Name: …………………………………………………………………………………… Target mark: ………………

Signature: ……………………………………………………………………………….

**P530/3**

**BIOLOGY**

(PRACTICAL)

**Paper 3**

**Nov /Dec. 2019**

3 hours

**END OF YEAR EXAMINATIONS 2019**

**Uganda Advanced Certificate of Education**

**S.5 BIOLOGY**

PRACTICAL

**Paper 3**

3 hours

**INSTRUCTIONS TO SEMI-CANDIDATES**:

* Answer **all** questions
* Answers **must** be written in the spaces provided. Additional sheets of paper must **not** be inserted.

|  |  |
| --- | --- |
| **For Examiner’s Use only** | |
| **Question** | **Marks** |
| 1 |  |
| 2 |  |
| 3 |  |
| **Total** |  |

1. You are provided with specimen T. Examine it carefully and answer the questions that follow.

a) (i) List three observable features of specimen T.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(ii) Using the characteristic features you have named in a) above, suggest the phylum, class and order to which the specimen T belongs.

Phylum ………………………………………………………………………………………………………………………………………

Class ………………………………………………………………………………………………………………………………………

Order

………………………………………………………………………………………………………………………………………

(iii) In which kind of habitat would you find specimen T.

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… (iv) Suggest the role it plays in that habitat

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(v) Suggest two observable adaptations, which suit the specimen's role in the habitat.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

b) Pin the specimen with the ventral side uppermost. Dissect and remove the skin, taking note of how it is attached to the underlying body wall.

(i) Carefully examine the skin and describe its attachment on the body wall.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

ii) Observe the main blood circulation on the skin. Describe the pattern of blood vessel distribution on the inner surface of the skin.

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… (c) Open up the buccal cavity using forceps and examine the prominent structure on the lower jaw, describe how it’s attached on it.

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… (ii) How is the structure of the above related to its functions?

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… (d) Dissect the specimen further to display the superficial muscles on the left hind thigh. (07marks)

2. You are provided with suspension **X** and carbohydrate solutions **P** and **Q** .You are required to determine the nature of solutions P and Q and investigate the action of suspension X on them. (27 marks)

(a) Carry out the following tests and record your observations and deductions in Table 1 below.

**Table 1**

|  |  |  |
| --- | --- | --- |
| **TESTS** | **OBSERVATIONS** | **DEDUCTIONS** |
| Take 1 of P and 1 of Benedict’s solution and boil. |  |  |
| Take 1 of Q and add 1 of Benedict’s solution and boil. |  |  |

(b) Take 4 of suspension X in a test tube and place it in a water bath of boiling water for 10 minutes. Remove the test tube from the water bath and allow it to cool. Label it boiled X. label six test tubes 1 to 6. In each test tube, add contents as shown in the Table II and leave to incubate at the respective temperatures for 25 minutes.

Table II

|  |  |  |
| --- | --- | --- |
| **Test tube** | **Contents** | **Temperature of incubation** |
| 1 | Put 2 of P and 1 of unboiled X | Room temperature |
| 2 | Put 2 of Q and 1 of unboiled X | Room temperature |
| 3 | Put 2of P and 1 of unboiled X | 40 |
| 4 | Put 2 of Q and 1 of unboiled X | 40 |
| 5 | Put 2 of P and 1 of boiled X | 40 |
| 6 | Put 2 of Q and 1 of boiled X | 40 |

(c) (i) After incubation, carry out the Benedict’s test on the content of each of the six test tubes using 1 of the test solution and 1 of Benedict’s solution in each case. Record your observations and conclusions in Table III

Table III

|  |  |  |
| --- | --- | --- |
| **TEST TUBE** | **OBSERVATIONS** | **CONCLUSIONS** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |

(ii) Explain your observations in the test tubes:

1, 3 and 5

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

2, 4 and 6

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(d) (i) What conclusions can you draw about the identity of the carbohydrates P and Q?

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(ii) Suggest a further test you would carry out to confirm the identity of P and Q.

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3. You are provided with specimen **L**, **M** and **N**. Cut open the specimens into two halves as follows:- Specimens L and M longitudinally with complete seed(s) in one half, while specimen N transversely.

(a)Describe

(i)The arrangement of seeds in specimen M and N. (04 marks)

Specimen M

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Specimen N

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….……………………………………………………………………………………………………………………

(ii)The structure of the parts listed in the Table below:- (11 marks)

|  |  |  |
| --- | --- | --- |
| **Part** | **Specimen L** | **Specimen M** |
| Seed |  |  |
| Pericarp |  |  |
| Funicle |  |  |

(b)Draw and label a half of transverse section of specimen N. (06 marks)

**END**

**UNKNOWNS**

1. **T-**Toad/frog
2. **P-**1% Starch solution

**Q-**1% Sucrose solution

**X-**2% Yeast solution

1. **L-**Rawmango fruit

**M-**Bean pod

**N-**Ripe tomato fruit

**Hint:** Semi –candidates must have access to;

* Food test reagents
* Heat source
* Thermometer
* Distilled water
* Stop clock and test tubes on top of other basic requirements.