Name: …… Index no ……..….....

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

Date: ……

231/1
BIOLOGY
THEORY
PAPER 1
MARCH/APRIL 2011
TIME: 2 HOURS

BUTERE EAST ZONE JOINT EXAMINATION

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

Biology
Paper1

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:

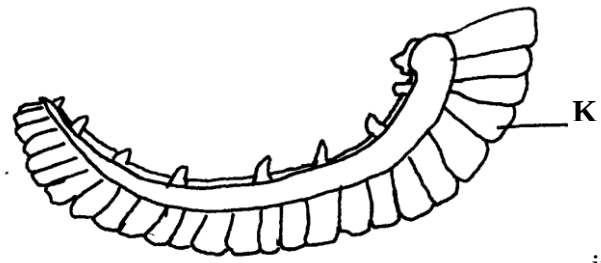
QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
1-28	80	

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

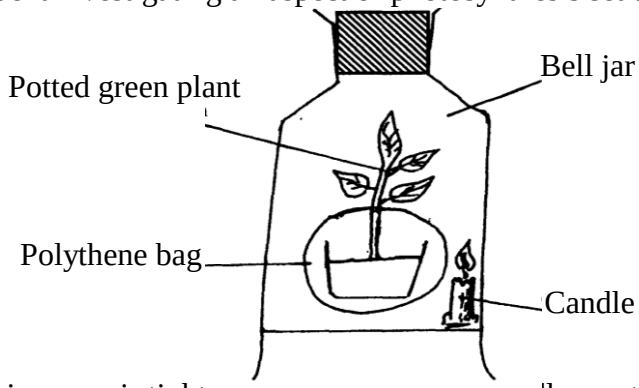
1. The table below shows the concentration of some ions in pond water and in the cell sap an aquatic plant growing in the pond.

Ions	Concentration in pond Water (parts per million)	Concentration in cell sap (parts per million)
Sodium	50	30
Potassium	2	150
Calcium	1.5	1
Chloride	180	200

a) Name the process by which potassium ions could have been taken by this plant. (1mk)
b) State **one** condition necessary for the process named in (a) above to take place. (1mk)
2. a) A student was viewing a slide preparation of a cheek cell under high power of a microscope. The features of the cell were blurred. Name the part of the microscope that the student would use to obtain a sharper outline of the features. (1mk)
b) Give the formula used to calculate magnification in light microscope. (1mk)
3. The diagram below represents an organ from a bony fish. Study the diagram and answer the questions that follow



a) Name the organ (1mk)
b) State **three** ways in which park K is adapted to its function. (3mks)
4. A student investigating an aspect of photosynthesis set up an experiment as shown in the diagram below.



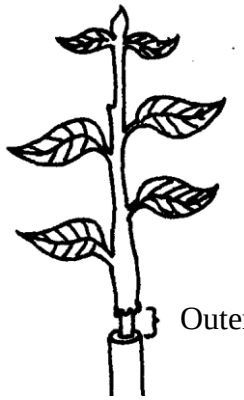
The bell jar was air tight. After some time the candle went off. The student then placed the set-up in direct sunlight for 5 hours.
a) Give a reason why the burning candle was inclined (1mk)
b) Suggest a reason why it was necessary to cover the pot with polythene bag. (1mk)
5. Explain how sunken stomata lower the rate of transpiration. (2mks)
6. State **three** functions of mammalian blood other than transport of substances. (3mks)
7. State **three** ways in which the ileum is structurally adapted to the absorption of digested food. (3mks)
8. State how mitochondria is adapted to its function. (2mks)
9. State how xylem is adapted to its function. (3mks)
10. State functional differences between arteries and veins. (2mks)

Arteries	**Veins**

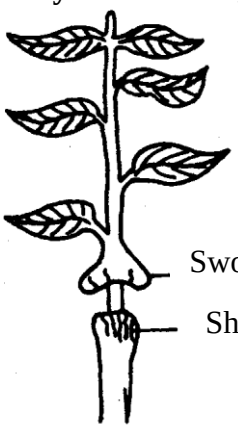
11. What is oxygen debt? (2mks)

12. What is the importance of sebaceous glands in the human skin? (2mks)
13. Name the hormones responsible for the regulation of blood sugar level. (2mks)
14. The figures below show an experiment that was carried out by form two students of Mitini Secondary School.

A Day 1 of experiment



B 30 days after setting the experiment



a) What was the aim of this experiment? (1mk)
b) Explain the observation on the stem after 30 days. (1mk)
c) Suggest what may happen to the plant after a long time. (2mks)
15. List the changes that take place during inhalation in the breathing cycle of a mammal in the following. (4mks)

a) Rib cage thoratic cavity.
b) Diaphragm
c) External intercostals muscles.
d) Internal intercostals muscles.

16. Distinguish between continuous and discontinuous variation (1mk)

Continuous	**Discontinuous**

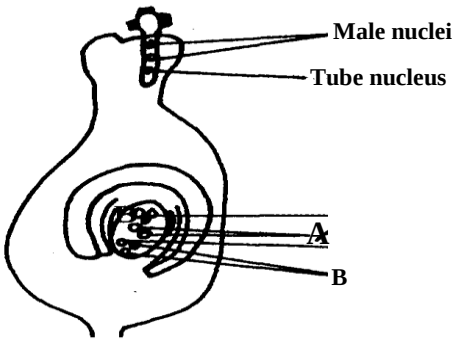
ii) Complete and incomplete metamorphosis

Complete	**Incomplete**

b) The following organisms were found in a certain habitat water snail, Protozoa, Kingfisher mosquito larvae, phytoplankton, fish and waterweeds.
In the table below place the organisms in their respective trophic levels. (3mks)

Trophic level	**Organisms**
Producers	
Primary consumers	
Secondary consumers	

18. State **two** processes used by plants for excretion. (2mks)
19. State **two** internal factors in seeds that cause dormancy. (2mks)
20. The figure below shows some stage of development in the life of a plant.



a) State the fate of **A** and **B** after fertilization . (2mks)

A……

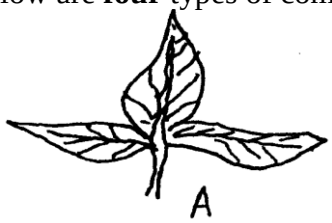
B……

b) What name is given to this type of fertilization? (1mk)

21. Define the following terms:

i) Cephalothorax. ii) Eukaryotes

22. Below are **four** types of compound leaves.



Identify the **four** types of compound leaves. (4mks)

A……

B ……

C ……

D……

23. To estimate the population of grasshoppers in Kogelo village 400 grasshoppers were caught, which were marked and released. After 2 hours 200 grasshoppers were caught; out, of which 80 had been marked.

a) Suggest the possible instrument that may have been used for capturing the grasshoppers. (1mk)

b) Estimate the population size of the grasshoppers in the village. (2mks)

24. Explain how the following assist in adapting xerophytes to their habitat. (2mks)

i) Folded leaves.

ii) Leaves modified to spines.

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

26. Name the causative agent of cholera. (1mk)

27. What is double fertilization in flowering plants. (2mks)

28. a) During implantation in a mammal, the blastocyst differentiates into 3 layers, which are: (3mks)

b) Which of the layers named in (a) above normally differentiates to form the placenta. (1mk)

29. State **four** ways of breaking dormancy in a seed. (4mks)

30. a) Name the hormone responsible for metamorphosis during larval stage of an insect. (1mk)

b) State the source of the hormone. (1mk)

31. State structural difference between sclerenchyma and colenchyma tissues. (2mks)

Sclerenchyma	**Colenchyma**