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Name ..... Index number ..... / .....

231/3  
BIOLOGY  
Paper 3  
(PRACTICAL)  
Oct.IN 0v. 2012  
1¾ hours

Candidate's Signature .....

Date..... / .....



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**  
**Kenya Certificate of Secondary Education**  
**BIOLOGY**  
**Paper 3**  
**(PRACTICAL)**  
1¼ hours

**231/3 - Biology Paper 3 (Practical)**  
Tuesday 8.00 am - 9.45 am  
23/10/2012 (1st Session)

**Instructions to candidates**

- (a) Write your name and index number in the spaces provided above.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) Answer **all** the questions in the spaces provided.
- (d) You are required to spend the first 15 minutes of the 1¼ hours allowed for this paper reading the whole paper carefully before commencing your work.
- (e) Additional pages must **not** be inserted.
- (f) **This paper consists of 7 printed pages.**
- (g) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing,**

For Examiner's use only

Question	Maximum Score	Candidate's Score
1	12	
2	14	
3	14	
<b>Total Score</b>	<b>40</b>	



iiii

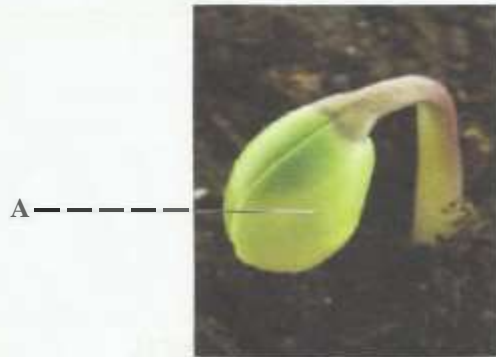
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Kenya Certificate of Secondary Education, 2012  
BIOLOGY  
Paper 3

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Turn over

1 Below is a photograph showing a seedling during germination.



- (a) With a reason, name the type of germination shown in the photograph.
  - (i) Type of germination ..... (1 mark)
  - (ii) Reason .....  
..... (2 marks)

(b) State **three** functions of the part labelled **A** in the germination of a seedling up to the appearance of the first foliage leaves. (3 marks)

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(c) Account for the change in shape the seedling will undergo to straighten. (6 marks)

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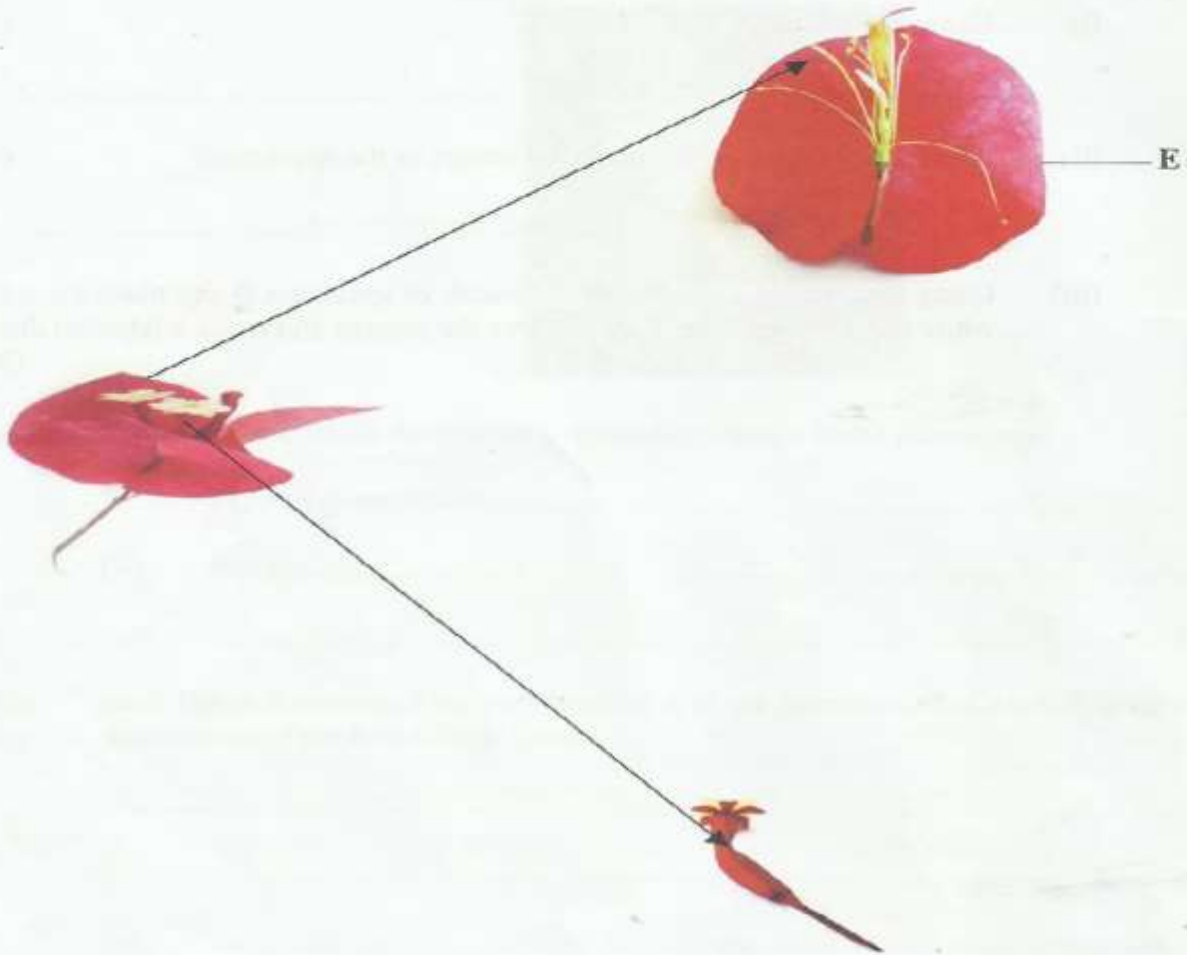
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- 2 (a) You are provided with a specimen labelled **D** which has been grown on a substrate.
- (i) Name the specimen (1 mark)
- .....
- (ii) What type of asexual reproduction occurs in the specimen? (1 mark)
- .....
- (iii) Using a mounting pin, pick a few strands of specimen **D** and place them on the white tile. Using a hand lens, observe the strands and make a labelled drawing. (3 marks)

(b) The photograph below shows different parts of a flower.



(i) Name the class of the plant from which the photograph was taken. (1 mark)

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(ii) Using observable features on the photograph, give **three** reasons for your answer in (b) (i) above. (3 marks)

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(iii) Name the agent of pollination for the flower in the photograph. (1 mark)

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(iv) State **three** observations on the photograph that support the answer in (b) (iii) above. (3 marks)

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(v) Name the part labelled E on the photograph. (1 mark)

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**3** You are provided with a potato, a 10 ml measuring cylinder, dilute hydrogen peroxide solution and substances **F** (pH 4), **G** (pH 7) and **H** (pH 9). Cut the potato and remove a piece measuring 1 cm<sup>3</sup> from it.

Cut the 1 cm<sup>3</sup> piece into tiny pieces and crush (macerate) them on a clean white tile using a glass rod.

Divide the macerated potato into **three** equal portions for use in the procedure that follows:

- I. Put 2 cm<sup>3</sup> of substance **F** (pH 4) into the 10 ml measuring cylinder.  
Add **one** portion of the macerated potato into the measuring cylinder.  
Read and record the volume of the mixture in the table provided below.  
Add one drop of washing-up solution.  
Add **1 cm<sup>3</sup>** of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes**, read the mark to which the foam rises. Record the reading in the table provided.  
Clean and rinse the measuring cylinder with distilled water.
- II. Put 2 cm<sup>3</sup> of substance **G** (pH 7) into the measuring cylinder.  
Add the **second** portion of the macerated potato.  
Read and record the volume of the mixture in the table.  
Add one drop of washing-up solution.  
Add **1 cm<sup>3</sup>** of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes**, read the mark to which the foam rises. Record the reading in the table.  
Clean and rinse the measuring cylinder with distilled water.

- III. Put 2 cm<sup>3</sup> of substance **H** (pH 9) into the measuring cylinder.  
 Add the **third** portion of the macerated potato.  
 Read and record the volume of the mixture in the table.  
 Add one drop of washing-up solution.  
 Add 1 cm<sup>3</sup> of dilute hydrogen peroxide solution to the mixture and immediately start a stop clock or watch. At the end of **two minutes**, read the mark to which the foam rises.  
 Record the reading in the table.

	F (pH 4)	G(pH 7)	H (pH 9)
<b>Volume of solution + portion of potato</b>			
<b>Volume of solution + portion of potato + foam</b>			
<b>Volume of foam</b>			

(9 marks)

- (a) Using the data obtained in the table, calculate the volume of the foam produced in each of the pH 4, pH 7, and pH 9 substances. Record the volumes in the table.

(b) Account for

- (i) the observation made when hydrogen peroxide was added to the potato mixture (3 marks)

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- (ii) the difference in the volume of foam produced in pH 4 and pH 9 substances. (2 marks)

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**THIS IS THE LAST PRINTED PAGE.**

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