Name ..... Index No. .....

231/1
BIOLOGY
Paper 1
(Theory)
July/August 2016
Time: 2 Hours

Candidate's Signature .....

Date .....

'ANDARUA SOUTH FORM FOUR JOINT EVALUATION

Kenya Certificate of Secondary Education

BIOLOGY
Paper 1
July/August 2016
Time: 2 Hours

INSTRUCTIONS TO CANDIDATES

* Write your name and index number in the spaces provided above.
* Sign and write the date of examination in the spaces provided above.
* Answer **all** the questions in this question paper.
* All answers must be written in the spaces provided.
* Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
* Candidates should answer the question in English.

For Examiner's Use Only

Question	Maximum score	Candidate's score
1 - 22	80	

Distinguish between taxonomy and taxon. (2 marks)

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Name the organelle that performs the following functions in a cell.

a) Protein synthesis (1 mark)

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b) Transport of cell secretions (1 mark)

Explain why plant cells do not burst when immersed in distilled water. (1 marks)

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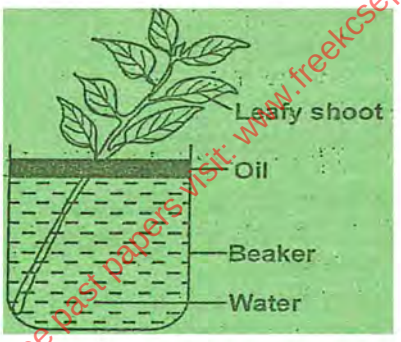
An experiment shown below was a set up to investigate a certain physiological process in plants.



i) What process was being investigated ? (1 mark)

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) What effect will the following have on the observation made in (a) above ?

Fanning the shoot (1 mark)

) Removing all the leaves from the shoot. (1 mark)

Placing the set up in the dark. (1 mark)

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State the role of light in the process of photosynthesis. (1 mark)

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b) Name one product of dark reaction in photosynthesis. (1 mark)

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c) State two mineral elements that are necessary in synthesis of chlorophyll. (2 marks)

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6. 50 black mice and 50 white mice were released into an area inhibited by a pair of owls. After four months 38 of the black mice and 9 of the white mice were recaptured.
a) How would this observation be explained. (2 marks)

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b) Name the theory of evolution that support the results in (a) above. (1 mark)

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c) Name two vestigial structures in man. (2 marks)

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7. a) In an investigation, the pancreatic duct of a mammal was blocked, it was found that blood sugar regulation remains normal while food digestion was impaired. Explain these observations. (3 marks)

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b) State two functions of bile juice in digestion. (2 marks)

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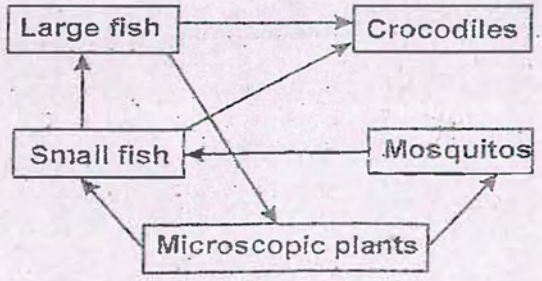
8. Use the food web below to answer the questions that follows.



a) Construct a food chain ending with crocodile as a quaternary consumer. (1 mark)

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b) Name the organisms in the food web that has only one predator. (1 mark)

.....

c) Name the organism with
i) the highest biomass (1 mark)

.....

ii) the lowest biomass (1 mark)

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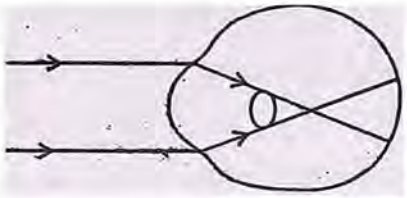
9. The diagram below shows the position of an image formed in a defective eye.



a) Name the defect. (1 mark)

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b) Explain how the defect named in (a) above can be corrected. (2 marks)

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10. One molecule of lipids gives more energy than one molecule of glucose when respired aerobically but is not always used as a respiratory substrate.
a) Give two reasons for this. (2 marks)

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b) Name two disaccharides which are reducing sugars. (2 marks)

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11. An experiment was carried out to investigate the rate of reaction below.

Sucrose ⟶ fructose + glucose

For the product fructose and glucose to form it was found that substance **K** was to be added and temperature maintained at 37°C. When another substance **L** was added, the reaction was slowed down and eventually stopped.

a) Suggest the identity of substance **K** and **L**. (2 marks)

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b) Other than temperature, state three ways in which the rate of reaction could be increased. (3 marks)

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12. What is the role of the following to a germinating seed ?

i) Oxygen (1 mark)

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ii) Cotyledons (1 mark)

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iii) Water (2 marks)

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13. **a)** Name the bacteria found in the root nodules of leguminous plants. (1 mark)

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b) State the association of the bacteria named in (a) above with leguminous plants. (1 mark)

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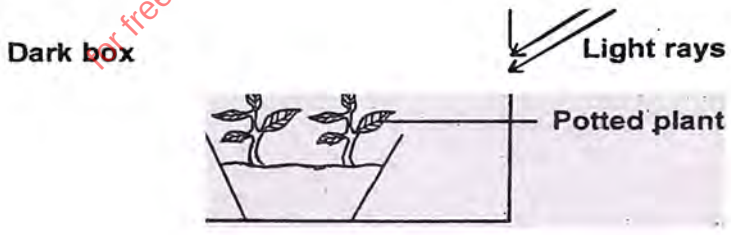
14. In an experiment a young potted seedling were placed in a dark box with unilateral light source as shown below.



a) What was the aim of the experiment ? (1 mark)

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b) State the observation made on the seedlings after 3 days. (1 mark)

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15. The diagram below represent a mammalian bone.

a) Name the bone. (1 mark)

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b) i) Which bone articulate with the bone shown in the diagram at the notch ? (1mark)

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ii) Name the type of joint formed when the bone in b(i) articulate. (1 mark)

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16. a) The action of ptyalin stops at the stomach. Explain. (2 marks)

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b) State a factor that denatures enzymes. (1 mark)

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c) Name the features that increase surface area of small intestines. (2 marks)

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17. Give reasons for each of the following :

a) Constant body temperature maintained in mammals. (1 mark)

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b) Effects of low blood sugar in the body. (2 marks)

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a) People can die when they inhale gases from burning charcoal in poorly ventilated rooms. What compound is formed in the human body that lead to such death ? (1 mark)

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b) Write the differences between aerobic respiration and photosynthesis in plants. (2 marks)

Aerobic respiration	Photosynthesis

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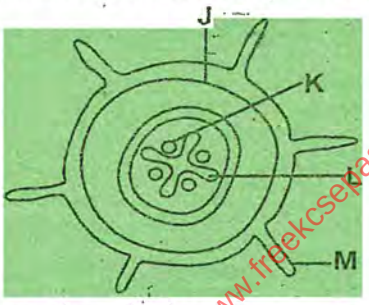
The diagram below represents a transverse section of a plant organ.



) From which plant organ was the section obtained ? (1 mark)

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

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Name the parts labelled J, K and L. (3 marks)

J .....

K .....

L .....

State two functions of parts labelled M. (1 mark)

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plain the following terms as used in evolution.
Homologous structures (2 marks)

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b) Analogous structures (2 marks)

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21. a) Name two supporting tissues in plants. (2 marks)

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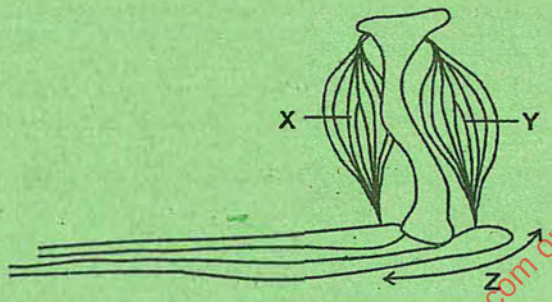
b) Study the diagram below and answer the questions that follows.



i) Identify the muscle represented by X and Y. (2 marks)

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ii) Describe how muscle X and Y cause straightening of joint Z. (2 marks)

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c) Name joint Z. (1 mark)

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22. State two roles of adrenaline in man. (2 marks)

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