**School………………………………………………………………………….…………………………………………**

**Candidate’s Name:…………………………………………………..………Signature:……….……………**

**P530/3**

**BIOLOGY**

**PRACTICAL**

**Paper 3**

**July/Aug 2016**

**3 ¼ hours**

**MUKONO EXAMINATIONS COUNCIL**

**Uganda Advanced Certificate of Education**

**BIOLOGY PRACTICAL**

**Paper 3**

**3 hours 15 minutes**

**INSTRUCTIONS TO CANDIDATES**

* *This paper consists of* ***three*** *questions.*
* *Answer* ***all*** *questions.*
* *Write the answer in the spaces provided. Additional sheets of papers must* ***not*** *be inserted.*
* *You are not allowed to start working within the first 15 minutes. You are advised to use this time to read through the paper and ensure that you have all the apparatus, chemicals and specimens you may require.*

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

1. You are provided with specimen **T** which is freshly killed. Carefully examine the head of the specimen and its features.
2. Describe the:
3. position, appearance and structure of the eyes. ***(2 marks)***

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1. structural shape of the head. ***(3 marks)***

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1. Explain the ecological significance of your description in a) (i) and (ii) above. ***(3 marks)***

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c) Dissect the specimen to display,

1. the blood vessels that take blood from the heart to the thoracic region of the animal.
2. the blood vessels that return blood from the alimentary canal and its associated organs back to the heart, with the heart turned upwards and pinned through the ventricles.

Draw and label your dissection on one diagram. ***(22 marks)***

d) By further dissection, display the blood vessels from the left leg, pelvic and lumber

regions of the specimen. Draw and label the kidney and related blood vessels

returning blood from the left side to the kidney. ***(8 marks)***

1. You are provided with solution **C**, **D**, **L** and **M**. You are required to carry out tests to identify the nature of solutions **C** and **D**, and then find out the actions of solutions **L** and **M** on **C** and **D**. Carryout tests in Table 1 on solution **C** and **D** and record your observations and deductions. ***(15 marks)***

**Table 1**

|  |  |  |  |
| --- | --- | --- | --- |
| Test | | Observations | Deductions |
| **Iodine test** | **C** |  |  |
| **D** |  |  |
| **Benedict’s test** | **C** |  |  |
| **D** |  |  |
| **Biuret test** | **C** |  |  |
| **D** |  |  |
| **DCPIP test** | **C** |  |  |
| **D** |  |  |

b) Label four test tubes 1, 2, 3 and 4 and put contents into each test tube as follows:

Test tube 1: 1cm3 of **C** + 1cm3 of **L**

Test tube 2: 1cm3 of **C** + 1cm3 of **M**

Test tube 3: 1cm3 of **D** + 1cm3 of **L**

Test tube 4: 1cm3 of **D** + 1cm3 of **M**

Incubate the four tests tubes in a water bath at a temperature of 35-400C for 20 minutes, carry out tests for vitamin **C**, reducing sugars and protein. Record your observations and deductions in Table 2 below. ***(12 marks)***

**Table 2**

|  |  |  |  |
| --- | --- | --- | --- |
| Test |  | Observation | Deductions |
| Reducing sugar | Test tube 1 |  |  |
| Test tube 2 |  |  |
| Test tube 3 |  |  |
| Test tube 4 |  |  |
| Protein | Test tube 1 |  |  |
| Test tube 2 |  |  |
| Test tube 3 |  |  |
| Test tube 4 |  |  |
| Vitamin C | Test tube 1 |  |  |
| Test tube 2 |  |  |
| Test tube 3 |  |  |
| Test tube 4 |  |  |

1. (i) From the results above, suggest the nature of substances **L** and **M**. ***(1mark)***

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(ii) Give an explanation for your suggestion in c) (i) above. ***(3 marks)***

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1. From the above tests, suggest with reasons the food substances in solutions **C** and **D**. ***(5 marks)***

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1. You are provided with specimens G, **H**, **I**, **J** and **K**.
2. State three observable differences between specimens **G** and **J**. ***(3 marks)***

|  |  |
| --- | --- |
| Specimen **G** | Specimen **J** |
| ……………………………………………  ……………………………………………  ……………………………………………  …………………………………………… | ……………………………………………  ……………………………………………  ……………………………………………  …………………………………………… |

1. Using a hand lens, examine the tarsus of the hind limb of each of specimen **I** and **J**.
2. Draw and label the tarsus of each limb. ***(6 marks)***
3. Give the ecological significance of the structure of each tarsus. ***(2 marks)***

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1. Examine the mouth parts of specimen **J** and **K** using a hand lens.
2. Draw the mouth parts of specimen **J** and **K**. ***(4 marks)***
3. Relate the structure of each mouth part to its function on the specimen. ***(2 marks)***

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1. Using features of the abdomen only, construct a dichotomous key to identify specimens **G**, **H**, **I**, **J** and **K**. ***(8 marks)***

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