Name_____ Adm. No_____ Class_____

Index No._____ Candidates Signature_____ Date_____

231/3
BIOLOGY
PAPER 3
JULY 2016
TIME: 1¾ HOURS

Kenya Certificate of Secondary Education
Mock Examinations
Biology
Paper 3
1¾ Hours.

Instructions to Candidates

a) Write your name, index and Adm. Number and class in the spaces provided.
b) Sign and write the date of examination in the space provided.
c) Answer **ALL** questions in the spaces provided.
d) You are required to spend the first **15 minutes** of the 1 ¾ hours allowed for this paper reading the whole paper before commencing your work.
e) This paper consists of **8 printed** papers.

For Examiners Use Only

Question	Maximum score	Candidates score
1	13	
2	16	
3	11	
Total	**40**	

This paper consists of **8 printed pages**. Candidates should check the question paper to ascertain that no pages are printed and that no question is missing.

1. In this question you are going to investigate the effect of placing potato pieces in solutions if different concentrations of sucrose.
You are provided with part of a fresh Irish potato, *Solanumtuberosum*, P1.
-Carefully cut three pieces from P1, each one as shown in the figure below.

-Place the pieces of potato into the container labelled distilled water.
-Make sure that the potato is completely covered by the water and that the pieces of potato are not stuck together.Leave the experiment for 30minutes. During this time,complete (a)(i), (a)(ii), (c) and (d) and then start Question 2 if necessary
a) You will be measuring the length of the potato pieces that have been in the distilled water after the 30minutes has passed.
i) Suggest what you would expect to happen to the length of these potato pieces.(1mk)

(ii) In the spaces below, draw a table in which you can record the length of each potato piece and the mean length after 30 minutes in distilled water.(3 mks)

After 30 minutes.
- Carefully remove the potato pieces from the container.
- Dry gently with paper towel.

(iii) Measure the length of each piece and record these values in your table.(1 mk)

(iv) Calculate the mean length of the potato pieces after soaking in distilled water and enter this information in your table. (1 mk)

(v) The potato pieces soaked in distilled water may or may not have changed in length. Suggest an explanation for the results you have obtained.

(b) You are provided with a piece of potato, P2 that has been soaked in a concentrated sucrose solution for 12 hours.

(i) In the table below, state two differences between the feel of the potato pieces that have been soaked in distilled water and P2.(2mks).

Potato chips soaked in distilled water	P2

(iii) Explain the differences you have recorded in the table above.(3 mks)

2. (a) (i) PHOTOGRAPH 1 below shows a ground-living beetle. Make a largedrawing of the whole animal as an insect.(5mks)

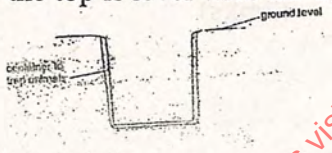
(ii) Measure the length of the insect in the figure above and the length of your drawing. Calculate the magnification of your drawing. (3mks)

Length of insect in the figure

Length of drawing

Magnification

(b) One method of estimating the population of insects, such as the ground-living beetle, is to use a pit-fall trap. A suitable container, such as an empty food tin, is set into the ground so the top is level with the surface of the soil, as shown in the figure.



Suggest and explain briefly two precautions that you might take when investigating populations of insects, such as ground-living beetles, using pit-falls traps.(4 mks)

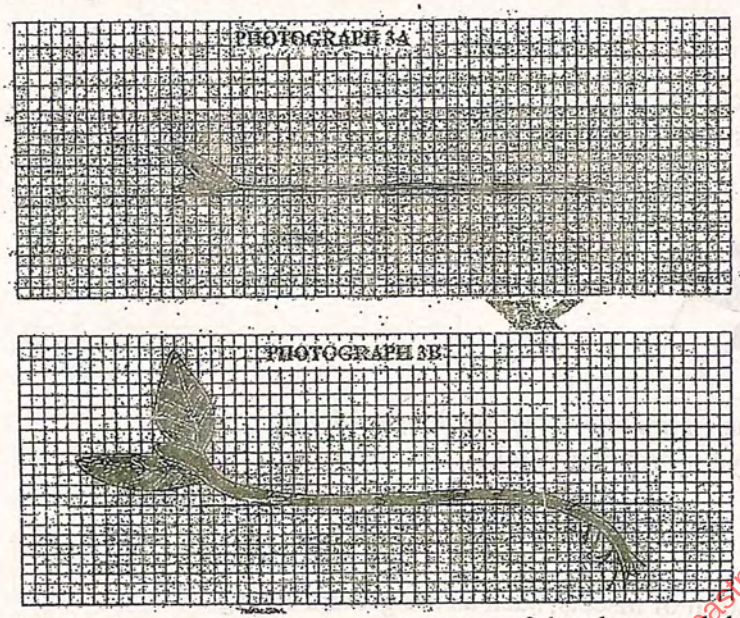
c) PHOTOGRAPH 2below shows another organism found in the same phylum as the insect above.

Photograph 2

i) Suggest the class to which the animal in PHOTOGRAPH2 belongs.(1mk)

ii) Describe three visible differences in the structure of the insect in PHOTOGRAPH 1 from the organismin PHOTOGRAPGH 2which distinguishes them into separate classes. (3mks)

3. PHOTOGRAPH 3A below shows a young bean seedling which had been grown in the dark and then placedhorizontally on the surface of some damp soil.
The seedling was kept well watered and exposed to the light for 2 days.
PHOTOGRAPH3B shows the seedling after 2 days.



a) Describe the changes in appearance of the shoot and the root of the seedling after 2 days

i) Shoot (2mks)

ii) Root

b) i) Give the name of the hormone responsible for the changes that occurred in the shoot. (1mk)

ii) Describe the processes involved in the changes of directional growth of the shoot of the seedling (6mks)

c) State one survival value of the above response. (1mk)