

THE KENYA NATIONAL EXAMINATIONS COUNCIL  
Kenya Certificate of Secondary Education

231/3

— **BIOLOGY** —  
(PRACTICAL)

Paper 3



Nov. 2019 – 1<sup>3</sup>/<sub>4</sub> hours



Name ..... Index Number .....

Candidate's Signature ..... Date .....

**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<sup>3</sup>/<sub>4</sub> 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.
- (h) Candidates should answer the questions in English.

**For Examiner's Use Only**

Question	Maximum Score	Candidate's Score
1	13	
2	12	
3	15	
<b>Total Score</b>	<b>40</b>	

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Turn over

1 You are provided with specimens **F** and **G**, obtained from different plant species. Observe them together with photographs **E** and **H** and answer the questions that follow.

**Note:** Do not destroy specimens **F** and **G** as you will need them for question 2.



**E**



**H**

(a) (i) State how plants represented by specimen **F** and photographs **E** and **H** protect themselves.

Specimen **F**

(1 mark)

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.....

Photograph **E**

(1 mark)

.....  
.....

Photograph **H**

(1 mark)

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(ii) State the likely habitat of each of the plants in (a) (i), giving a reason in each case.

Specimen F (2 marks)

Habitat .....

Reason .....

.....

Photograph E (2 marks)

Habitat .....

Reason .....

.....

Photograph H (2 marks)

Habitat .....

Reason .....

.....

(b) Examine the leaves of specimen G.

(i) Describe **two** observable features of these leaves that help the plant conserve water. (2 marks)

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(ii) Besides leaf structure, explain **two** mechanisms that help the plant in (b) (i) above **not** to dry up during the dry season. (2 marks)

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2. You are provided with specimens labelled **J** and **K** in addition to **F** and **G** and photographs **E** and **H** (used in question 1).

(a) Follow the dichotomous key below to identify **E**, **F**, **G**, **H**, **J** and **K**.

- 1. (a) Leaf margin smooth ..... Go to 2
- (b) Leaf margin serrated/rugged ..... Go to 3
- 2. (a) Leaf parallel-veined ..... **K**
- (b) Leaf net-veined or veins not showing ..... Go to 4
- 3. (a) Leaf with thorny edges ..... **H**
- (b) Leaf edges not thorny ..... Go to 5
- 4. (a) Leaf large ..... **G**
- (b) Leaf tiny ..... **E**
- 5. (a) Leaf on thorny stem ..... **F**
- (b) Leaf not on stem ..... **J**

Fill the table below, indicating the steps used to identify the leaves of each specimen or photograph. (6 marks)

Leaf	Steps followed
<b>E</b>	
<b>F</b>	
<b>G</b>	
<b>H</b>	
<b>J</b>	
<b>K</b>	

(b) (i) Besides leaf features found in the dichotomous key above, state two other features that can be used to identify leaves. (2 marks)

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- (ii) State the complementary characteristics that define the leaf features stated in (b) (i). (2 marks)

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- (c) The habit of a plant in its environment is referred to as being a tree, shrub or herb, depending on its height.

Suggest the habits of the plants from which specimen **F** and photograph **H** were obtained. (2 marks)

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- 3. You are provided with specimens **L** and **M** which are types of teeth from the same mammal. Observe these specimens together with photographs **N** and **P** and answer the questions that follow.

- (a) (i) With a reason in each case, name the type of tooth represented by specimens **L** and **M**.

Specimen **L** (2 marks)

Name: .....

Reason .....

.....

Specimen **M** (2 marks)

Name: .....

Reason .....

.....

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(ii) Draw and label specimen L.

(2 marks)

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(iii) State two functional differences between specimens L and M.

(2 marks)

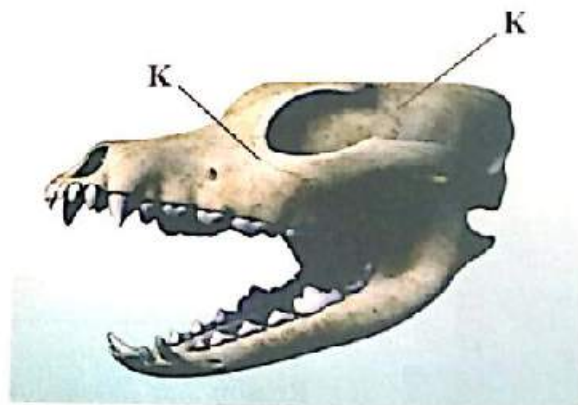
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(b) State the diet of the mammals from which photographs N and P below were obtained, giving a reason in each case.



N



P

(i) Photograph N

(2 marks)

Diet .....

Reason .....

.....

.....



(ii) Photograph P (2 marks)

Diet .....

Reason .....

.....

.....

(c) (i) Name the joint labelled K on photograph P. (1 mark)

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(ii) Explain **two** features of the joint named in (c) (i) above that makes it adapt to its function. (2 marks)

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