Name……. **Adm No**……..…

231/1
BIOLOGY
THEORY
Paper 1
March/April 2013
2 Hours

MOKASA
JOINT EVALUATION TEST - 2013
Kenya Certificate of Secondary Education (K.C.S.E)

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BIOLOGY
THEORY
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INSTRUCTIONS TO CANDIDATES

- Write your name and Index Number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **ALL** questions in the spaces provided.

For Examiners use only.

Question	Maximum Score	Candidates Score
1 – 29	80	

This paper consists of 7 Printed pages.
Candidates should check the question paper to ensure that all the Papers are printed as indicated and no questions are missing

1. The table below shows the concentration of some ions in pond water and in the cell sap of 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)

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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)

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b) Give the formula used to calculate magnification in light microscope. (1mk)

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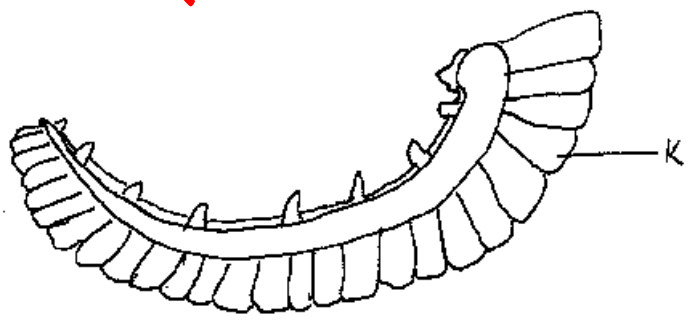
3. The diagram below represents an organ from a bony fish. Study the diagram and answer the questions that follow.



a) Name the organ. (1mk)

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b) State **three** ways in which part K is adapted to its function. (3mks)

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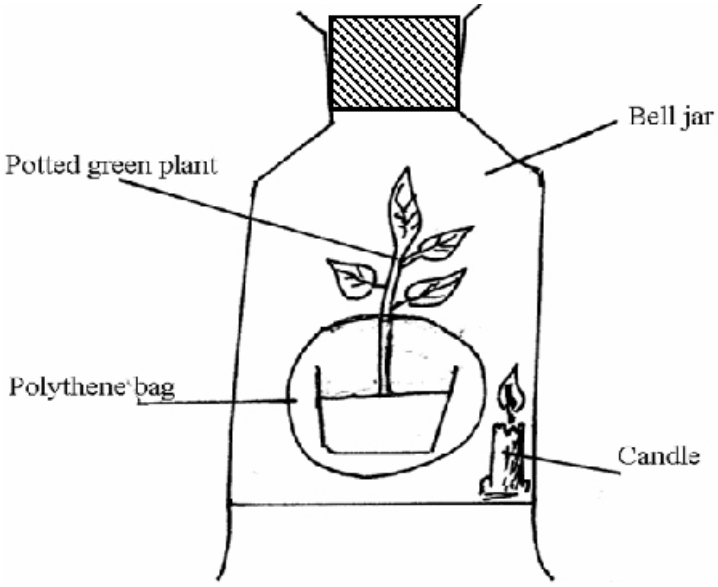
4. A student investigating an aspect of photosynthesis set up an experiment as shown in the diagram below.



The bell jar was made 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)

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b) Suggest a reason why it was necessary to cover the pot with polythene bag. (1mk)

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5. Explain how sunken stomata lower the rate of transpiration. (2mks)

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6. State **three** functions of mammalian blood other than transport of substances. (3mks)

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7. State **three** ways in which the ileum is structurally adapted to the absorption of digested food. (3mks)

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8. State how a mitochondrion is adapted to its function. (2mks)

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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)

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12. What is the importance of sebaceous glands in the human skin? (2mks)

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13. Name the hormones responsible for the regulation of blood sugar level. (2mks)

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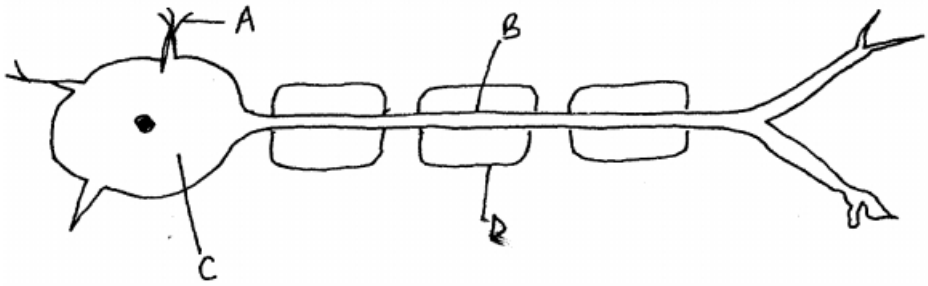
14.



a) Name the parts labeled A and C. (2mks)

A……

C……

b) State the functions of part labeled B and D. (2mks)

B ……

……

D……

……

15. In guinea pig, there are two alleles for hair colour, black and white. In a breeding experiment, all the F1 phenotypes produced from a cross between pure-breeding black-haired and pure-breeding white haired parent had black hair.

(Use letter B to represent gene for hair colour)

a) What is an allele (1mk)

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……

b) Work out the phenotypic ratio of the F2 generation. (4mks)

16. Name parts of brain which control:

a) Involuntary activities eg. Breathing (1mk)

……

b) Control voluntary body movements. (1mk)

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17. Define the following terms: (2mks)

i) Cephalothorax

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ii) Eukaryotes

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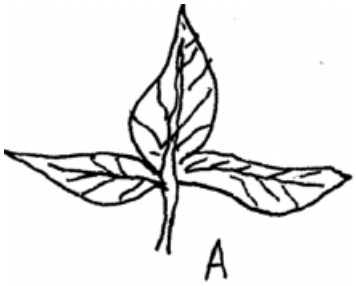
18. Below are four types of compound leaves



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

A ……

B ……..

C ……..

D……

19. To estimate the population of grasshoppers in Kogelo village 400 grasshoppers were caught, which were marked and released. After 24 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)

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

i) Folded leaves

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ii) Leaves modified to spines

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21. State the changes that occur in a nerve axon to produce an action potential. (3mks)

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

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

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

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

i) ……

ii) ……

iii) ……

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

……

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

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

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b) State the source of the hormone named in (a) above (1mk)

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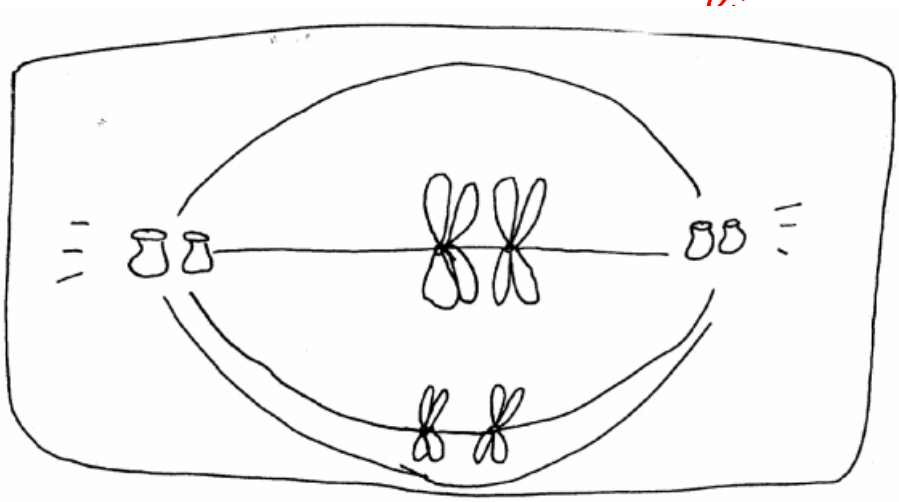
28. Below is a stage of cell division.



a) Identify the stage. (1mk)

……

b) Give reasons for your answer in (a) above. (2mks)

……

……

29. Identify the mode of feeding of the

(a) Animal whose dental formula is given below

$I\ ^{0}/_{3}\ C^{0}/_{1}\ Pm^{3}/_{3}\ M^{3}/_{3} = 30$ (1mrk)

……

……

(b) Give reasons for your answer in a) (i) above. (2mrk)

……

……

……

30. A rainbow lizard was seen basking on a rock.

(a) Name two ways by which it gained heat by these behavioural process. (2mrks)

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(b) State the role of scales in reptiles. (1mrk)

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