

NAME: INDEX NO:

SCHOOL..... DATE.....

CANDIDATE'S SIGN.....

231/3
BIOLOGY
PAPER 3
JUNE 2014
TIME: 1 ¾ HOURS

KABARAK-SACHO-SUNSHINE JET EXAMINATION

KASSU

Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** in the spaces provided above.
- **Sign** and write the **date** of examination in the spaces provided above.
- 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.
- Answers must be written in the spaces provided in the question paper.

For Examiner's Use only:-

Question	Maximum Score	Candidate's Score
1	14	
2	14	
3	12	
TOTAL	40	

This paper consists of 4 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. You are provided with 10% glucose solution and substance **labeled Y**. Also provided is a solution labeled **X**. You are to investigate the reaction between the glucose solution and **substance Y**. Measure 20.00cm³ of the glucose solution and transfer it to the boiling tube provided. Transfer all the **substance Y** provided into the solution in the boiling tube. Tightly fit the rubber bung carrying a delivery tube to the boiling tube. Place the boiling tube in a water bath kept between 35 – 38⁰ c. Measure 1.0. Cm³ of **solution X** and transfer to a test tube. Connect the delivery tube so that the open end enters the **solution X**. Allow the set – up to stand for about 30 minutes and during this time observe the changes occurring in the boiling tube and in the test tube having **solution X**.

a) Fill the table below (2 marks)

Tube	Observations
Boiling Tube	
Test Tube	

b) What conclusions can your draw from your observations in the test tube? (2 marks)

.....

.....

.....

.....

c) Name the process that took place in the test tube (1 mark)

.....

.....

d) Shake the contents of the boiling tube and using a dropper remove a little of the contents. Transfer a drop to a glass slide; add two drops of methylene blue stain. Cover with a cover slip and observe using a microscope of x10 or x15 eye piece lens.

(i) Draw and label the **substance Y** which is in the slide **(2 marks)**

(ii) What is the possible identity of **substance Y** **(1 mark)**

.....

e) Why was the temperature of the water bath kept between 35 – 38⁰c **(1 mark)**

.....

f) If the experiment was done under the following conditions, suggest, giving reasons the expected results.

(i) Water bath was kept at 100⁰c

Observations: **(1 mark)**

.....

Reasons: **(1 mark)**

.....

g) From the microscope

(i) Name the part **labeled Q.** **(1 mark)**

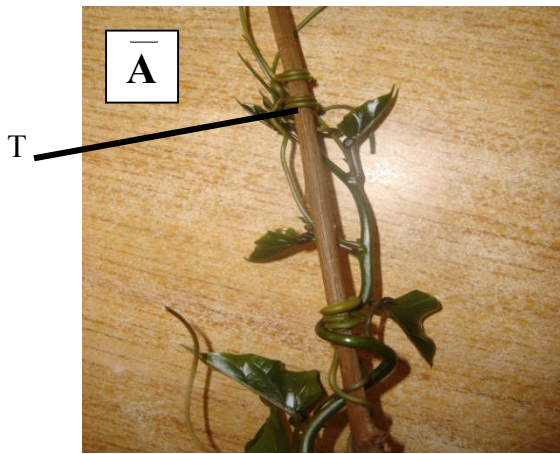
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(ii) Give the function of part **labeled P.** **(1 mark)**

.....
h) Name the form in which **substance Y** stores its excess glucose **(1 mark)**

.....

Q2. (a) Examine photograph **A**, **B1** and **B2** carefully and answer the questions that follow. B2 was extracted from B1



B2



B1

(i) **What** name is given to the coiled part labeled **T** found on specimen **A** (1 mark)

.....

(ii) **Name** the type of response exhibited by the coiled part on specimen **A** (1mark)

.....

(iii) **Name** the stimulus responsible for the response named in (ii) above. **(1mark)**

.....

(iv) **Explain** how the response exhibited by the coiled part on specimen **A** occurred **(3 marks)**

.....

.....

.....

.....

(v) **State** the biological significance of the response described in (iv) above to the survival of the specimen. **(1mark)**

.....

b) Use photographed specimens labeled **B1** and **B2** above to answer the questions below.

(i) State the agent of pollination for the specimen above. **(1mark)**

.....

(ii) Give a reason for your answer. **(1mark)**

.....

(iii) Describe the external features of leaves of the specimen **B2**. **(3marks)**

.....

.....

.....

(iv) Based on the floral parts, state the class to which specimen **B** belongs. **(1mark)**

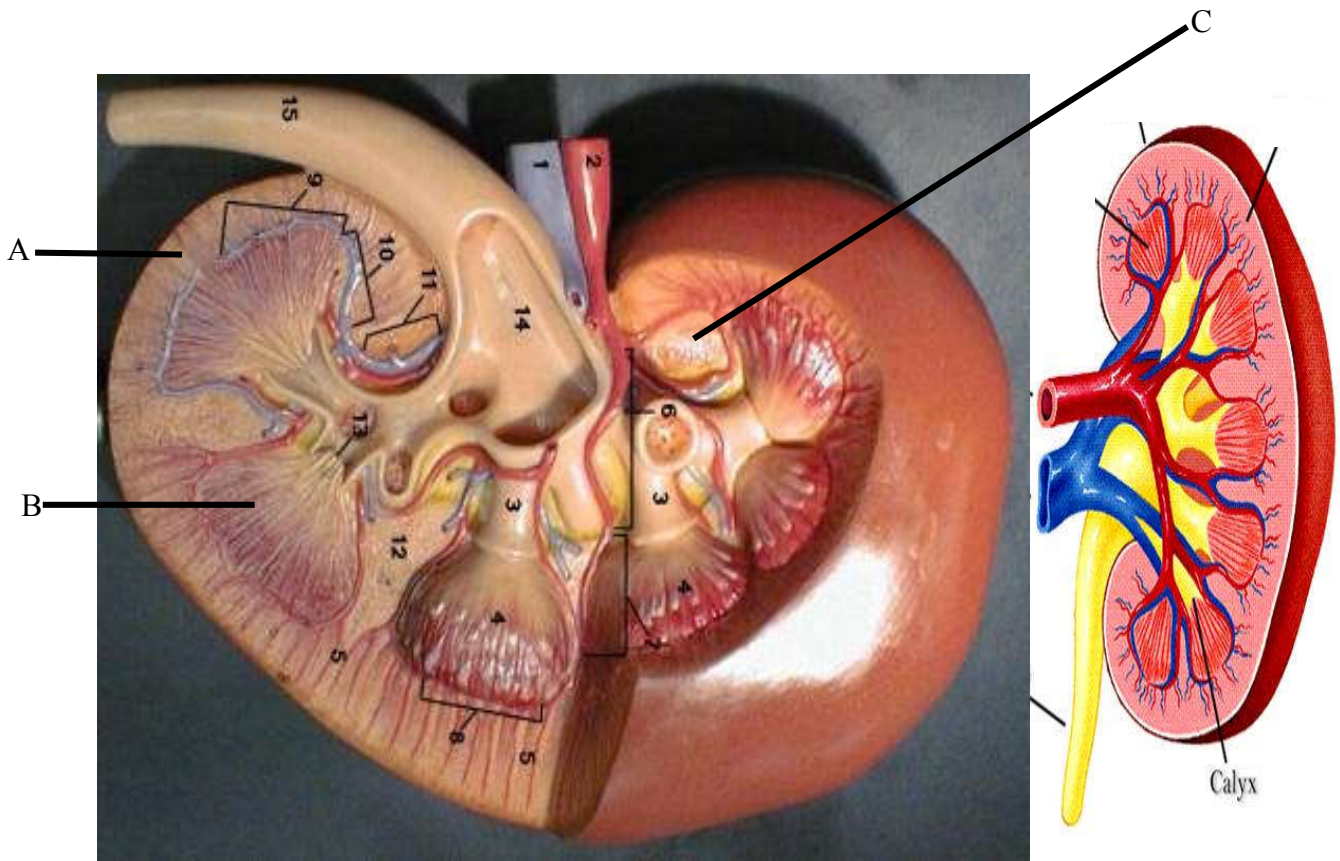
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(v) Give a reason for your answer in (iv) above. **(1mark)**

.....

.....

Q3 Below is a section through a mammalian organ.



i) Identify the section _ **(1mark)**

.....

ii) Name the parts labeled **A, B** and **C** **(3marks)**

A

B

C

iii) State two functions of the photographed specimen. **(2marks)**

.....

.....

iv) Label on the photograph using **G** and **L** the region where the **Glomerulus**, and **Loop of Henle** are located respectively. **(2marks)**

.....
.....

(v) Name a process that occurs in the glomerulus and Loop of Henle **(2marks)**

a) Glomerulus

b) Loop of Henle

(vi) Name two renal diseases **(2marks)**

.....
.....

KABARAK-SACHO-SUNSHINE JET EXAMINATION

KASSU

BIOLOGY PRACTICAL PAPER 3

JUNE 2014

MARKING SCHEME

1. You are provided with 10% glucose solution and substance **labeled Y**. Also provided is a solution labeled **X**. You are to investigate the reaction between the glucose solution and **substance Y**. Measure 20.00cm³ of the glucose solution and transfer it to the boiling tube provided. Transfer all the **substance Y** provided into the solution in the boiling tube. Tightly fit the rubber bung carrying a delivery tube to the boiling tube. Place the boiling tube in a water bath kept between 35 – 38⁰ c. Measure 1.0. Cm³ of **solution X** and transfer to a test tube. Connect the delivery tube so that the open end enters the **solution X**. Allow the set – up to stand for about 30 minutes and during this time observe the changes occurring in the boiling tube and in the test tube having **solution X**.

a) Fill the table below (2 marks)

Tube	Observations
Boiling Tube	Bubbles / effervescence
Test Tube	Solution X turns into white ppt

b) What conclusions can you draw from your observations in the test tube? (2 marks)

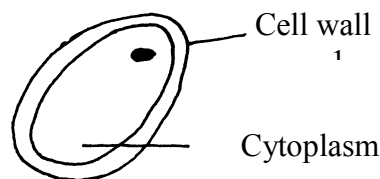
The colourless gas produced is carbon (iv) oxide, solution x is lime water / calcium hydroxide.

c) Name the process that took place in the test tube (1 mark)

Fermentation/ anaerobic respiration

d) Shake the contents of the boiling tube and using a dropper remove a little of the contents. Transfer a drop to a glass slide; add two drops of methylene blue stain. Cover with a cover slip and observe using a microscope of x10 or x15 eye piece lens.

(i) Draw and label the **substance Y** which is in the slide (2 marks)



Mg x 150

(ii) What is the possible identity of **substance Y** (1 mark)

Yeast

- e) Why was the temperature of the water bath kept between 35 – 38⁰c (1 mark)
It is the optimum temperature range /best temperature/most suitable for functioning of enzymes.
- f) If the experiment was done under the following conditions, suggest, giving reasons the expected results.
(i) Water bath was kept at 100⁰c

Observations: (1 mark)

No reaction / no respiration /no CO₂ production /no effervescence.

Reasons: At high temperature the enzymes are denatured and yeast cells are killed (1 mark)

- g) From the microscope (1 mark)
- (i) Name the part labeled Q. (1 mark)
Low power objective lens
- (ii) Give the function of part labeled P. (1 mark)
Allows change from one objective lens to another,
- h) Name the form in which substance Y stores its excess glucose (1 mark)

Glycogen;

Q2.(a)

- (i) Name given to the coiled part labeled T found on specimen A (1 mark)

Tendrils; Rj: wrong spellings. Acept. Plural.

- (ii) Type of response exhibited by the coiled part on specimen A (1marks)

Thigmotropism/Haptotropism; Rej wrong spellings.

- (iii) Stimulus responsible for the response named in (ii) above. (1mark)

Contact; Rj. Touch

- (iv) How the response exhibited by the coiled part on specimen A occurred (3 marks)

Due to contact; the auxins/IAA moved away from the surface of contact/accumulated on the surface away from contact; where they caused faster growth/cell elongation hence curling/coiling (around a support);

- (v) Biological significance of the response described in (iv) above to the survival of the specimen. (1 mark)

Has tendrils to provide support; (by coiling around firm support)./to reach for light.

b).

- (i) The agent of pollination for the specimen B. 1mk

• **Insects;**

- (ii) A reason. 1mk

• **Brightly coloured petals;**

KABARAK-SACHO-SUNSHINE JET EXAMINATION.

BIOLOGY 231/3

PAPER 3

JUNE 2014

This document must not be seen by the candidates whatsoever

CONFIDENTIAL 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 candidates either directly or indirectly. The teacher in charge of Biology **SHOULD NOT** perform any of the experiments or give any information related to these instructions to the candidates.

Each candidate will require the following:

1. 10% glucose solution
2. Substance labeled **Y**- yeast
3. Solution labeled **X** – calcium hydroxide
4. Measuring cylinder
5. Boiling tube
6. Thermometer
7. Delivery tube at least bended
8. Water bath
9. Stop watch
10. Methylene blue
11. Stop watch
12. Methylene blue
13. Glass slide and cover slip
14. A dropper
15. Microscope with the following parts labeled **Q**-lower objective lens and **P** revolving nose piece
16. Rubber bung/ stopper.
17. Test tube