

NAME ..... INDEX NUMBER .....

SIGNATURE .....

DATE .....

231/1

**BIOLOGY**

PAPER 1

**TIME: 2 HRS**

JULY/AUGUST 2016

## **WESTLANDS SUB-COUNTY JOINT EXAMINATION**

KENYA CERTIFICATE OF SECONDARY EDUCATION (K.C.S.E)

**BIOLOGY**

Paper 1

(Theory)

July/August 2016

**Time: 2 hours**

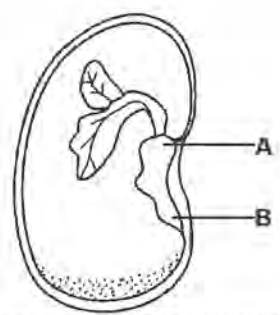
### **INSTRUCTIONS TO CANDIDATES**

- a) Write your name, index number and signature in the spaces provided above.
- b) There are eight (8) printed pages. Ensure all pages are printed.
- c) Write the date of the examination in the spaces provided.
- d) Answer all the questions in the spaces provided.
- e) Additional papers must not be inserted.

### **FOR EXAMINER'S USE ONLY**

<b>Question</b>	<b>Maximum Score</b>	<b>Candidates Score</b>
1-23	80	

1. a) How is the fovea centralis adapted to its function? (1 mark)
- .....
- b) A person was not able to see near objects clearly but could view far objects clearly. State the eye defect the person had. (1 mark)
- .....
- c) How can the defect be corrected? (1 mark)
- .....
2. The diagram below shows the internal structure of a bean seed. Study it.



- a) Name part A ..... (1 mark)
- b) Why is it important that part B develops first during germination? (2 marks)
- .....
- .....
3. When internal pressure reduces in the following tubular structure; xylem, trachea of insects and bronchus in human do not collapse. Identify what prevents them from collapsing;
- a) Xylem vessels (1 mark)
- .....
- b) Bronchi in human (1 mark)
- .....
- c) Trachea system of insects (1 mark)
- .....
4. a) State the function of sepals. (2 marks)
- .....
- b) Explain how double fertilization occurs in flowering plants. (2 marks)
- .....
- .....
5. How are leaves of submerged planting adapted for photosynthesis? (2 marks)
- .....
- .....

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6. Identify the stages in cell division in which the following events take place.

a) Chromosomes are found at both ends of the spindle fibres.

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b) Synapsis

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c) What is the importance of crossing over ? (1 mark)

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7. State the functions of the following cell organelles;

a) Nucleolus

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b) Lysosome

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8. State two roles of green plants in a fish aquarium other than food for fish. (2 marks)

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9. Plants do not have ability to move from one place to another. How do they compensate for this in order to carry out the following processes.

a) Reproduction (2 marks)

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b) Nutrition (2 marks)

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10. During an accident, a victim suffered injuries in the head. After the accident he lost his memory and was passing excessive amount of dilute urine. Suggest the part of the brain which was damaged.

a) Memory

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b) Passing large amount of dilute urine

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11. There are five kingdoms into which organisms are classified ; namely, Animalia, Plantae, Fungi, Protocista and Monera.  
 State three characteristics of kingdom Monera that are not found in the other kingdom. (3 marks)

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12. a) State two features of the phloem sieve tubes. (2 marks)

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b) State the reasons for the following adaptations of the xylem vessels.  
 i) Lack of cross walls (1 mark)

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ii) Narrow lumen (1 mark)

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13. a) Name the most suitable biological equipment for collecting the following organisms;

i) moths from a coffee farm ..... (1 mark)

ii) ants from a tree trunk ..... (1 mark)

b) State the term that refers to the scientific system of assigning two names to an organism. (1 mark)

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14. The diagram below show an experiment performed on oat coleoptile. Coleoptile was left intact, coleoptile 2 had its tip cut off and coleoptile 3 had its tip covered with aluminium foil cap.

a) State the type of response being investigated. (1 mark)

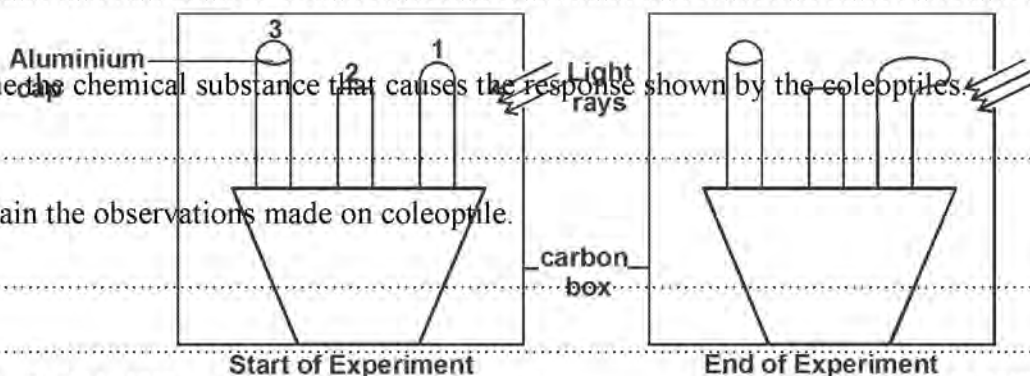
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b) Name the chemical substance that causes the response shown by the coleoptiles. (1 mark)

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c) Explain the observations made on coleoptile. (2 marks)

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15. Give three reasons why biological control method is preferred to chemical control method in the control of pests and parasites. (3 marks)

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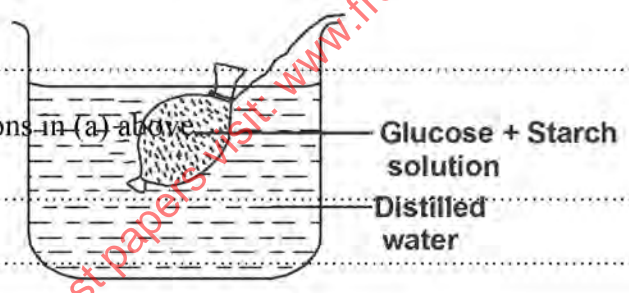
16. Students set up an experiment as shown below.

The set up was left to stand for 40 minutes after which starch test and reducing sugar test was carried out on the distilled water.

a) State the observation made by the students.  
Starch test (1 mark)

.....  
Reducing sugar test (1 mark)

b) Explain the observations in (a) above. (3 marks)



17. In an investigation, the pancreatic duct of a rat was blocked by tying it with a string. Explain how this affected the following processes.  
a) Digestion of food (2 marks)

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b) Regulation of blood glucose level. (2 marks)

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18. a) Distinguish between homozygote and heterozygote. (2 marks)

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b) Ability to roll the tongue is dominant to rolling of tongue. If a woman who roll her tongue marries a man who is a tongue roller but is the son of a non-roller father. What would be the chances of them producing a non-roller child. (3 marks)

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19. The diagram below shows one of the bones of the hind limb.

a) Identify the bone ..... (1 mark)

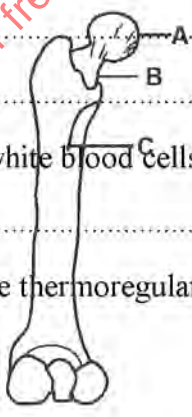
b) Name the parts labelled ..... (2 marks)

A ..... B.....

C.....

20. a) State two ways in which white blood cells protect the body against disease-causing micro-organisms. (2 marks)

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b) Name a source of white blood cells in the human body. (1 mark)

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21. Study the graphs of the thermoregulation in two different organisms.

a) State the type of organisms represented by A and B. (2 marks)

A ..... B .....

b) State two structures that insulate the body of organism B. (2 marks)

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.....

22. Study the base sequence below.

C - A - T - G - C - G - T

a) i) Identify the nucleic acid represented by the strand. (1 mark)

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

b) Write a complementary strand that would form from the strand. (1 mark)

23. State four adaptations of the red blood cells to their functions. (2 marks)

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