

**231/3
BIOLOGY
PAPER 3
PRACTICAL
JULY/AUGUST 2014**

**KATHONZWENI SUB-COUNTY FORM 4 PRE-TRIAL EXAMINATION
Kenya Certificate of Secondary Education
BIOLOGY
PAPER 3
CONFIDENTIAL**

Each student must be provided with the following

- Mature orange/lemon labeled V
- One small beaker
- Two test tubes
- Test tube holder
- DCPIP about 2m/s for each candidate
- Benedict's solution
- Means of cutting
- Source of heat

Name _____ Index No. _____

Candidate's signature _____

Date _____

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BIOLOGY
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1 ¾ HOURS**

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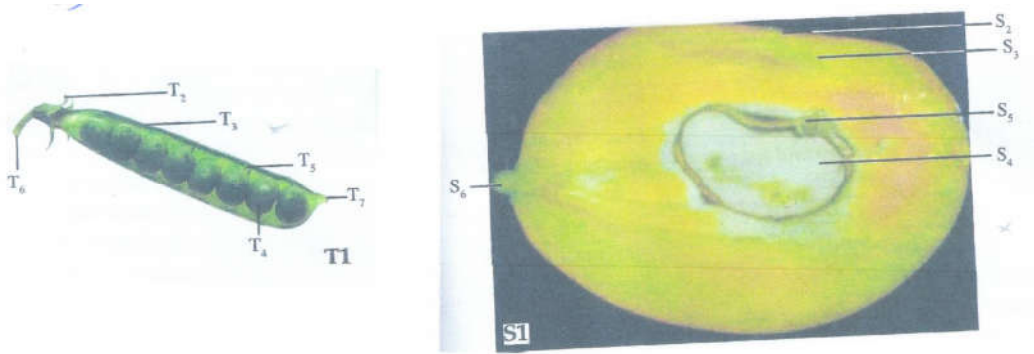
INSTRUCTIONS TO CANDIDATES

- (a) Write your name and index number in the spaces provided above.
- (b) Answer all the three questions in the spaces provided
- (c) 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.
- (d) Additional papers must not be inserted in this paper

For examiner's use only

Question	Maximum score	Candidate's score
1	21	
2	07	
3	12	
Total score	40	

1. (a) Study the diagrams T₁ and S₁ carefully and answer the following questions:



(i) Name the parts labeled S₂, S₃, S₄, S₅ and S₆.

(5mks)

- S₂ _____
- S₃ _____
- S₄ _____
- S₅ _____
- S₆ _____

(ii) Name the parts labeled T₂, T₃, T₄ and T₅.

(4mks)

- T₂ _____
- T₃ _____
- T₄ _____
- T₅ _____

(iii) Complete the following table showing the type of fruit and reasons for each answer

Specimen	Type of fruit	Reasons
S ₁		
T ₁		

(iv) Complete the table below showing method of dispersal and reasons for each answer.

Specimen	Method of dispersal	Reasons
S ₁		
T ₁		

Max 2mks

(b) You are provided with a fruit labeled V.

(i) Cut a transverse section through specimen V. Draw and label of the cut surfaces. (4mks)

(ii) State the type of placentation of specimen V.

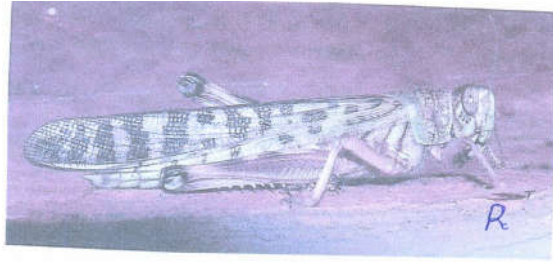
(1mk)

(iii) Squeeze out the juice from one of the halves of specimen V. Using the reagents provided carry out tests to identify the type of food substances present in the juice

Food substance	Procedure	Observation	Conclusion

(3mks)

2. Study the diagrams Q and R carefully and answer the following questions.



(a) (i) Name the phylum to which specimens R and Q belong. (1mk)

(ii) State two reasons for your answer in a (i) above. (2mks)

(b) (i) Name the class to which each of R and Q belong (2mks)

R _____

Q _____

(ii) State reasons for your answer in (b) (i) above (2mks)

R _____

Q _____

3. Study the diagrams set A₁, set E₁, set M₁ and set B carefully and answer the questions below



(a) State the conditions under which each set up was grown. (3mks)

Set A₁ _____

Set E₁ _____

Set B _____

(b) (i) Name the phenomenon exhibited by seedlings in set E₁ (1mk)

(ii) Give a reason why plants exhibit the phenomenon named in (b) (i) above (1mk)

(c) (i) Name the response exhibited by the seedlings in set B. (1mk)

(ii) Explain how the response named in (c) (i) above occurred (2mks)

(d) (i) State the type of germination exhibited by seedlings in set A₁ and set M₁. (2mks)

Set A₁ _____

Set M₁ _____

(ii) Give a reason for your answer in (d) (i) above (2mks)

Set A₁ _____

Set M₁ _____

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MARKING SCHEME**

1. (a) (i)

- S₂ – Pericarp;
- S₃ – Mesocarp;
- S₄ – Seed;
- S₅ – Endocarp;
- S₆ – Fruit stalk;

(5mks)

(ii) T₂ – Remains of calyx;

- T₃ – Placenta;
- T₄ – Seed/ovule;
- T₅ – Funicles;

(4mks)

(iii)

Specimen	Type of fruit	Reasons
S ₁	Drupe;	- Once seed; Accept: hard or stony endocarp; Fleshy mesocarp; basal placentation
T ₁	Legume pod	- Two sutures/two lines of weakness. Accept: marginal placentation.

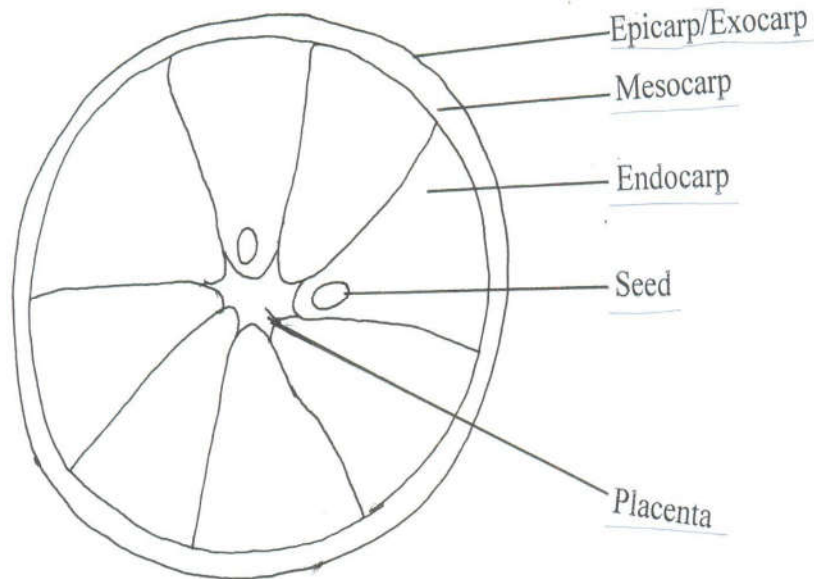
⁴/₂ = 2mks

(iv)

Specimen	Method of dispersal	Reasons
S ₁	Animal	- Bright colour; accept: fleshy mesocarp
T ₁	Mechanical (self-explosive mechanism)	- Two lines of weakness

⁴/₂ = 2ks

(b) (i)
 L = 3 max
 D = 1mk
 4mks



(ii) Axile; 1mk Reject Axil or axile.

(iii)

Food substance	Procedure	Observation	Conclusion
Reducing sugar;	- Add equal amount of Benedict's soln. heat	- Colour to orange/brown	- Reducing sugars present
Ascorbic acid or vitamin C	- Add juice dropwise to DCPIP	DCPIP discolourises	Ascorbic acid or vit C. present

$\frac{6}{2} = 3\text{mks}$

2. (a) (i) Arthropoda; 1mk
 Reject Arthroponda;
 Anthropoda

(ii) Presence of exoskeleton; have segmented body
 Accept jointed appendages (2mks)

(b) (i) R – Insecta 1mk reject insect
 Q – Arachnida 1mk

(ii) R – three body regions; 1mk
 Accept – three pairs of legs
 One pair of antennae
 One pair of compound eyes
 One pair of spiracles per segment

Q – Body divided into two parts (Cephalothorax and abdomen); 1mk
 Accept four pairs of walking legs

3. (a)
Set I_1 – normal conditions
Set E_1 – in the dark
Set B – unidirectional light

3mks

- (b) (i) Etiolation; 1mk
(ii) To reach light; 1mk
- (c) (i) Positive phototropism; 1mk
(ii) Auxins move to the darker side causing faster growth on this side; resulting in curvature of the shoot towards the source of light; 2mks
- (d) (i) Set A_1 – Epigeal; 1mk
Set M_1 – hypogeal; 1mk
- (ii) Set A_1 – cotyledons brought above the ground; 1mk
Set M_1 – cotyledons remain below the earth's surface/underground; 1mk