

NAME.....ADM NO.....
SCHOOL.....CANDIDATES SIGN
DATE..... TEACHER.....CLASS.....

231/1

BIOLOGY

PAPER 1

TIME: 2 HOURS



CEKENAS END OF TERM ONE EXAM-2022

FORM FOUR EXAM

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

PAPER 1

INSTRUCTIONS TO CANDIDATES

- Write your name, admission number, date, and signature and school name in the spaces provided.
- Answer all the questions
- Answers must be written in spaces provided
- *This paper consists of 12 printed pages. Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.*

FOR EXAMINERS USE ONLY

SECTION	MAXIMUM SCORE	STUDENTS SCORE
1-24	80	
TOTAL	80	

1.a) Define the term specimen. (1mk)

b) Give two significances of collecting specimens in biology. (2mks)

2. Give three reasons why *Drosophila melanogaster* is considered suitable for use in genetic experiments. (3mks)

3. List two factors you would consider before selecting a microscope for use in a biological study. (2mks)

4. A group of form two students placed a fresh leaf in warm water. They observed that air bubbles formed on the surface of the leaf.

a) What biological process were they investigating? (1mk)

b) Name the structures from which the air bubbles were coming from. (1mk)

c) Explain the distribution of the structures named in (b) above on the leaf surfaces of an aquatic plant. (2mks)

5. Differentiate between hydrolysis and condensation. (2mks)

6. (a) Which sets of teeth would be used in chewing sugarcane for maximum extraction of sap? (2mks)

(b) What is the advantage of heterodont dentition over homodont dentition? (1mk)

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(b) During digestion name the enzyme that acts on the sugarcane sap and give the final products. (2mks)

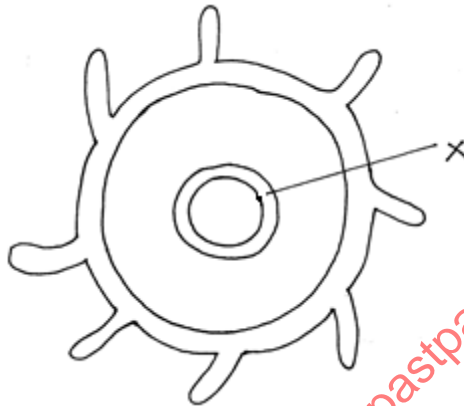
Enzyme

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Final products

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



a) The part labelled X turned blue black after iodine solution was applied on the cut cross section of the above specimen

i) Name part X (1mks)

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ii) Give a reason for your answer. (1mks)

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b) State two phenomenon of stomata which reduce the rate of transpiration. (2mks)

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8. a) What is respiratory quotient? (1mks)

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b) Explain why it is difficult to measure respiratory quotient in plants. (2mks)

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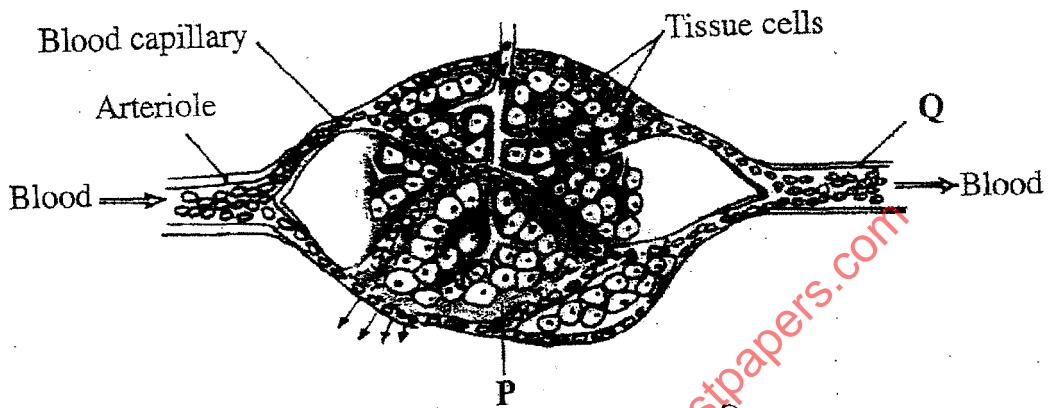
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9. Study and complete the table below.

(3mks)

Character	Monocot	Dicot
a) Number of stamens		
b) Arrangement of vascular bundle in stem		
c) Type of root		

10. The diagram below shows blood circulation in a mammalian tissue.



a) Give the name of the above section of the blood circulation system.

(1mks)

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b) Explain two the adaptation of the above section to its function.

(2mks)

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c) What is the name of blood vessel Q.

(1mk)

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11. Differentiate between dioecious and monoecious plants.

(2mks)

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12.a) Why does endosperm weight of a germinating seed decrease as the weight of the shoot increases.

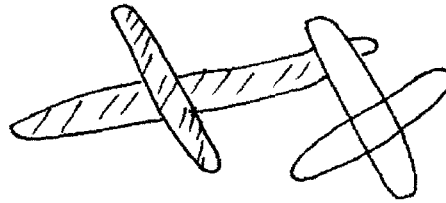
(1 mks)

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b) State three importance of the pupa stage of metamorphosis to insects. (1mks)

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13. The diagrams below show a pair of homologous chromosomes. Study them and answer the questions that follow.



i) State the phenomenon shown above. (1mk)

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ii. What is the genetic significance of the phenomenon above? (1mk)

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iii. Name the type of mutation caused by the above phenomenon. (2mks)

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14. In an experiment to determine the population of Tilapia fish in a school fish pond, students of Canada school decided to use capture-recapture method.

a) Name three vital tools the students would need for the exercise. (3mks)

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b) State two factors that might affect the accuracy of their results. (2mks)

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15. The table below show description of sizes of glomeruli and renal tubules of two animals, which are in different environments.

	Animal Q	Animal W
Glomeruli	Few	Many
Renal tubules	Long	Short

a) Name the likely environment in which each animal lives. (2mks)

Q –

.....

W-

.....

b) Suggest the main nitrogenous waste produced by animal W. (1mk)

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c) What is the importance of the renal tubules being long? (1mk)

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16. What is the role of the following hormones in human reproduction?

i) Follicle stimulating hormone in male (1mk)

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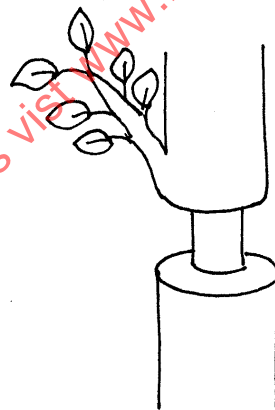
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ii) Luteinizing hormone during menstrual cycle. (1mk)

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17. Below is representation of an experiment that was carried out on a tree in Kayombe forest.



a) Which two tissues are removed in a ring bark experiment? (2mks)

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b) Removal of the tissues above leads to some effects to the plant. Name these 2 effects. (2mks)

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c) State and explain the observation that would be made in the plant above after some time. (3mks)

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18. A section of nucleic strand contains the following sequence.



a) i) Write the complimentary DNA stand. (1mk)

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ii) Write the mRNA strand of the strand in (a) above. (1mk)

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b) Name the site for protein synthesis in a cell. (1mk)

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c) State one disorder caused by non-disjunction mutation. (1mk)

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19. i) State the importance of rings of chitin in the tracheal system of insects. (1mk)

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ii) Explain the significance of maintaining a steep concentration gradient in the respiratory surfaces of animals. (1mk)

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iii) Explain why a bony fish dies shortly after being removed from water. (3mks)

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20. Explain why Lamark's theory of evolution is not accepted by modern scientist. (2mks)

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21. Name the branch of biology that deals with;

a) Relationship between antelopes and gazelles in their environment. (1mk)

b) Study of Ebola virus. (1mk)

c) Explain what would happen if a given of living things lose their ability to reproduce. (1mk)

22. Explain the following when testing a leaf for starch.

i) Boiling the leaf in hot water. (1mk)

ii) Destarching (1mk)

iii) Boiling the leaf in methylated spirit. (1mk)

23. Explain why osmosis is a special type of diffusion. (1mk)

24. Explain three protective functions of the blood. (3mks)

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