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

Candidates Signature .....

Date .....

231/3
Biology
Paper 3
(PRACTICAL)
July/Aug 2013
1¾ hours.

LARI DISTRICT JOINT MOCK EXAMINATIONS
Kenya Certificate of Secondary Education

BIOLOGY
Paper 3
(PRACTICAL)
1¾ hours

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 papers must **not** be inserted
f) This paper consists of 6 printed pages.
g) Candidates should check the question paper to ascertain that all the pages are printed 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	

BIOLOGY – PAPER 3

231/3

1. You are provided with solutions labeled L_1, L_2 and L_3 is the same as L_2 except that L_3 has been boiled.
   Label three test-tubes **A**, **B** and **C**.
   Into the test-tube labeled A add 1ml of solution L_1.
   Into the test-tube labeled B add 1ml of L_1 and 1ml of L_2.
   Into the test-tube labeled C add 1ml of L_1 and 1ml of L_3.

   a) Withdraw a drop from test-tube A and place it on a white tile. To the drop add one drop of iodine solution. Record your observations in the table below. (3mks)

Test-tube	**Observation**	**Conclusion**
A		
B		
C		

Repeat the procedure with contents in test-tubes B and C. Record your observations in the table.

Place the three test-tubes labeled A, B and C into a water bath at $37^{o}C$

NB. Ensure that the temperature of the water bath does not fall below $35^{o}C$ or exceed $38^{o}C$.

b) After 30 minutes, test the contents of each of the test-tubes labeled **A**, **B** and **C** following the procedure in (a) above. Record your observations in the table below. (3mks)

Test-tube	Observation	Conclusion
A		
B		
C		

c) Why was test-tube labeled **A** included in the experiment?

d) (i) Suggest the identity of solution L_2. (1mk)

(ii) Give a reason for your answer in (d) above. (1mk)

e) Suggest a part of the alimentary in the body of a mammal where the process being investigated in this experiment would take place. (1mk)

f) Account for the results at the end of the experiment in the test-tube labeled.

i) **B** (1mk)

ii) **C** (2mks)

2. You are provided with specimens Labeled **R, S** and **T**. Use them to answer the following questions.

   a) Identify Specimens **R**, **S** and **T.** (3mks)

   R -
   S -
   T –

   b) Name the region from which bone **T** was obtained. (1mk)

   c) Name any three observable features that are common in **S** and **T** and for each state its function (6mks)

   d) State two observable differences between specimens **S** and **T**. (2mks)

   e) How is specimen **R** adapted to its function? (2mks)

3. You are provided with specimens **P** and **Q**

   a) What type of fruits are specimen **P** and **Q**? (2mks)

   P -

   Q -

   b) Make a transverse section through specimen **P**
   Draw the transverse section of the specimen and label any **three** parts. (5mks)

   c) Squeeze the juice from specimen **P** into a small beaker. Using reagents provided that is **X** (Benedict's solution and **Y** (DCPIP), test for the food substances in the juice. Record the food substances, procedures, observations and conclusions in the table below. (3mks)

Food substance	Procedure	Observation	Conclusion

d) Name the type of placentation of specimen **Q** (1mk)

e) (i) With a **reason**, name the class to which specimen **Q** belongs (2mks)

Class –

Reason –

(ii) State the method of dispersal of the specimen **Q**. (1mk)

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BIOLOGY

PAPER 3

PRACTICAL

JULY/AUG. 2013

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BIOLOGY

PAPER 3

PRACTICAL

INSTRUCTION TO SCHOOLS

The information contained in this paper is to enable the head of the school and the teacher in charge of biology to make adequate preparations for this year's biology practical examination. **NO ONE ELSE** should have access to this paper or acquire knowledge of its contents. Great care **MUST** be taken to ensure that the information herein does not reach the candidate either directly or indirectly. The teacher in charge of biology should not perform any of the experiments in the same room as the candidates or make the results of the experiments available to the candidates or give any other information related to the experiments to the candidates.

REQUIREMENTS

Each candidate will require the following:

- 5 test-tubes
- 5ml of solution L_1 – starch solution 0.5%
- 2ml of solution L_2 – Diastase solution 10%
- 2ml of solution L_3 – Boiled diastase solution 10%

  NB: boiled for 10 minutes
- Means of labeling – 3 labels
- Water bath
- Thermometer
- Iodine solution
- 3 droppers
- A white tile
- Means of timing
- 10ml measuring cylinder
- Specimen **R** – molar/ premolar tooth
- Specimen **S** – Cervical vertebra
- Specimen **T** – thoracic vertebra
- Specimen **P** – Ripe orange
- Specimen **Q** – mature pea pod
- Solution **X** – Benedict's solution
- Solution **Y** – DCPIP
- Scapel
- Hand lens
- 50ml/100ml beaker.

BIOLOGY PAPER 3 PRACTICAL

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MARKING SCHEME;

1. (a)

Test-tube	**Observations**	**Conclusion**
A	Blue black / blue/ black / bluish black;	Starch present;
B	Blue black / blue/ black / bluish black;	Starch present;
C	Blue black / blue/ black / bluish black;	Starch present;

6/2=3mks

(b)

Test-tube	**Observations**	**Conclusion**
A	Blue black / blue/ black / dark blue/ bluish black;	Starch present;
B	No colour change/ brown/ yellow colour /colour of iodine	Starch present;
C	Blue black / blue/ black / bluish black;	Starch present;

6/2=3mks

(c) Control experiment

(d) (i) Distase/enzyme/Starch digesting enzyme/ ptyalin/ saliva enzyme/salivary enzyme; (1mk)

(ii) Because it converted/ digested/ changed starch/ can be denatured by boiling/acts within a range of temperature between $35^{o}C$ – $38^{o}C$/ optimum temperature; **only 1** (1mk)

(e) Mouth/duodenum/ileum;

NB (f) tied to table (b)

(f) **B** – Starch absent/ No colour change/ colour of iodine remains because starch has been digested/ converted/ hydrolysed/broken down into glucose/ maltose/ simple sugar; (1mk)

C – starch present because boiling denatured enzyme/ L_2; thus starch not broken down/ not digested/ not acted upon; (2mks)

2. (a) **R** – Premolar/molar tooth; (reject wrong spellings)
S – Cervical vertebra;
T – Thoracic vertebra; (3mks)

(b) Thoracic/ chest region; (1mk)

(c) - Neural spine; for attachment of muscles;

- Centrum; to provide mechanical support/ support weight of body/support vertebral column;

-Neural canal; for passage of spinal cord;

-Facets; for articulating with other bones/vertebrae

-transverse process; for muscle attachment;

-Neural arch; for protecting/enclosing/housing/ accommodating spinal cord;

NB: each feature and function =2mks **first 3** (6mks)

(d)

S	**T**
-Vertebral canal present	-absent
-Small/ narrow spine	-long neural spine;
-lack extra facets	-has extra facets;
-small/short/forked/branched/divided/ winged transverse process	-short unbranched transverse process

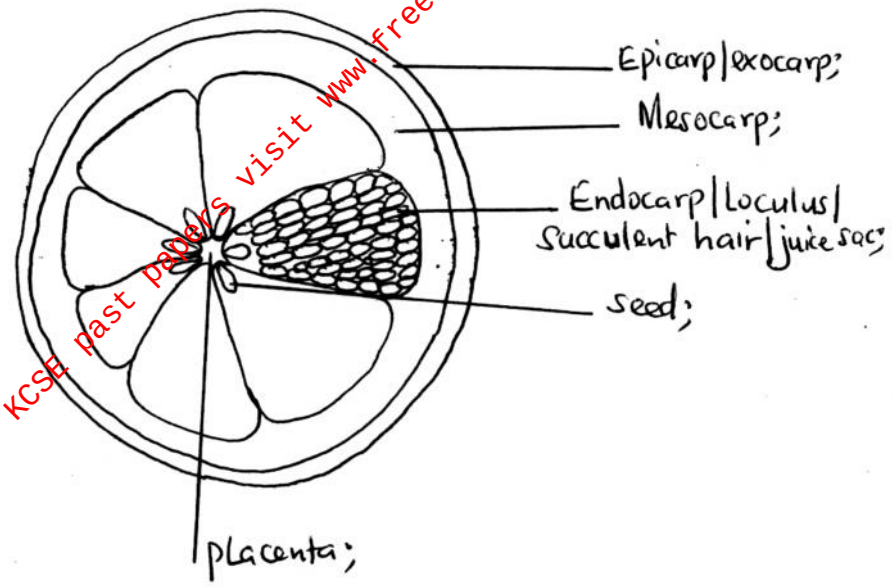
first 2 (2mks)

(e) has broad/wide surface/ has ridges/ cusps; for grinding/crushing/ cutting; (2mks)

3. (a) **P** – Berry / hesperidium;

Q – Pod / legume;

(b)



Magnification X $^{1}/_{2}$ – X 3; (1mk)

Drawing mark (1mk)

-continuos line

-No shading

Label marks (3mks)

-Epicarp/exocarp;

-Mesocarp

-Endocarp/loculus/juice sacs/succulent hairs;

-Placenta;

-Seed;

(c)

Food Substance	**Procedure**	**Observations**	**Conclusion**
Ascorbic acid/ vitamin C	To DCPIP add juice/To DCPIP add drop by drop juice;	DCPIP decoloured/ become coloureless/ colour of DCPIP disappears;	Vitamin C/ ascorbic acid present;
Reducing sugars	To juice add Benedict's solution/ X heat/ boil/ warm;	Colour changes to yellow/orange/brown;	Reducing sugars present;

NB: No mark for food substance. 6/2=3mks

(c) Marginal; reject wrong spelling. (1mk)

(d) (i) Class – Dicotyledonae; reject wrong spelling

Reason – has 2 cotyledons (2mks)

(ii) self/ self dispersal/ self dispersed/ self explosive/ self explosive mechanism/ self mechanism/ explosive mechanism; (1mk)