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Name Index Number /

231/3
BIOLOGY
Paper 3
(PRACTICAL)
Oct./Nov. 2012
1 $\frac{3}{4}$ hours



Candidate's Signature

Date.....

THE KENYA NATIONAL EXAMINATIONS COUNCIL

Kenya Certificate of Secondary Education

BIOLOGY
Paper 3
(PRACTICAL)
1 $\frac{3}{4}$ 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 1 $\frac{3}{4}$ 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	
Total Score	40	



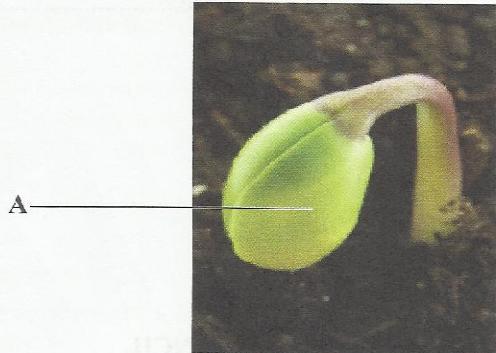
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Kenya Certificate of Secondary Education, 2012

BIOLOGY

Paper 3

- 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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- 2 (a) You are provided with a specimen labelled D which has been grown on a substrate.

- (i) Name the specimen (1 mark)

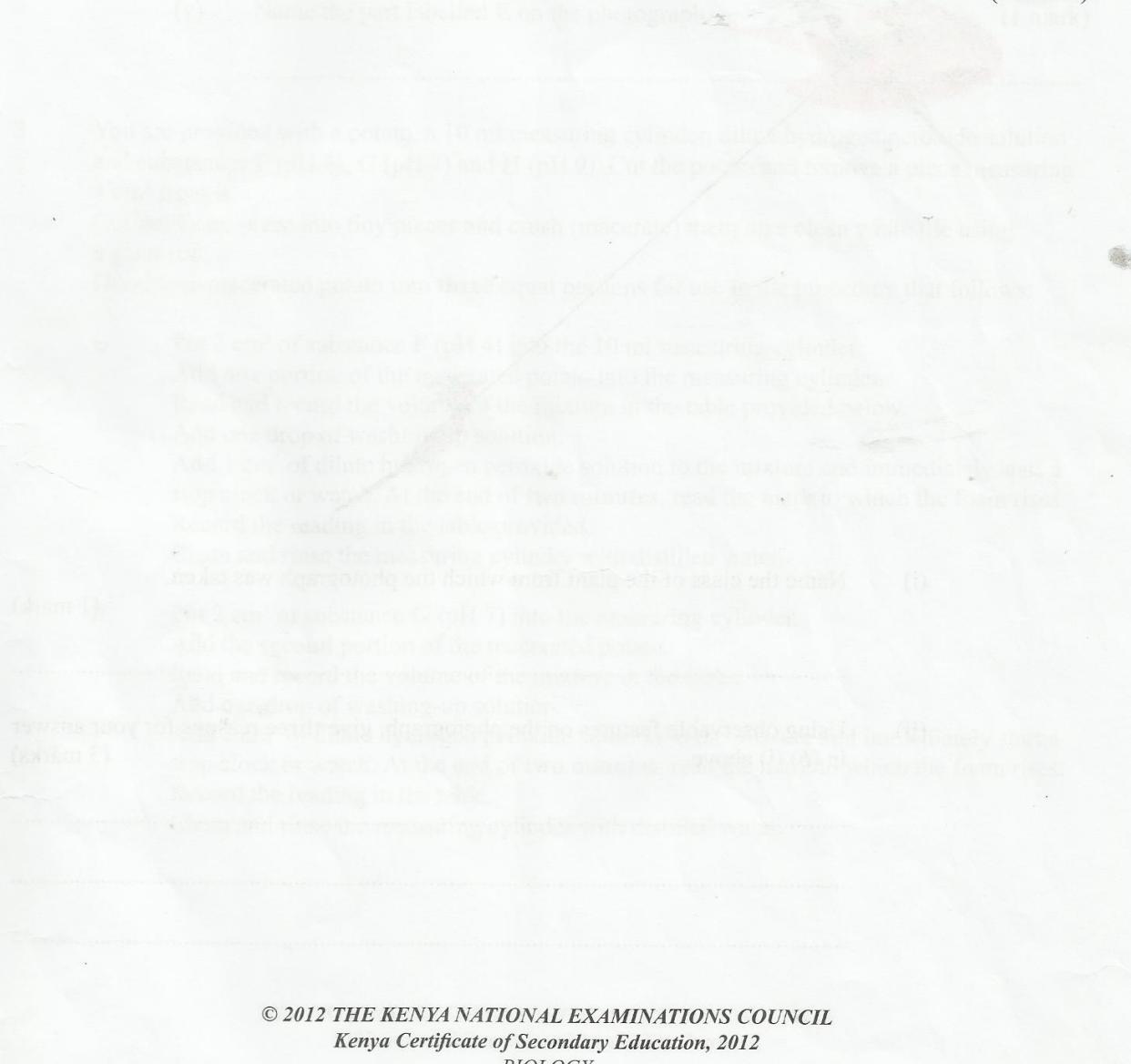
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- (ii) What type of asexual reproduction occurs in the specimen? (1 mark)

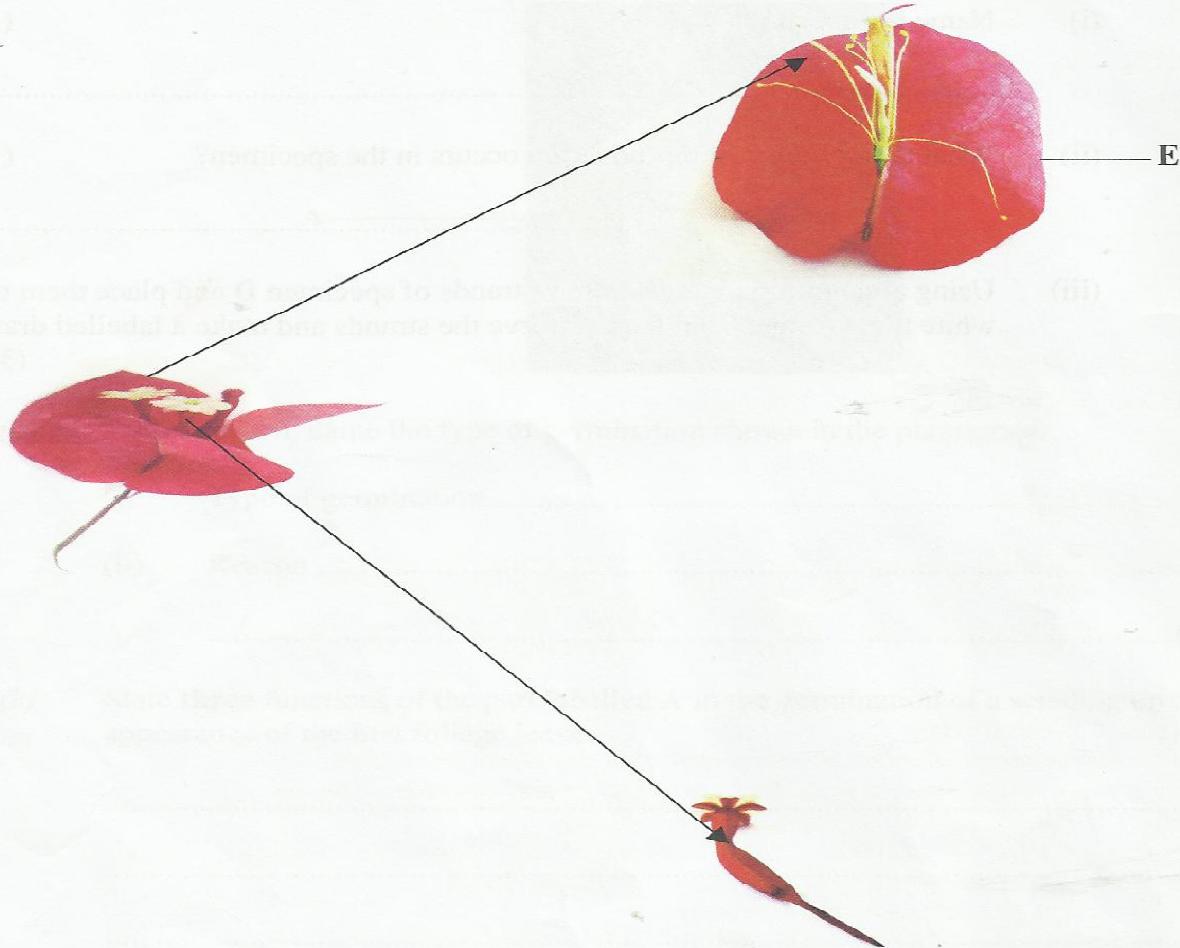
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- (iii) Using a mounting pin, pick a few strands of specimen D and place them on the white tile. Using a hand lens, observe the strands and make a labelled drawing.

(3 marks)



(b) (i) 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)

- (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 cm³ from it.

Cut the 1 cm³ 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 cm³ 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 cm³ 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 cm³ 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 cm³ 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 cm³ 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 cm³ 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)
Volume of solution + portion of potato			
Volume of solution + portion of potato + foam			
Volume of foam			

(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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