Name:..... Stream:.....

553/2
BIOLOGY
PRACTICAL
PAPER 2
2 hours
Jun./Jul. 2023

Uganda Certificate of Education

BIOLOGY PRACTICAL

MOT II EXAMINATIONS, 2023

PAPER 2

2 HOURS

Instructions to candidates:

- *Answer **all** questions.*
- *Drawings **must be** made in the spaces provided.*
- *Use **sharp pencils** for your drawings.*

For Examiner's use only.

Question	**Marks**	**Examiner's signature**
1		
2		
3		
Total		

1. You are provided with solutions **X** and **Y**. You are required to determine the food substances in them.

(a) Using reagents provided, carry out the following tests on X and Y and record your observations and deductions in the table below. (06 marks)

Table I

Test	Observations	Deductions
(i) To $1cm^3$ of solution **X** in a test tube, add 2 drops of Iodine solution.		
(ii)To $1cm^3$ of solution X in a test tube, add $1cm^3$ of Benedict's of solution and boil for 1 minute.		
(iii)To $1cm^3$ of solution Y in a test tube, add $1cm^3$ of Benedict's of solution and boil for 1 minute.		
(iv)To $1cm^3$ of solution Y in a test tube, add $1cm^3$ of dilute hydrochloric acid and boil for 1 minute. Cool under tap water and then add $1cm^3$ of dilute sodium hydroxide solution followed by $1cm^3$ Benedict's solution and boil for 1 minute.		

(v) Identify the food substances in solution X and Y. (01mark)

X: ……..

Y: ……..

(b) Rinse your mouth water, collect about 4 cm^3 of saliva and dilute it with distilled water to about $6cm^3$ in a clean test tube. Label this solution R. label three test tubes 1,2 and 3.

Procedure
To test tube 1 add $2cm^3$ of X plus $2cm^3$ of R.
To test tube 2 add $2cm^3$ of X plus $2cm^3$ of boiled R
To test tube 3 add $2cm^3$ of Y plus $2cm^3$ of R
Incubate the three test tubes in a water bath maintained at 37℃ − 40℃ for 20 minutes.
After 20 minutes, carry out the following tests on the contents of the test tubes.

Table II

Test	Observation	Deduction
(i) Divide the contents of test tube 1 into two portions. To the first portion, add 2 drops of Iodine solution.		
To the second portion, add $2cm^3$ of Benedict's solution and boil for 1 minute.		
(ii) To the contents of test tube 2, add 2 drops of Iodine solution.		
(iii) To the contents of test tube 3, add $2cm^3$ of Benedict's solution and boil for 1 minute.		

(iv) With reference to your observations in table (I) and table (II) above, explain your results in test tube 1, 2 and 3 after 20 minutes of incubating in warm water.

Test tube 1 $(01\frac{1}{2}$ marks)
……
……
……

Test tube 2 $(01\frac{1}{2}$ marks)
……
……
……

Test tube 3 $(01\frac{1}{2}$ marks)
……
……
……

(c) State two properties of the active substance in R being investigated in the experiment above. In each case give a reason to support your answer. (02 $\frac{1}{2}$ marks)

(i) Property

……

Reason

……

……

(ii)Property

……

Reason

……

……

2. You are provided with specimens S, T and U from the same animal or bird.

(a) Identify the specimen (03 marks)

S: ……..

T: ……..

U: ……

(b) Identify the animal part from which each specimen was obtained (03 marks)

S: ……

T: ……

U: ……..

(c)Examine the specimens and describe their structure (06 marks)

Specimen S

……

……

……

Specimen T

……

……

……

Specimen U

……

……

……

(d)Basing on the observable features mentioned above, compare specimen S and U

(i)Differences

……

……

……

……

……

(ii)Similarities

……

……

……

(e)Explain the;
(i) Differences in functions between S and U
……
……
……
……
……
……
……
(ii)Functional similarities between S and T
……
……
……
……
……
(f) Draw and label specimen S

3. You are provided with specimen **U** and **V** which are plant organs. Examine them and answer the questions that follow.

(a) Identify each of the specimens. (02 marks)
U: ……
V: ……
(b) State two observable structural differences and similarities between U and V.
Similarities (02 marks)
……
……
……
Differences

U	V
(i)	
(ii)	

(c) State two functions of U to the plant from which it was obtained. Give a reason in each case. (04 marks)

Function	Reason
(i)	
(ii)	

(d) Using a razor blade, cut out 3 internodes of V, carefully without destroying any other structure. Draw and label. State your magnification. (06 marks)

(e) From your drawing in (d) above, state three adaptations of V to its functions.
($03\frac{1}{2}$marks)
……
……
……

END