Students Name: …………………………………………………………………

School Name:…………………………………… Index Number ……………

553/3

BIOLOGY

PAPER 3

Nov/Dec 2020

2 Hours



**HES MOCK EXAMINATIONS 2020**

**UGANDA CERTIFICATE OF EDUCATION**

BIOLOGY

**PAPER 3**

**2 HOURS**

**INSTRUCTIONS:**

*Answer* **all** *questions.*

*Drawings and answers should be made and written in the spaces provided respectively.*

*Use a sharp HB pencil for your drawings.*

*Coloured pencils or crayons should* **not** *be used.*

No *additional sheets of writing paper are to be inserted in this booklet.*

*Work on additional sheets will* **not** *be marked*

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| **For Examiners’ use only** | | |
| **Question** | **Marks** | **Examiner’s Signature** |
| **1.** |  |  |
| **2.** |  |  |
| **3.** |  |  |
| **Total** |  |  |

1. You are provided with specimen ***O,*** which is an organ from a plant. Peel the organ removing only a thin layer. Chop the tissue into small cubes (about 15) of equal size; .

(a) Use the cubes of the tissue as instructed in the tables below; (08 marks)

***Table I***

|  |  |  |
| --- | --- | --- |
| **Test** | **Observation** | **Deduction** |
| 1. To of hydrogen peroxide in a test tube add 2 cubes. |  |  |
| 1. To of hydrogen peroxide in a test tube add of solution , test the mixture with litmus paper. Add 2 cubes to the mixture. |  |  |
| 1. To of hydrogen peroxide in a test tube add of solution , test the mixture with litmus paper. Add 2 cubes to the mixture. |  |  |
| 1. To of hydrogen peroxide in a test tube add of distilled water. Test the mixture with litmus paper. Add 2 cube to the mixture. |  |  |

(b) (i) Explain your results in test (i) in table I above. (02 marks)

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(ii) Identify the active ingredient in the tissue. (01 mark)

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1. Make a general conclusion about the activity of the active ingredient mentioned in (b) (ii) above, basing on the results in test (ii), (iii) and (iv) in table I. (02 marks)

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(d) Work out; (07 marks)

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| **Test** | **Observation** | **Deduction** |
| 1. To of hydrogen peroxide in a test tube add 1 (one) cube. |  |  |
| 1. To of hydrogen peroxide in a test tube add 1 (one) crushed cube. |  |  |
| 1. To of hydrogen peroxide in a test tube add 3 crushed cubes of the tissues. |  |  |
| 1. To of distilled water in a test tube add 1 (one) cube. |  |  |

(e) (i) State **two** factors that affect the activity of the active ingredient in the

tissue, that are investigated in tests (i) and (ii) and (iii) table II.

(02 marks)

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(ii) State the property of the active ingredient investigated in test (iv) in table II. (01 mark)

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2. Specimens ***P***, , , , and are leaves of plants.

(a) (i) State the group of plants to which the parent of specimen belongs. (01 mark)

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(ii) Give **two** reasons for your answer in (a) (i) above. (02 marks)

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(b) How is the structure of specimen ***P*** related to its function? (03 marks)

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(c) (i) Make a drawing of specimen , on it label on the major parts of a leaf. (04 marks)

(ii) Identify the parallel veins in specimen . (01 mark)

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(d) (i) Fill the table below. (04 marks)

**Table III**

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| **Specimen** | **Description of petiole** |
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(ii) Usingfeatures of the petioles only make a dichotomous to identify the

specimens considered in table III. (04 marks)

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3. You are provided with specimens ***W***, and ***Y***, which are all freshly killed animals.

(a) (i) Identify the phylum to which the animals belong. (01 mark)

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(ii) State **three** reasons for your answer in (a) (i) above. (03 marks)

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(b) Make a labeled drawing of the dorsal view of the head of specimen . (05 marks)

(c) State the habitat of each animal and the role the animal plays in the habitat.

(03 marks)

(i) ***W***; habitat ……………………………………………………………………

Role:

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(ii) ***X***; habitat ……………………………………………………………………

Role:

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(iii) ***Y***; habitat ……………………………………………………………………

Role:

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(d) Show how the structure of specimen ***W*** has enabled it to survive in its habitat. (06 marks)

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**END**