces provided above.*
- Candidates should answer **ALL** the questions in English in the spaces provided.*
- Additional pages must not be inserted.*

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QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1 – 28	80	

This paper consists of 09 Printed pages.

Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing.

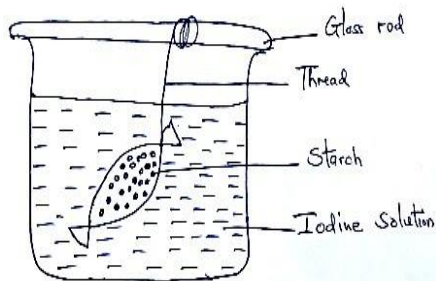
1. a) State **one** way by which plants compensate for lack of the ability to move from one place to another. (1mark)

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b) Give **one** difference in mode of illumination between an electron microscope and a light microscope. (1mark)

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2. Form one student set up an experiment shown below to investigate a certain physiological process. The set up was left for 30 minutes.



a) State the expected results after 30 minutes (1mark)

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b) Explain your answer in (a) above (2marks)

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3. Name two diseases of the teeth. (2marks)

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4. a) Name the organelles found in abundance in white blood cells. (1mark)

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b) The diameter of field of view of a light microscope was found to be 1.5mm. The size of a single cell was 250 micrometer. Determine the number of cell occupied along the field of view. (3 marks)

5. The diagrams below show two different organisms.



a) Name the class to which each the above organisms belongs

A..... (1mark)

B..... (1mark)

b) Give **two** conspicuous external features that can be used to differentiate the two classes (2 marks)

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6. State the significance of the following steps while testing for disaccharide in food sample.

a) Addition of dilute hydrochloric acid. (1mark)

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b) Addition of sodium bicarbonate. (1mark)

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7. a) State the role of carbonic anhydrase enzyme (1mark)

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b) A patient with blood group A died shortly after transfusion with blood group B. Explain. (2marks)

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8. Give two benefit of transport in plants.

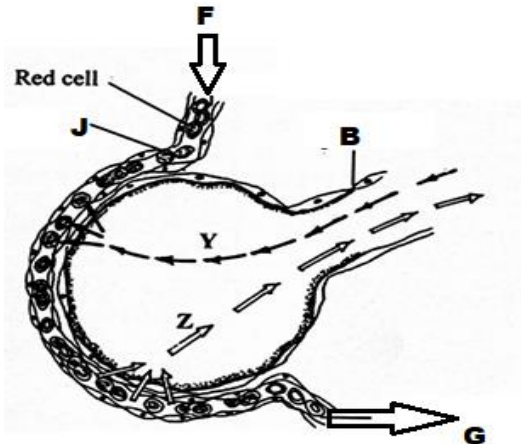
(2 marks)

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9. The diagram below illustrates gaseous exchange in alveolus.



a) Name the feature labeled B.

(1 mark)

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b) Which blood vessel receives blood leaving G?

(1 mark)

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c) Name the process by which gases move in and out of the red blood cells

(1 mark)

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10. a) Give a reason why halophytes have pneumatophores.

(1mark)

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b) State the economic importance of the following excretory products in plants

i) Nicotine

(1mark)

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ii) Quinine

(1mark)

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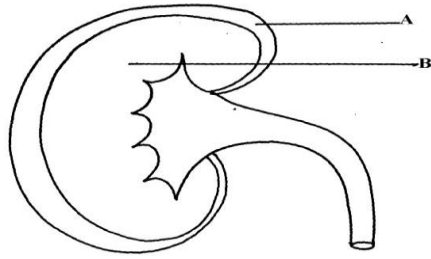
11. Explain why a variegated leaf has less stored starch

(2marks)

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12. The figure below shows a vertical section through a mammalian kidney.



a) Label the parts A and B:

A _____ (1mark)

B _____ (1mark)

b) Name parts of the kidney tubule found in part A. (1mark)

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c) What is the role of glucagon in homeostasis? (1mark)

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13. a) Differentiate between **population** and **community** as used in ecology. (1 mark)

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b) State **two** ways through which energy is lost from one trophic level to the next in a food chain. (2marks)

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c) State one limitation of using a quadrat to estimate the population of an organism. (1 mark)

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14. A church faithful of **Shakahola** was observed to be thin and emaciated after prolonged fasting.

Explain. (2marks)

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15. The following table shows the estimated number of organisms in a dam.

- ❖ Small fish -3,500
- ❖ Microscopic algae -12,000
- ❖ Crocodiles -100
- ❖ Large fish -950
- ❖ Mosquito larvae -8,900

a) Construct a possible food chain for the dam (1mark)

b) Construct a pyramid of numbers from the data (2marks)

16. a) State one effect of discharging of hot water into a lake (1 mark)

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b) Identify two ways through which **HIV/Aids** virus can be transmitted? (2 marks)

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17. a) State **two** genetic disorders of the blood. (2marks)

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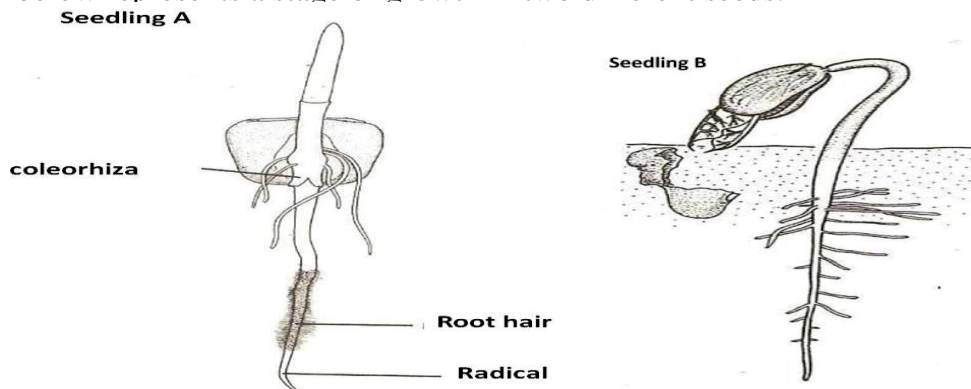
b) List three types of gene mutation (3 marks)

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18. The diagram below represents a stage of growth in two different seeds.



a) Identify the type of germination exhibited by seedlings A and B.

i) Seedling A (1mark)

ii) Seedling B (1mark)

b) State the role of oxygen during germination. (1mark)

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19. a) Name the hormones that control metamorphosis in insects (2marks)

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b) Give one advantage of metamorphosis in insects (1mark)

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20. A certain species of micro-organism was seen moving from an area containing oxygen to one without oxygen.

a) Identify the response exhibited by the above microorganism. (1mark)

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b) State one survival value of the response named in (a) above. (1mark)

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21. The photographs below are of organisms resting on different environmental backgrounds. Observe them and answer the questions that follow;



A

B

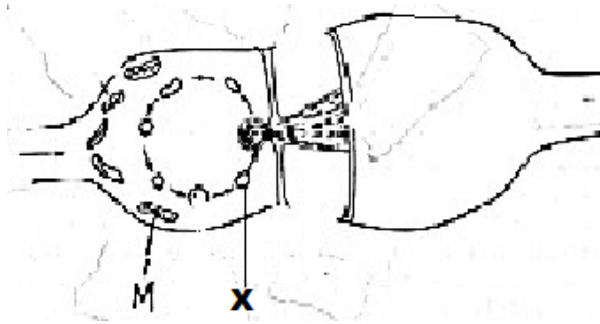
a) Name the aspect of evolution depicted in the photograph (1mark)

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b) Explain the phenomenon shown above. (2marks)

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.....

22. The diagram below represents a synap



a) Name the:

i) Structure labeled **M**.

(1mark)

.....

ii) Transmitter substance labeled **X**.

(1mark)

.....

b) **On the diagram**, show the direction of the nerve impulse transmission.

(1mark)

23. 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**). (3 marks)

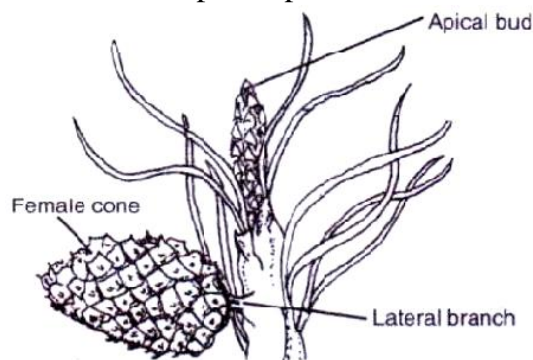
b) What is the significance of high tail power in fish?

(1mark)

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24. The diagram below represents a certain plant species.



i) State the class to which the plant belongs.

(1mark)

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ii) State one observable xerophytic characteristic seen in the diagram above?

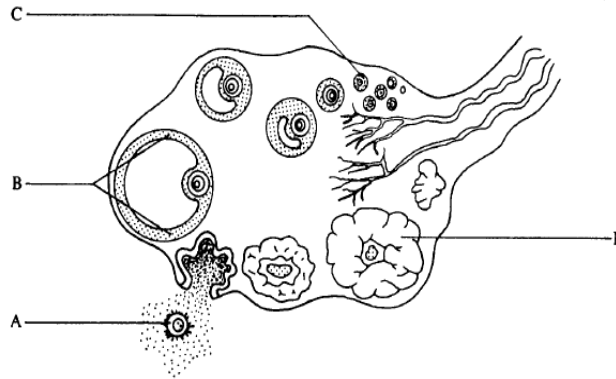
(1mark)

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25. a) Name one vestigial structure in the mammalian eyes (1mark)

b) List **two** limitations of fossil records as an evidence of evolution. (2marks)

26. The diagram below shows a section of a human ovary.

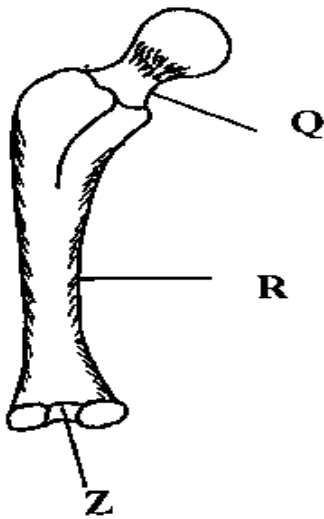


a) Name the structure labelled A. (1mark)

b) Name the hormone, which is responsible for the (i) Development of structure B. (1mark)

(ii) Development of structure D. (1mark)

27. The diagram below shows a bone of hind limb .Study it and answer the questions that follow.



a) Identify the bone (1mark)

b) Name the parts labelled Q and R (2marks)

Q.....

R.....