Name……... Adm No…… Class…….

Index No…….. School…….. Sign ……..

DATE ……..

231/1
BIOLOGY
PAPER 1
JUNE 2024
TIME: 2 HOURS

MIRROR JET EXAMS 2024
TERM TWO 2024

Kenya Certificate of Secondary Education. (K.C.S.E)

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided above*
- ***Sign** and **write** the date of examination in the spaces provided above.*
- *Answer **all** questions in the spaces provided on the question paper.*

FOR EXAMINER'S USE ONLY:

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1- 25	80	

1. Give two reasons why the pressure of blood is greater in the arteries than in the veins of mammals. (2mks)

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2. After four months of pregnancy, the ovaries of a woman can be removed without terminating pregnancy. However, during the first four months of pregnancy, the ovaries must remain intact if pregnancy is to be maintained. Explain these observations. (2mks)

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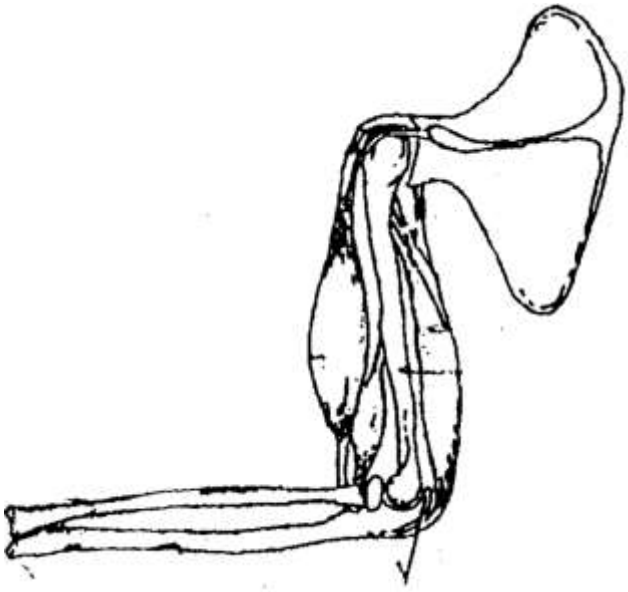
3. The diagram below shows the arrangement of bones and muscles in a human arm



K

(a) Name the part of the bone labeled **K**. (1mk)

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(b) How do the muscles work to extend the arm. (1mk)

.....

4. Industrial wastes may contain metallic pollutants. State how such pollutants may indirectly reach and accumulate in the human body if the wastes were dumped into rivers. (3mks)

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5. Explain how drooping of leaves on a hot sunny day is advantageous to a plant. (2mks)

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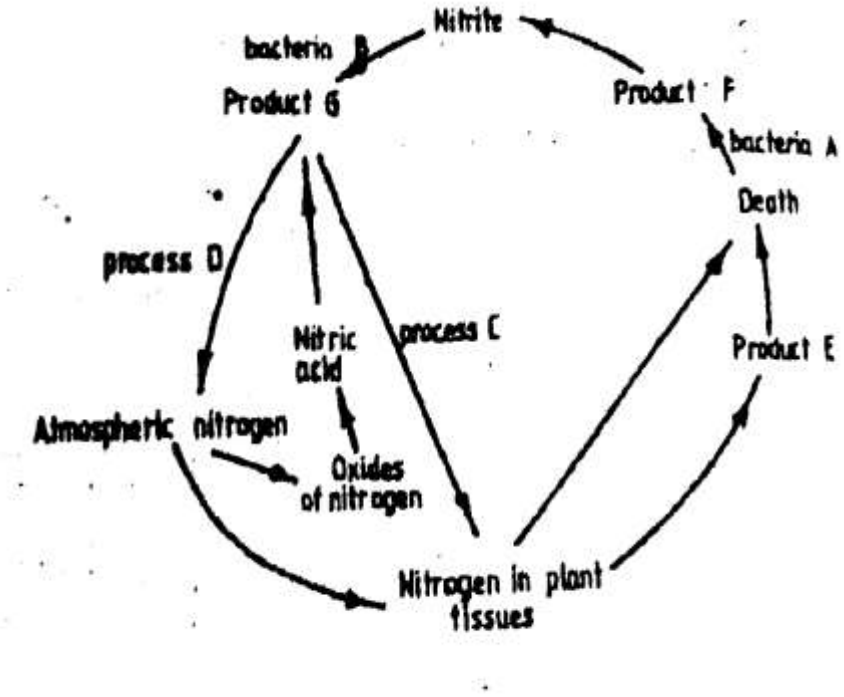
6. The figure below is diagram of the nitrogen cycle



(a) Identify the bacteria A (1mk)

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(b) Nitrogen in the atmosphere cannot be directly utilized by plants. State two ways by which this nitrogen is made available for plant use. (2mks)

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.....

7. Explain why several axillary buds sprout when a terminal bud in a young tree is removed. (2mks)

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8. A rhinoceros in a national park was found to be infected with ticks. State the trophic level occupied by the,

(a) Rhinoceros (1mk)

.....

(b) Ticks (1mk)

.....

9. Some millet seeds were soaked in water for two days. They were then broken into small pieces and placed on the surface of agar.

The petri-dish was covered and kept in a warm place. After two days, it was discovered that starch was absent in the agar.

(a) Suggest how the test for starch in the agar block was conducted. (2mks)

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(b) Why was it necessary to soak the seeds first. (2mks)

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(c) What was the importance of covering the petri-dish? (1mk)

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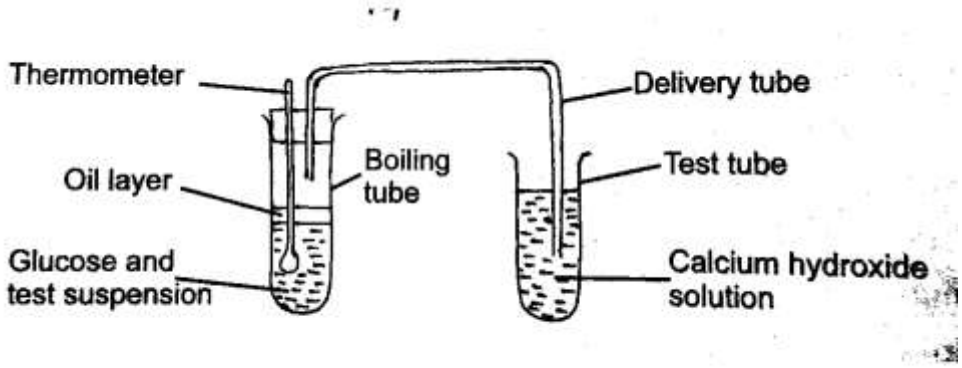
10. Fig. 8.3 below was used by a group of form 2 students to investigate a certain physiological process.



(a) What was the purpose of the following in the set up:

(i) Oil layer? (1mk)

.....

. (ii) Calcium hydroxide solution? (1mk)

.....

.....

(b) What effect would each of the following treatments have on the rate of reaction taking place in the boiling tube?

(i) Adding metabolic poison such as sodium cyanide to the suspension. (1mk)

.....

(ii) Adding more yeast? (1mk)

.....

11. A piece of fresh liver was added to some small amount of hydrogen peroxide in attest tube. Effervescence occurred in the tests tube and froth formed.

(a) What would be observed in the test tube if boiled piece of liver is used instead? Give a reason for your answer. (1mk)

Obsevatition.....

Reason.....

(b) What is the active ingredient of liver which brings about the reaction above? (1mk)

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12. A flower was found to have inconspicuous petals, long feathery stigma and small light pollen grains.

(a) What is the likely agent of pollination of the flower? (1mk)

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(b) What is the significance of small light pollen grains? (1mk)

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13. (a) What is apical dominance? (2mks)

.....

(b) State the significance of pruning tea plants. (1mk)

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(c) Identify two factors that determine viability of a seed. (2mks)

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14. Give two morphological features that can be used to separate a housefly, a millipede and a tick into their respective classes. (2mks)

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.....

15 (a) State two causes of mutation (2mks)

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....

(b) Define the following terms.

(i) Hybrid Vigour (2mks)

.....

(ii) Polypoloidy (1mk)

.....

16. All insects are believed to have arisen from a common ancestor. However, modern insects differ widely in a variety of ways. For example, their mouthparts are adapted for different modes of feeding, e.g. biting, piercing, and sucking.

(a) What kind of evolution is this? (1mk)

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(b) Explain how the differences in the mouthparts came about. (3mks)

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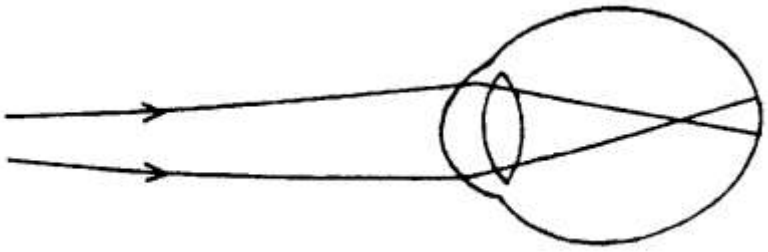
17. The diagram below illustrates a certain eye defect



(a) Name the defect (1mk)

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(b) Explain how the defect named in (a) above can be corrected. (3mks)

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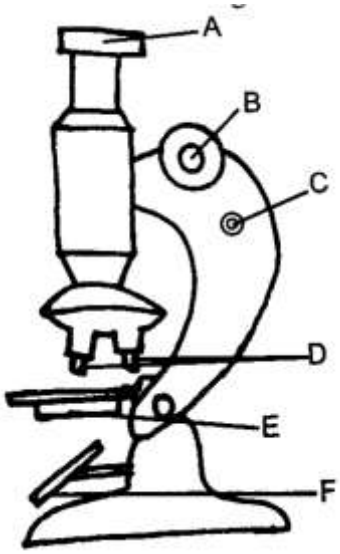
18. The diagram below shows some components of a light microscope.



(a) Name the parts labeled A and B (1mk)

.....

(b) (i) A student was viewing a slide preparation of a cheek cell under high power of a microscope. The features of the cell were blurred. Which one of the labelled parts of the microscope would the student use to obtain a sharper outline of the features? (1mk)

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Give the formula used to calculate magnification in a light microscope. (1mk)

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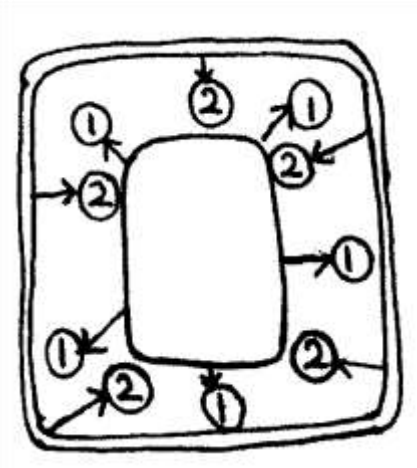
19. The diagram below resents a fully turgid plant cell.



(a) Which arrows represent:

(i) Turgor Pressure (1mk)

.....

(ii) Wall pressure. (1mk)

.....

(b) State the roles placed by osmosis in plant (2mks)

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20. (a) Treating a cell undergoing interphase stage of cell division with a metabolic poison stops cell division. Explain. (2mks)

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(b).What is the significance of meiosis to living organisms? (1mk)

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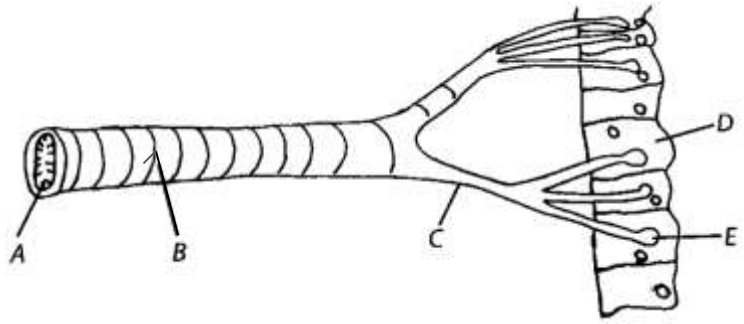
21. The diagram below represents part of the gaseous exchange site of a terrestrial insect. Use it to answer the question that follow:



(a) Name the parts labeled

A .....

B.....

(b) State the significance of part labeled B. (1mk)

.....

(c) Name the fluid which fills the cavity of structure labeled E and state its significance. (1mk)

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22. The equation below summarizes a certain chemical process which takes place in a certain region of the alimentary canal.

Sucrose + Enzyme A $\longrightarrow$ Glucose + Product B

(a) Name the process summarized by the above equation. (1mk)

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(b) Name the;

(i) Enzyme A (1mk)

.....

(ii) Product B (1mk)

.....

(c) What is the name of the juice which contains enzyme A in human beings (1mk)

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(d) Name the region of the alimentary canal of man where the above process occurs (1mk)

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23. State the function of each of the following structure in a female mammal.

(i) Placenta (1mk)

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(ii) Amniotic fluid (1mk)

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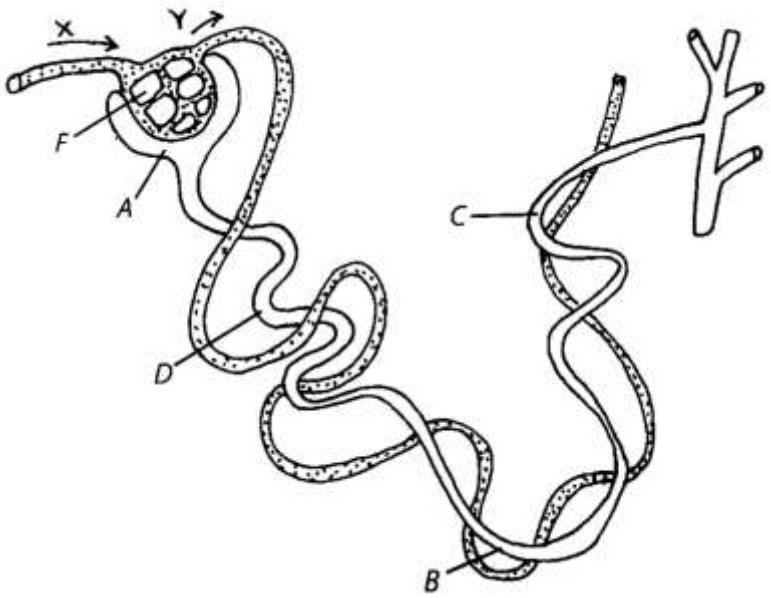
24. The figure below represents the mammalian nephron.



(a) Name the parts labeled A and B (1mk)

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(b) State the differences between the following:

(i) Blood in X and Y (1mk)

.....

(ii) Composition of the content of F and D (1mk)

.....

(iii) What would be the effect of shortening the part marked B? (1mk)

.....

25. In an experiment, *Drosophila melanogaster* (fruit fly) with broad abdomen were crossed with those with narrow abdomen. All the offspring's (F1 generation) from the crosses had broad abdomens. Using letter, A to denote the gene for broad abdomen.

(a) (i) Give the genotypes of the parent. (2mks)

.....

.....

(iii) If 150 fruit flies with broad abdomen in the second filia generation (F2), how many flies had broad abdomen in the same generation? Show your working.
(2mks)

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(c) In a related experiment, fruit flies with broad abdomen were crossed with fruit flies with narrow abdomen. The offspring with broad abdomen and the ones with narrow abdomen were in the ratio of 1:1.

(i) What is the genotype of the parent with broad abdomen? (1mk)

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(ii) What is biological significance of the experiment? (1mk)

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