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Name Index Number /

231/3
BIOLOGY
Paper 3
(PRACTICAL)
Oct./Nov. 2012
1¾ hours

Candidate's Signature

Date.....



THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education
BIOLOGY
Paper 3
(PRACTICAL)
1¾ 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 1¾ 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	



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)

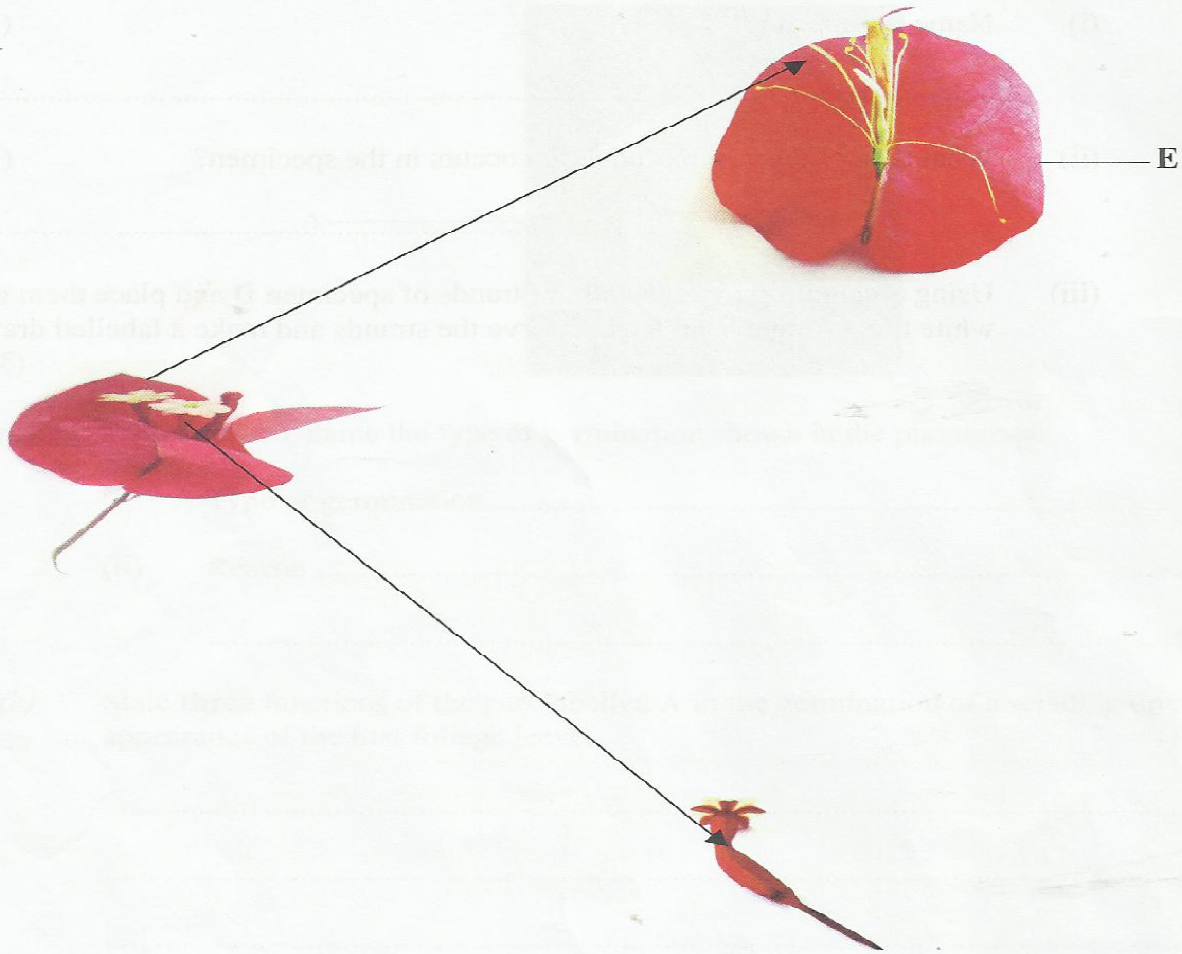
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(ii) What type of asexual reproduction occurs in the specimen? (1 mark)

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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) 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 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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