NAME:.....INDEX NO:.....

DATE:..... ADNO..... SIGN:.....

231/1
BIOLOGY
PAPER I
(THEORY)
July/August 2018
TIME: 2 HOURS

FORM 4 MID-YEAR EVALUATION EXAMINATION 2018

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

Instructions to candidates

(a) Write your name and Index number in the spaces provided.
(b) Answer ALL questions in the spaces provided.
(c) Candidates check the question paper to ascertain that all the papers are printed
(d) This paper consists of 11 printed pages. Candidates should check the question paper to ensure that all pages are printed as indicated and that no questions are missing.

FOR EXAMINER'S USE ONLY.

QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
1 – 30	80	

1. Name two components of blood that are absent in the tissue fluid (2mks)

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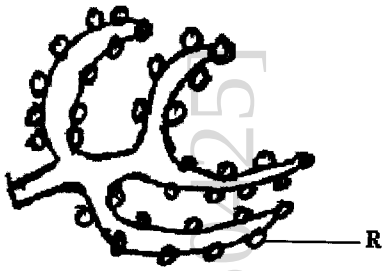
2. The following is a drawing of a cell organelle



i) Identify the cell organelle. (1 mark)

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ii) Give the function of the part labelled R. (1 mark)

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3. (a) Name the association between leguminous plant and rhizobium bacteria (1mk)

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(b) A group of form three students were estimating the population of nut grass in their school field whose area is 480m^2. They run two ropes of 2m long parallel to each other and placed them 1m apart. They counted and recorded the number of nut grasses enclosed by the two ropes. They repeated this three times. In the first set, they obtained 20 nut grasses, in the second set they obtained 11 star grasses and in the third set they obtained 8 star grasses.

(b)(i) Identify the method of population estimation the students were using (1mk)

(ii) Using the above information, estimate the population of nut grasses in their field. Show your working. (2mks)

4. State the function of the following apparatus

(a) a sweep net (1mk)

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(b) a bait trap (1mk).

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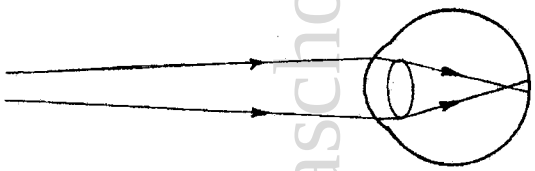
5. The diagram below shows a certain eye defect.



(a) State the defect. (1mark)

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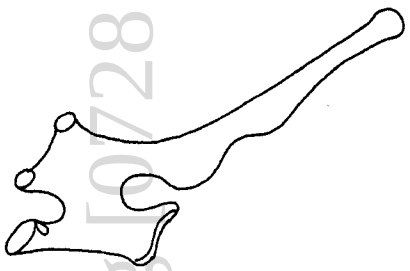
(b) On the space below, illustrate how the defect can be corrected. (1 mks)

6. The diagram below represents the mammalian vertebra.



(a) Identify the vertebra represented above. (1mk)

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(b) Give a reason for your answer. (1mk)

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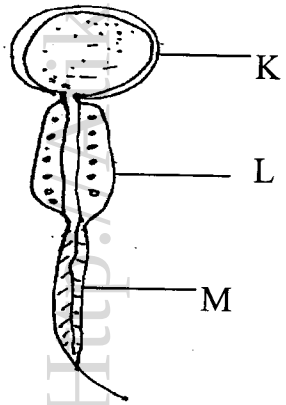
7. The diagram **below** represents one of the specialized cells found in the human body.



(a) Identify the cell. (1mk)

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(b) Name the parts labeled. K and L (2mks)

K.....

L.....

(c) What is the function of part labeled M ? (1mks)

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8. State three theories that explain the mechanism of opening and closing of stomata. (3 mks)

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9. Explain how temperature and oxygen concentration affect the rate of active transport

Temperature (2mks)

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Oxygen concentration (2mks)

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10. A student visiting a game park observed that an adult elephant flapping its ears twice as much as its calf in order to cool its body when it is hot. Explain (2mks)

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11. State three importances of classification (3mks)

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12. (a) Distinguish between the terms transpiration and Guttation (2 mks)

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(b) State the structures through which each of the process named in (a) above occurs (2mks)

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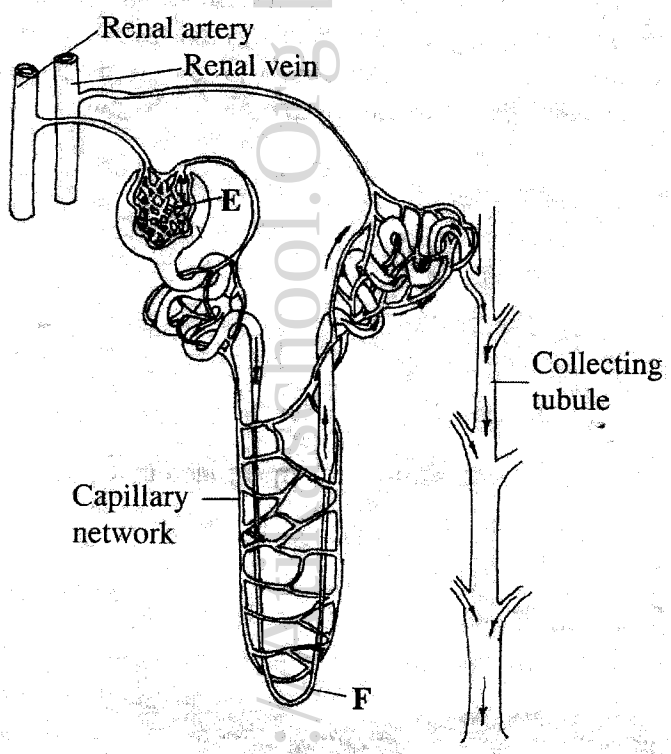
13. The diagram below illustrates the structure of the kidney nephron.



(a) Name the part labelled **E**

(1mk)

(b) How is the part labelled **F** adapted to its function?

(3mks)

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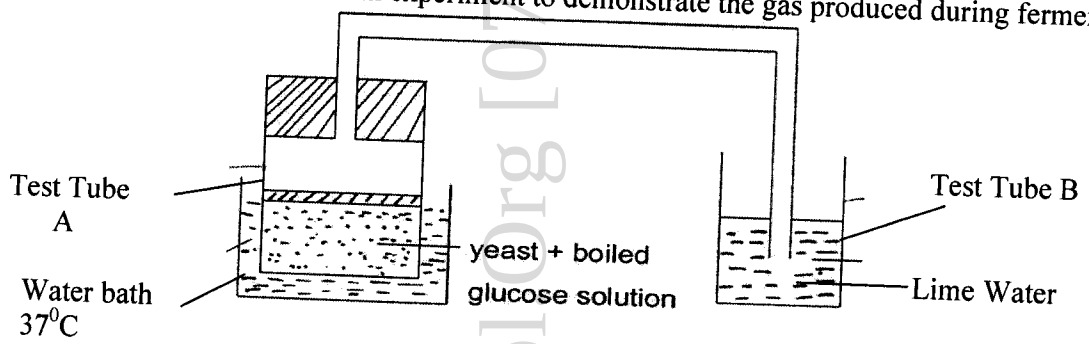
14. The diagram below illustrates an experiment to demonstrate the gas produced during fermentation.



After one hour the following observations were made:

- Gas bubbles appears in both tubes.
- White precipitate formed in lime water.

(a) Account for the above observations.

(3mks)

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(b) Explain how you can set a control for the experiment. (1mk)

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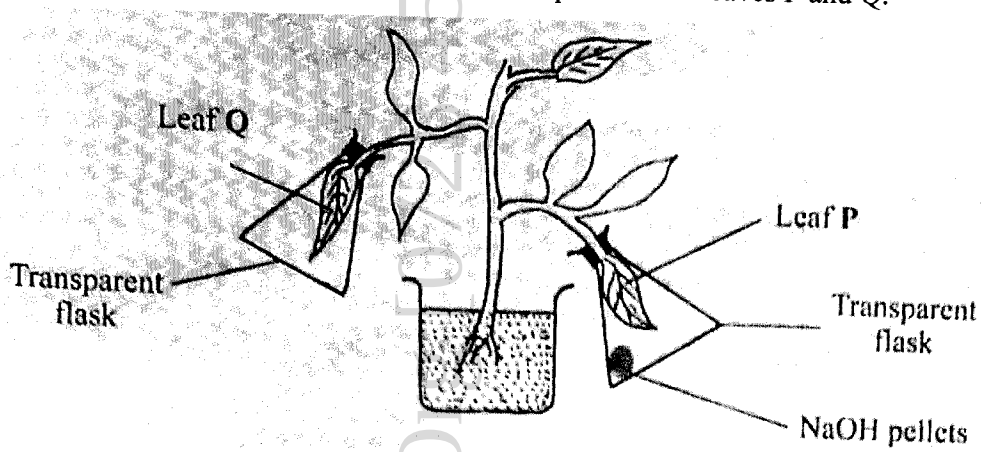
15. In an experiment to investigate a factor affecting photosynthesis, a potted plant which had been kept in the dark overnight was treated as shown in the diagram below and exposed to light. The students performed a starch test to confirm if photosynthesis took place in the leaves P and Q.



a) Why was the potted plant kept in the dark overnight? (1mk)

(b) Explain the results obtained in the leaves labelled P and Q (3 mks)

16. Name three support tissues in plant stems (3 mks)

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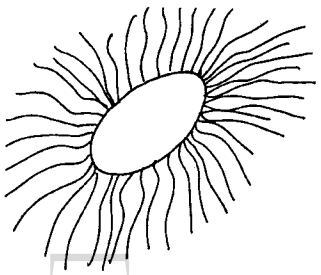
17. The diagram below shows a seed of a certain plant.



(a) Name the likely agent of dispersal. (1mk)

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(b) Give a reason for your answer. (1mk)

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18. Name two classes of the phylum Arthropoda that have cephalothorax (2mks)

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19. (a) Name the source of hydrochloric acid in the mammalian stomach. (1mk)

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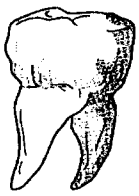
(b) Study the diagram of the mammalian tooth **below** and answer the questions that follow.



(i) Identify the tooth. (1mk)

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(ii) Give a reason for your answer in (a) above. (1mk)

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(c) State **one** adaptation of the tooth to its function. (1 mk)

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20. Name **one** condition caused by gene mutation. (1 mks)

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21. Differentiate between intracellular and extracellular enzymes. (2mks)

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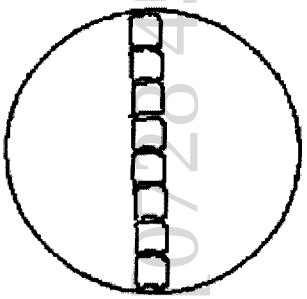
22 . During a practical lesson to estimate the size of a cell a student observed and sketched the diagram below. Using information from the sketch , calculate the length of one cell in micrometers given the field of view was 8mm in width. (2 mk)



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23. If pepsinogen and trypsinogen were produced in their active forms, what would be their effect on the alimentary canal. (1mk)

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24. State the stage in meiosis where the following take place

(a) Synapsis (1mk)

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(b) Formation of separate cells each with haploid number of chromosomes (1mk)

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25. State the function of the following structures (3mks)

i. Seminiferous tubule

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iii. Prostate gland

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ii. Epidydimis

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26. (a) What is meant by organic evolution (1mk)

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(b) State **two** limitations in use of fossil records in retracting the evolutionary history of all modern day organisms (2 mks)

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27. State **two** ways in which knowledge of genetics has been applied by humans (2 mk)

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28. State **two** advantages of metamorphosis to the life of insects (2mks)

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29. State **two** types of immunity (2 mk)

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30. Give **three** features that make mammalian alveoli adapted to gaseous exchange (3 mks)

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