

NAME:.....INDEX .....DATE.....

SCHOOL:.....SIGNATURE.....

231/3

BIOLOGY

PAPER 3 (PRACTICAL)

JULY / AUGUST, 2010

1¾ HOURS

**KISUMU NORTH AND EAST DISTRICTS JOINT TEST**  
**Kenya Certificate of Secondary Education 2010**

231/3

BIOLOGY

PAPER 3

JULY / AUGUST 2010

**INSTRUCTIONS TO CANDIDATES:**

- ❖ *Write your name, index number and the name of your school in the spaces provided above.*
- ❖ *Sign and write the date of the examination the spaces provided above.*
- ❖ *Answer all the questions in spaces provided. Do not insert additional papers.*
- ❖ *You are required to spend the first 15minutes of the 1¾hrs allowed for this paper reading the whole paper carefully before commencing your work.*

**For Examiner's Use Only**

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1	15	
2	10	
3	15	
<b>TOTAL</b>	<b>40</b>	

1. You are provided with solutions labeled Q and S and a powder labeled P plus a filter paper. The powder labeled P will be used in parts (a), (b) and (c). Solution Q is iodine solution.

a) Use the iodine solution to test for the presence of the food substances in powder P. (1mrk).

- .....  
- .....

Food substances

- .....  
- ..... (1mrk)

Procedure

- .....  
- .....  
- .....  
- .....  
- ..... (1mrk)

Observation

- .....  
- .....  
- .....  
- ..... (1mrk)

Conclusion

- .....  
- ..... (1mrk)

Solution S is Benedict's solution.

b) Use the Benedict's solution to test for the presence of the food substance in powder P.

Food substance (1mrk)

- .....  
- .....

Procedure

(3mrk)

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.....  
.....  
.....  
.....  
.....

Observation

.....  
.....  
.....  
.....

Conclusion

.....  
.....  
.....  
.....

c) (i) Using the filter paper provided, test for the presence of lipids in powder P.

Procedure

(2mrks)

.....  
.....  
.....  
.....

Observation

(1mrk)

.....  
.....

Conclusion

(1mrk)

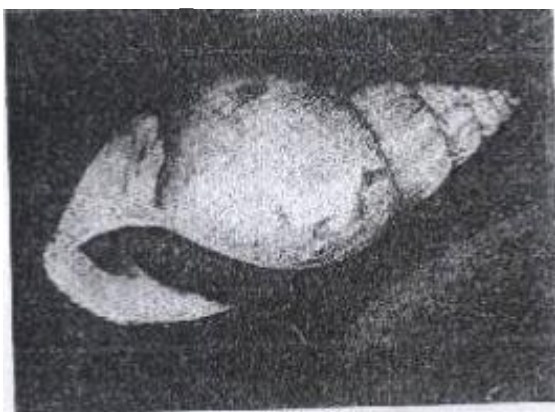
.....  
.....

(ii) Name two enzymes that may be required to digest powder P in the alimentary canal in human beings. (2mrks)

.....  
.....  
.....  
.....

2. During a visit to a museum, students were shown ten specimens of invertebrates on display. The teacher provided a dichotomous key shown to enable them to place each specimen on display into its taxonomic group. Five of the ten specimens that were on display are shown in the photographs below.

3.



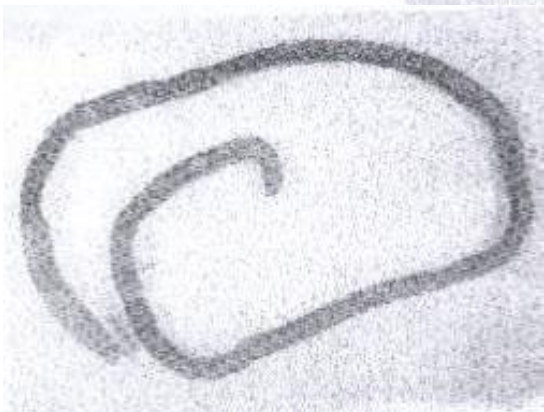
E



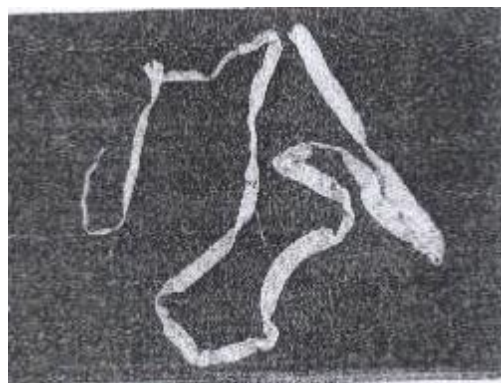
F



G



H



J

### Dichotomous key

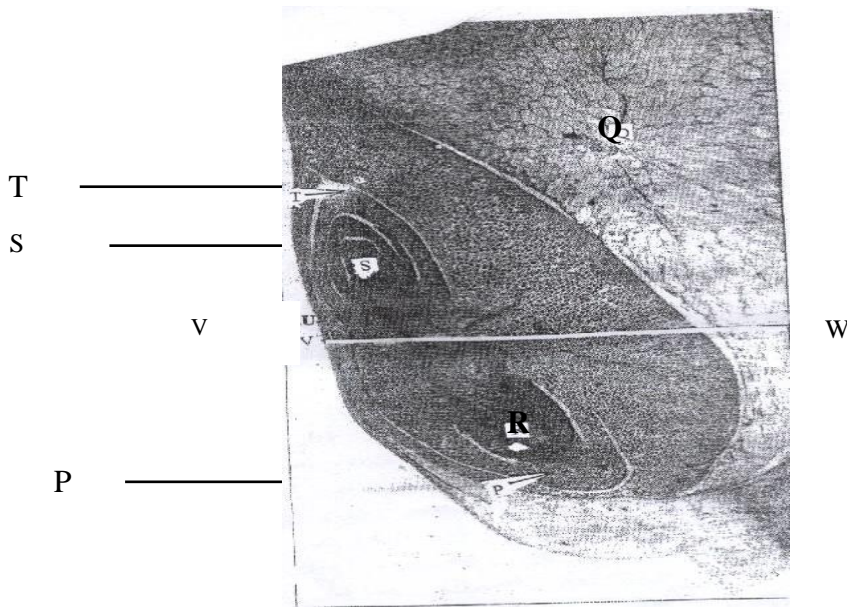
- |   |           |
|---|-----------|
| 1. a) Animals with flattened body.....            | go to 9   |
| b) Animals without flattened body.....            | go to 2   |
| 2. a) Animals with body shell.....                | MOLLUSCA  |
| b) Animals without body shell.....                | go to 3   |
| 3. a) Animals with segmented body.....            | Go to 4   |
| b) Animals with body not segmented.....           | NEMATODA  |
| 4. a) Animals with jointed appendages.....        | go to 6   |
| b) Animals without jointed appendages.....        | go to 5   |
| 5. a) Animals with long and cylindrical body..... | ANNELIDA  |
| b) Animals with short stout body.....             | TREMATODA |
| 6. a) Animals with antennae.....                  | Go to 7   |
| b) Animals without antennae.....                  | go to 8.  |
| 7. a) Animals with one pair of antennae.....      | INSECTA   |
| b) Animals with one pair of antennae.....         | CRUSTACEA |
| 8. a) Animals with pincer like mouth parts.....   | ARACHNIDA |
| b) Animals with sucking mouthparts.....           | ACARINA   |
| 9. a) Animals with long ribbon like body.....     | CESTODA   |
| b) Animals with circular body.....                | CRINOIDA  |

Use the dichotomous key to identify the taxonomic group of each of the five specimens shown in the photographs. In each case show in sequence the steps (e.g. 1a, 2b, 5a, and 7b) in the key that you followed to arrive at the identity of each specimen.

(10mrks)

Animal	Steps followed	Identity
E	.....	.....
F	.....	.....
G	.....	.....
H	.....	.....
J	.....	.....

3. You are provided with a photomicrograph showing a longitudinal section of maize grain. Study it and answer the questions that follow.



a) Name the parts marked P, Q, R, S, T. (5mrks)

- P.....
- Q.....
- R.....
- S.....
- T.....

b) Which region will stain blue black with iodine solution? (1mrk)

.....  
 .....

c) State the function of the parts labeled P and T. (2mrks)

P.....  
 .....

T.....  
 .....

d) Give a reason why a maize grain is a fruit and not a seed. (1mrk)

.....  
 .....

e) Name two food substances stored in the part marked Q. (2mrks)

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.....  
.....  
.....

f) A maize grain was left to germinate under normal conditions for one week. Which part would you expect to have decreased in dry weight? (1mrk)

.....  
.....  
.....

g) Given that the magnification of the electron micrograph is X 30,000, calculate the actual length of the grain in micrometers between V and W. 1mm = 1000 micrometers (um). (3mrks)