Name: ……………………………………………………………… Index no ……..…...................................

School: ……………………………………………………….....…. Candidate's sign ……………………....

Date: ………………………………………………………………

231/1
BIOLOGY
PAPER 1
JULY/AUGUST 2011
TIME: 2 HOURS

KISUMU WEST DISTRICT JOINT EVALUATION TEST

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

Biology
Paper 1

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided.*
- *Sign and write **date** of examination in the spaces provided above*
- *Answer **all** the questions in section **A** and **B***

For Examiner's Use Only:

QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
1- 30	80	

This paper consists of 8 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing

1.a) What is cross pollination? (1mk)

……

b) Name the spore producing structure of

(i) Mass plant. (1mk)

……

(ii) Fern plant. (1mk)

……

2. Name the material which forms.

(i) Hard exoskeleton of arthropods. (1mk)

……

(ii) Thick walls of the Xylem vessels. (1mk)

……

3 (a) Distinguish between transpiration and guttation. (2mks)

……

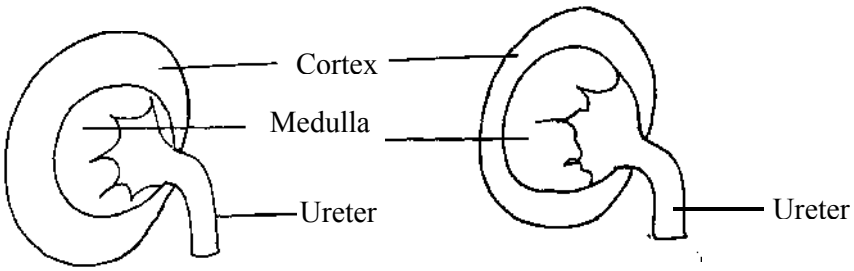
……

(b) What causes 'biological' wilting in plants. (1mk)

……

……

4. The diagrams below represent kidney of two different animals living in different ecological habitats. Study them and answer the questions which follow.



Kidnev of animal A **Kidnev of animal B**

(i)Which kidney represents an animal living in afresh water habitat? (1mk)

……

(ii) Give a reason for your answer in (i) above. (2mks)

……

……

5 (a) What are vestigial structures? (1mk)

……

(b) State **one** major importance of divergent evoluation to living organisms. (1mk)

……

……

6. Explain how high temperatures above optimum would affect the rate of enzyme activity. (2mks)

……

……

7. Give **two** functions of a cell membrane. (2mks)

……

……

8(a) Explain the term cell specialization. (1mk)

……

…… (b) State how each of the cells listed is below specialized to carry out its function;

(i) Palisade cell. (1mk)

…… (ii) A sperm cell. (1mk)

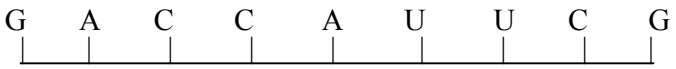
……

9. State **two** roles of green plants in a fish aquarium other than providing food for the fish. (2mks)

……

……

10.(a) The diagram below represents a section or portion of a certain nucleic acid.



With a reason, identify the type of nucleic acid whose portion is shown above. (2mks)

Nucleic acid:……

Reason.……

b) A certain type of gene mutation changed the word BRUSH TO BUS. Identify the type of gene mutation described above. (1mk)

……

11. Name the disease of the blood characterized by

(i) Abnormally large number of white blood cells. (1mk)

……

(ii) Cresent-shaped haemoglobin instead of the normal biconcave shape. (1mk)

……

12. Give a reason for each of the following biological phenomena:

(i) A mature plant cell does not lose its shape even after losing water maximally. (2mks)

……

……

(ii) Amoeba does not bust when placed in a solution which is hypotonic to its cytoplasmic contents. (2mks)

……

……

13 (a) Name **two** metalic ions which are involved in nerve impulse transmission. (2mks)

……

……

(b) State the function of each of the following structures in a mammalian ear. (2mks)

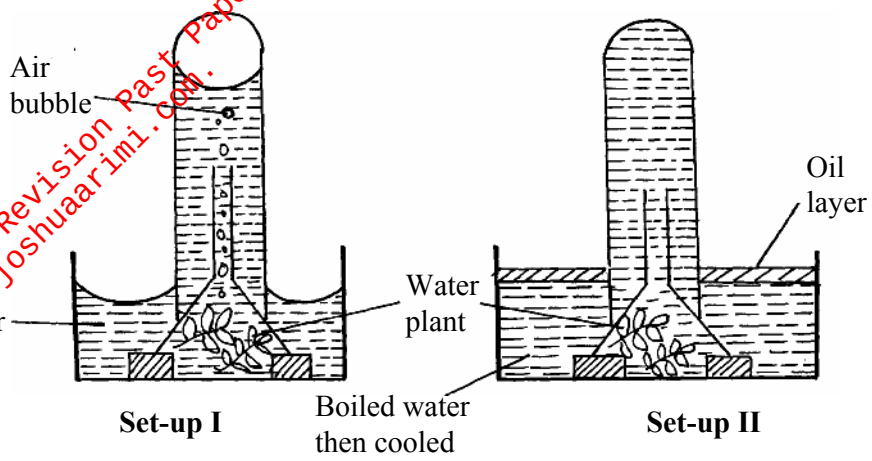
(i) Tyrupanic membrane.

……

(ii) Eustachian tube

……

14. Below are two set-ups of apparatus used by a group of students to investigate a certain physiological process. The apparatus were put in bright light for three hours, some air bubbles were observed to evolve in set-up I but not in set –up II



a) Explain why air bubbles were forming in set –up I (2mks)

……

……

b) Account for the observation obtained in set-up II of the experiment. (2mks)

……

……

15. Differentiate between primary and secondary growth in flowering plants. (2mks)

……

……

b)What is the importance of secondary growth? (1mk)

……

16. State **two** functions of the tongue during digestion in the mouth of man. (2mks)

……

……

17. Damage to the mammalian liver may lead to indigestion of fats. Explain this observation. (3mks)

……

……

……

18. (a) What is tropism? (1mk)

……

(b) Identify each of the types of the tropisms described below:-

(i) pollen tube growing towards the ovules. (1mk)

……

(ii) A bean seedling put horizontally on a wet cotton wool has its shoot curving upwards while its roots curve downwards. (1mk)

……

19. The table below shows the concentration of some ions in a pond water in he cell sap of an aquatic plant growing in a pond.

Ions	Concentration in pond water (ppm)	Concentration in the cell sap (ppm)
Sodium	500	30
Potassium	200	2000
Magnesium	15	10
Chloride	180	200

a) Name the process by which the following ions could have been taken up by these plants.
(i)Potassium ions. (1mk)

……

……

(ii) Sodium ions. (1mk)

……

……

b) Explain the role of oxygen in sodium –potassium pump mechanism across the membrane of a neuron. (2mks)

……

……

20 a) State the role of septum in the mammalian heart. (1mk)

……

……

(b) Give **two** advantages that a double circulation has over a single circulation. (2mks)

……

……

21. How does each of the following contribute to cooling of the body of a mammal:
(a) Sweating. (2mks)

……

……

(b) Vasodilation (2mks)

……

……

22. Name the carbohydrate that is
a) Found in abundance in the mammalian blood. (1mk)

……

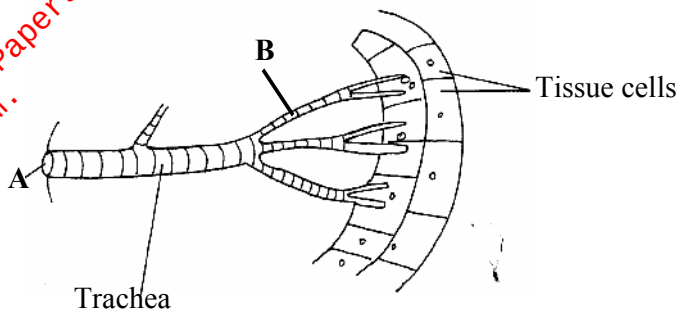
b) Stored in the mammalian liver. (1mk)

……

c) Stored in plants' seeds. (1mk)

……

23. The diagram below shows part of the tracheal system of a cockroach. Study it and use it to answer the questions that follow;



a) Name the parts labelled **A** and **B.** (2mks)

A ……

B……

b) (i) State the role played by the liquid found at the end of the structure labelled **B** (1mk)

……

……

(ii) State the biological importance of rings found on the wall of the trachea. (1mk)

……

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24.(a) State **two** advantages of the foetus being surrounded by amniotic fluid during its development. (2mks)

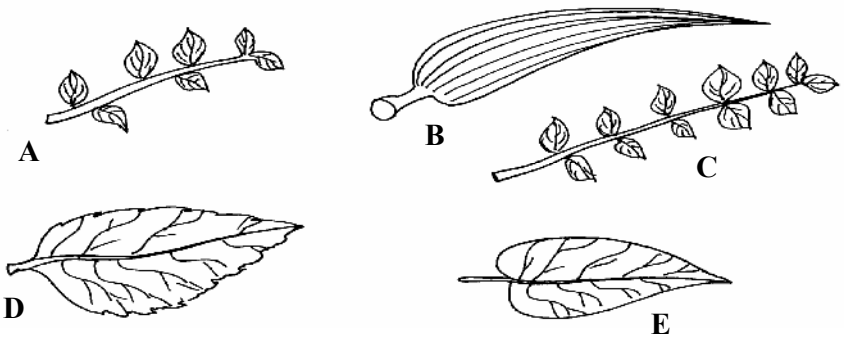
……

(b) Distinguish between dioecious and monoecious plants. (2mks)

……

……

25 (a) The diagrams below represents leaves obtained from different plants species.



Using the following characteristics construct a dichotomous key to identify the leaves. (3mks)

- Leaf venation
- Arrangement of leaflets
- Leaf type
- Leaf margin

You must begin the step I with leaf type as shown below:

1 (a) simple leaf.……go to 2

(b) compound leaf.……go to 4

……

……

……

……

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……

……

b) Name the class of phylum arthropoda whose members have two body parts and two pairs of legs per segment. (1mk)

……

26. During an ecological study. Students collected the following organisms.
- Nile perch
- Mosquito larvae
- Algae
- Tilapia

a) Draw a possible food chain that exists among these organisms. (1mk)

b) Identify the trophic level occupied by the following organisms.

i)Nile perch. (1mk)

……

ii)Algae. (1mk)

……

27. Explain how sunken stomata assist in reducing the rate of transpiration. (2mks)

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……

28. State **two** features of nerves which increase the speed of nerve impulse transmission along them. (2mks)

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29 (a) Define the term Ecydysis. (1mk)

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(b) What is the importance of Ecydysis in Arthropods. (1mk)

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30 A student viewed and drew a plant cell of a diameter 4mm using a light microscope whose eyepiece lens was marked X1 and objective lens marked X5. How many cells were linearly arranged along the microscope's field of view whose diameter was 8mm. (show your work.) (4mks)

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