**THE SHOOTING STARS EDUCATIONAL CONSULTANCY**
**Kenya Certificate of Secondary Education**

**231/3** **Paper 3**

# BIOLOGY – (Practical)

## June 2023 – 1¾ hours

**Name**…… **Index Number**……..

730 **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 ¾ 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**

| Questions | Maximum Score | Candidate's Score |
|---|---|---|
| 1 | 13 | |
| 2 | 15 | |
| 3 | 12 | |
| Total Score | 40 | |

0127

1. All living organisms have a plasma membrane composed of proteins and lipids. Plasma membrane regulates the passage of materials in and out of the cell to achieve equilibrium on both sides. You are required to perform an experiment to investigate the effect different concentrations of solutions would have in de-shelled egg.

You are provided with two de-shelled raw chicken eggs placed in a beaker labeled **Q** and **R** containing solutions **S1** and **S2** respectively.

Allow the set-up undisturbed for 45minutes.

(a) Remove each of them and place them in the petri-dish.

(i) Press each of them gently to feel the surface of each egg and record your findings.

(2mks)

Specimen Q:

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Specimen R:

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(ii) Account for the observations in (a) (i) on behaviour of specimen **Q** and **R**.

**Specimen Q:** (3marks)

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**Specimen R.** (2marks)

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(b) State **one** way in which the accuracy of the results would be improved. (1marks)

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(c) Suggest a control experiment for this set up. (1mark)

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2. You are provided with specimen **N** and Photographs **Q**, **U**, **V** and **X** which are specimens from different plants.

(a) State one structural similarity and one structural difference between the specimens in photographs **V** and **X**.

Similarity. (1mark)

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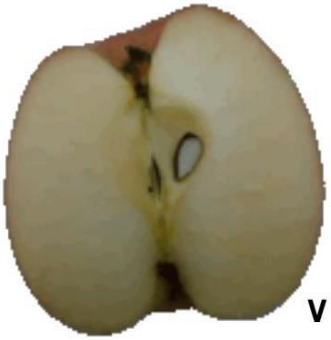
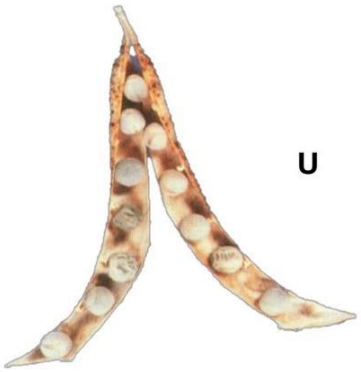


V

X




Q

(b) Complete the table below using the specimens in the photographs.(4mks)

| specimen | Mode of dispersal | Adaptive feature |
|---|---|---|
| N | | |
| Q | | |

(c) Remove one of the specimen **N,** observe under hand lens and draw a well labeled diagram.

(2mks)

(d) Explain how the seeds of specimen U are dispersed by its mechanism of dispersal. (3mks)

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(e) Using a glass rod, Macerate (crush) the tomato provided into a paste then add some little water to form a juice. Put 1ml of solution **F** into a test tube and add juice of tomato drop wise until colour disappears. Shake the test tube after addition of each drop.

(i) Record the number of drops used. (1mark)

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(ii) If one drop of 0.1% solution of ascorbic acid is required to decolorize 1ml of solution **F.** Calculate the percentage ascorbic acid concentration in the juice of tomato. (2marks)

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(iii) From the test above, suggest the identity of solution **F**. (1mark)

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3. The Photographs shows beak and foot structures in four different birds.

A

B

D

C


(a). (i) Name the type of evolution depicted by the beaks. (1mk)

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(ii) Explain your answer in (a) (i) . (2mks)

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(a (i) Name structure **Y** in foot **E**. (1mark)

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(ii) Structures **Y** is an adaptation of the foot to the organism's habitat. Explain? (2marks)

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(b). Explain the emergence of the structure labeled **S** in foot **F** based on Larmak's theory. (3mks)

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(c) How are birds with beak type **A** adapted to their feeding habits. (3mks)

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