**KAHUHO UHURU HIGH SCHOOL**

**231/3**

**BIOLOGY**

**PAPER 3**

**(PRACTICAL)**

**MAY 2016**

**TIME:1 ½ HOURS**

**CONFIDENTIAL:**

**Each candidate will require the following:**

* 15ml of 5% Bromothymol Blue.
* Lime water (calcium hydroxide) labeled solution X.
* A drinking straw.
* 2 test tubes.
* 10ml measuring cylinder.
* Boiling tube.
* Large bean seed soaked overnight labeled R1.
* Large maize grain soaked overnight labeled R2.
* Scalpel or razor blade.
* Iodine solution provided with a dropper.
* Dilute hydrochloric acid.
* Dilute sodium hydroxide.
* Hand lens.
* Distilled water provided in a wash bottle.
* 2 droppers.

**NB:** Bromothymol blue stock solution is 0.04g in 6 – 4ml N/100 NaOH, 73.6ml distilled water and 20ml absolute ethanol 5% Bromothymol blue is made by adding 95ml of distilled water to 5ml of stock solution.

**NAME……………………………………………………………..ADM NO……………LASS………**

**KAHUHO UHURU HIGH SCHOOL**

**Kenya Certificate of Secondary Education**

**BIOLOGY**

**PAPER 3**

**(PRACTICAL)**

**TIME: 1¾ HOURS**

1. You are provided with the following:

* 25ml Bromothymol blue.
* Solution X.
* A drinking straw.
* 2 test tubes.
* 10ml measuring cylinder.
* A boiling tube.
* Dilute hydrochloric acid.
* Dilute sodium hydroxide.

1. Place 2ml of Bromothymol Blue (B.T.B) in a clean test tube. Add dilute hydrochloric acid drop by drop and shake after each drop till there is a permanent colour change.

(i) State the resulting colour. (1 mark)

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1. To the mixture obtained above, now add sodium hydroxide solution drop by drop until there is a colour change. Record your observation. (1 mark)

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1. From your observations in (a)(i) and (a)(ii) above what is the nature of Bromothymol blue.(1 mark)

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1. Place 10ml of fresh Bromothymol blue in a boiling tube. Using the drinking straw, bubble air through the bromothymol blue until there occur colour change.

(i) Record your observation. (1 mark)

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1. What does the colour obtained in (b)(i) above suggest about the nature of the gas breathed out? (1 mark)

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1. Rinse the measuring cylinder and use it to place 2ml of solution X in a clean test tube. Rinse the drinking straw used in (b) above and use it to bubble air through solution X.

(i) Record your observation. (1 mark)

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(ii) Suggest the identity of solution X. (1 mark)

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1. Suggest the identity of the gas that gave rise to the observation above. (1 mark)

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(d) (i) Name the physiological process in cells that leads to formation of the gas named in c(iii) above. (1 mark)

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1. Write down a word equation for the process named in d(i) above. (2 marks)

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1. What is the importance of the identified process in cells of living organisms? (1 mark)

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2. Study the photographs and answer the following questions.

 PLATE 5

PLATE 6 PLATES 7

**(I)** The photograph in Plate **5** shows the germination process in a species of legume.

(a) (i) Name the type of germination shown in the photograph. (1 mark)

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

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(b) Other than germination the seedling have shown some responses.

(i) Name **two** responses shown in the photograph. (2 marks)

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(ii) State **one** survival value of each of the response named above. (1 mark)

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**(II)** Examine the photograph in Plate **6** and Plate **7** which show different essential parts of a flower of a species on two different plants.

(a) Name the flower parts shown in Plate **6** and Plate **7**. (2 marks)

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(b) (i) Name the phenomenon described in the statement above. (1 mark)

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1. Explain the significance of the phenomena stated in (a)(i) above. (1 mark)

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(c) (i) State the mode of pollination of the flower shown in the photograph. (1 mark)

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

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(d) (i) State the type of pollination of the flower shown in the photograph. (1 mark)

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(ii) Give **two** reasons for your answer. (2 marks)

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3. The photographs in Plate **J**, **K** and **L** shows the anterior part of two different animals,

Plate **L** shows the longitudinal dissection of Plate **K**. Examine the photographs and answer the questions below.

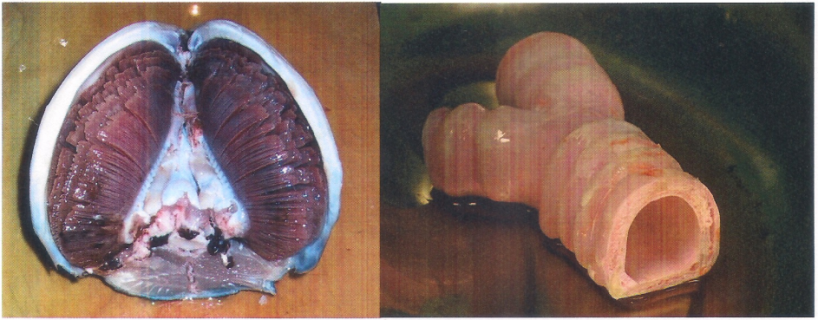


PLATE J PLATE K

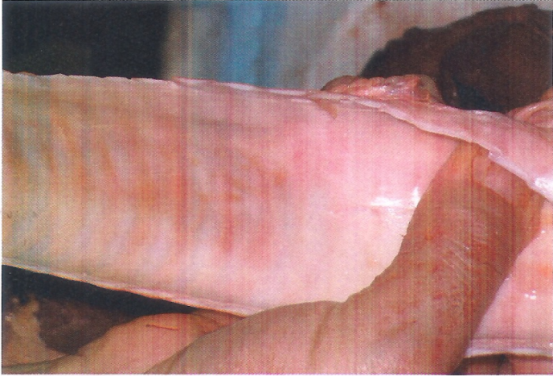


PLATE L

(a) (i) State the class to which the animal organ in Plate **J** belongs. (1 mark)

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(ii) State the habitat of the animal. (1 mark)

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(iii) Give a reason for your answer in (ii) above. (1 mark)

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(b) (i) Name the organ shown in the photograph in Plate **J**. (1 mark)

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(ii) State the function of the organ named above (i). (1 mark)

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(iii) Name the structure that protects the organ named in (b(i) above from mechanical damage . (1 mark)

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(iv) From observable features only explain three adaptation of the organ to its function.(3 marks)

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(c) (i) Identify the structure in the photograph Plate **K** and **L**. (1 mark)

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

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(iii) Using observable features only state three adaptations of the structure to its functions. (3 marks)

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