

NAME _____

ADMNO _____

CLASS _____

231/1

BIOLOGY

PAPER 1

THEORY

LAIKIPIA EAST TERM 2 2022 FORM 4 EVALUATION EXAM
Kenya Certificate of Secondary Education – K.C.S.E

Instructions to candidates

- Write your name admission number and class in the space provide above
- Answer all the question in the space provided

Form examiner's use only

Question	Maximum score	Candidates' score
1 – 29	80	

1. Give the structure of the cell that perform the following function:- (2Mks)

a) Regulate exchange of substances in and out of the nucleus

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.....

b) Synthesis of ribosomes

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.....

2. State the most suitable apparatus in collecting the following organisms.

(3Mks)

a) **Ants from barks of trees.**

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b) **Crawling stinging insects.**

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c) **Attracting and trapping rats.**

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.....

3. Define the term resolution power of a microscope.

(1Mk)

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.....

Explain the absence of the following components in urine of a healthy person

(2Mks)

i) Glucose

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ii) Plasma proteins

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4. Differentiate between primary and secondary growth

(2Mks)

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5. a) Give a reason why lack of roughage in diet often leads to constipation. (1Mks)

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.....

b) Name two fat soluble vitamin manufactured by the human body. (2Mks)

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6. a) State the role of the following bacteria in the nitrogen cycle (3Mks)

i) Rhizobium bacteria

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.....

iii) Nitrosomonas.....

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iv) Nitrobacter

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.....

7. a) What is the function of carnassial teeth. (1mk)

c) Use features shown of a common animal below to answer the questions that follow



a) Give **two** reasons to show that the animal above is carnivorous (2mks)

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.....

8. List the changes that takes place during inhalation in the breathing cycle of a mammal in the following (2Mks)

a) Ribcage

b) Diaphragm

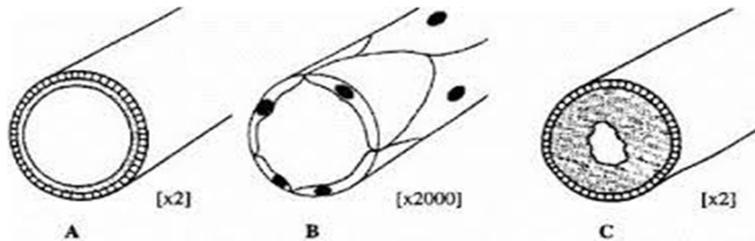
9. a) What is metamorphosis? (1mk)

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b) What is the biological importance of the larval stage during metamorphosis (2Mks)

.....

10. The following are the blood vessels in a human body



- a) Which letter represents the blood vessel that: (3mks)
- i) Experiences pulsating action.....
 - ii) Has valves along its length
 - iii) Supplies blood to every tissue of the body.....

b) Why is vessel **B** the only one that experiences ultra filtration? (1mk)

.....

11. Name the causative agent of the following diseases in man (2Mks)

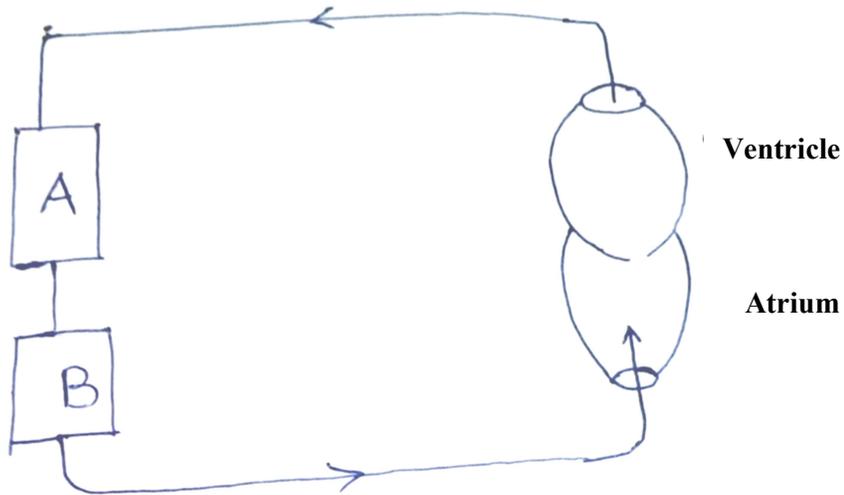
a) Candidiasis

.....

c) Syphilis

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12. Study the diagram below and answer the questions that follow



i) Identify the type of circulatory system shown above (1Mk)

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.....

ii) Give a reason for your answer in (a) (i) (1Mk)

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.....

iii) Give a disadvantages of this type of circulation (1Mk)

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.....

13. Give a reason for each of the following biological phenomenon (2Mks)

a) A mature plant cell does not lose its shape after losing water

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.....

b) Amoeba will not burst when placed in a hypotonic solution

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.....

14. Mention two differences between pollen grains of wind and insect pollinated flower

(2Mks)

Wind	Insect

15. State the functions of the following structures in human reproductive system

(3Mks)

Seminiferous tubules _____

Interstitial cells _____

Epididymis _____

16. The following are text messages on a cell phone that represent gene mutation

Intended message

Actual message

A. Buy me a coat

Buy me a goat

B. John is paying

John is praying

a) Identify the type of gene mutation that is represented in each case

(2Mks)

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.....

b) Identify any two disorder arising due to gene mutation in humans

(2Mks)

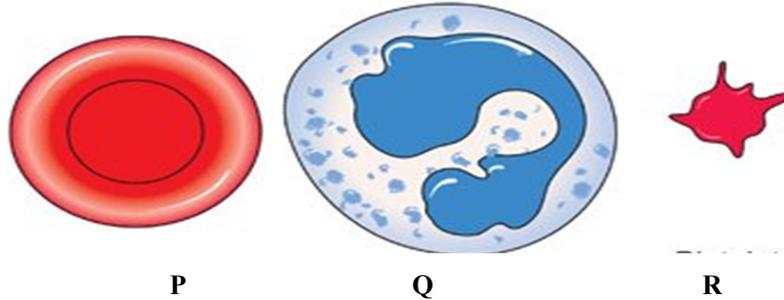
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17. The following are the three types of cells found in human blood



a) State **TWO** roles of enzyme released when cell **R** bursts on exposure to air (2mks)

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b) Give **one** way the cell represented by **Q** undertake its function in the body (1mk)

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18. State two characteristic features of members of division Bryophyta. (2Mks)

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19. Explain why water logging of the soil may lead to death in plants. (2Mks)

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20. A dog weighing 15.2kg requires 216kj while a mouse weighing 50g requires 2736kj per day.

Explain. (2Mks)

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21. The equation below shows an oxidation reaction of food substance.



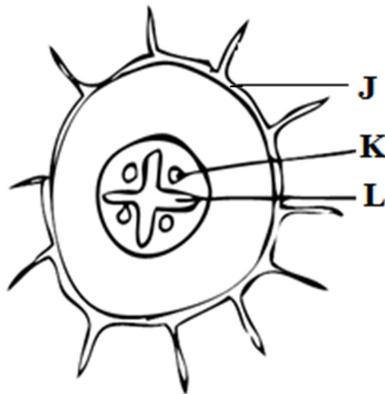
a) Determine respiratory quotient of the oxidation of food substance. (2Mks)

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.....

(b) Give two reasons why the above food is not the main substrate. (2Mks)

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22. The diagram below represents a transverse section of a plant organ.



(a) From which plant organ was the section obtained? (1mk)

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b) Give one reason for your answer above. 1mk

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c) Identify the parts labeled K and L. 2mks

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.....

23. The data below was obtained in an ecosystem

Mango tree - 1

Caterpillars – 100

Sparrow- 50

Hawk- 5

a) Sketch a pyramid of numbers for their feeding relationship (2Mks)

b) Identify the shape of the pyramid of number (1Mk)

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.....

24. a) i) what are vestigial structures? (1Mk)

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.....

ii) Give two examples of vestigial structures in human (2Mks)

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b)What is organic evolution. (1mk)

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.....

25.) What is meant by the term sex linked genes. (1mk)

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.....

b) Name two sex linked traits in man. (2mks)

.....
.....

26 a The following is a portion of a nucleic acid molecule.

G-A-C-U-A-G-A-C-G

(a) Name the type of nucleic acid shown above. (1 mark)

.....
.....

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

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(c) Write the base sequence of the strand that is complementary to the portion shown above (1 mark)

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27. State two roles of diffusion in human beings. (2mks)

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28. Name two sites of gaseous exchange in frogs. (2Mks)

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29. Where do the following processes take place in the chloroplast? (2mks)

i) Carbon fixation

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ii) Photolysis

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