THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

231/3

— BIOLOGY —

Paper 3

(PRACTICAL)

Nov. 2019 – 1¾ hours

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

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

Instructions to candidates

798

(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.***
(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	
Total Score	40	

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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)

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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
E	
F	
G	
H	
J	
K	

(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 .....

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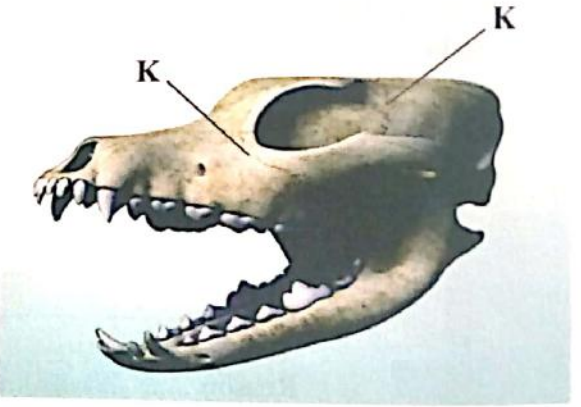
(b) State the diet of the mammals from which photographs **N** and **P** below were obtained, giving a reason in each case.

N



P

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(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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