Each candidate must be provided with:

1. X – Concentrated Orange Juice

   Z – DCPIP Solution

2. P – Cockroach

   Q – Bee

   R – Tick

   S – Housefly

3. C – Bean seedling
   D – Maize seedling
   } all grown for 14 days

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Name..... Personal No.....

Signature.....

553/2
BIOLOGY
(Practical)
Paper 2
Jul./Aug. 2023
2 Hours

SENIOR EDUCATION CONSULTANTS (SEC)
JOINT MOCK EXAMINATIONS, 2023

Uganda Certificate of Education

BIOLOGY
(Practical)

Paper 2

2 hours

INSTRUCTIONS TO CANDIDATES:

- *This paper consists of three questions.*
- *Attempt all questions.*
- *Drawing should be made in the spaces provided.*
- *Use sharp pencils for your drawings.*

For Examiner's use Only		
1		
2		
3		

1. You are provided with solution X which contains a food nutrient and a chemical reagent Z.

(a) Label test tubes A, B, C, D, E and F.
Using a measuring cylinder, measure the following quantities of solution X into test tubes A, B, C, D and E.

Table 1

Test tube	A	B	C	D	E
Volume of X (cm^3)	1	2	3	4	5

Increase the total volume of solution in test tube A, B, C, D and E to a uniform volume of $5cm^3$ by adding distilled water. Record the amount of water added to each test tube in the table below.

Table 2

Test tube	A	B	C	D	E
Volume of X (cm^3)					

(2 ½ marks)

(b) Measure $1cm^3$ of solution Z into test tube F
Using a dropper add solution X from test tube A dropwise to solution Z without shaking the mixture and count the numbers of drops used to decolorize solution Z. Record your results in table 3 below. Pour off the mixture and wash the rest thoroughly.
Repeat the above procedure using solutions in test tube B, C, D and E.

Table 3

Test tube	A	B	C	D	E
Number of drops used to decolorize Z					

(c) Plot a graph to show the relationship of number of drops added to solution Z on vertical axis (from table 3) and volume of solution X on horizontal axis.(from table 1)

(6½ marks)

(d) Explain the effect of water on solution X.

(2marks)

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(e) (i) Giving a reason suggest the identity of the food nutrient in solution X.

(1½mark)

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(ii) Identify solution Z and give a reason.

(1½mark)

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2. You are provided with specimens P, Q, R and S.

(a) Basing on observable features, state the phylum to which the specimen belongs.

Phylum. (1mark)

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Observable features.

(2marks)

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(b) Examine the specimens using a hand lens where necessary and describe the mouth parts and limbs.

(08marks)

Specimen	Mouth parts	Limbs
P		
Q		
R		
S		

(c) Specimen R is a parasite.

State the type of parasite, giving a reason.

(02marks)

Type of parasite

.....

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Reason

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(d) The characteristic features of the mouth parts and limbs only, construct a dictomous key to identify the specimens P, Q, R and S.
(03marks)

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3. You are provided with specimen C and D which have been germinated for the same period of time.

(a) (i) With the help of a thread, measure the length of the upper part from the cotyledon (hypocotyls) of specimen C. Record your results in the table below. Repeat the above procedure for specimen D.
(03marks)

Specimen	Length of hypocotyls(mm)	Length of epicotyls(mm)	Ratio of hypocotyls to epicotyls
C			

D			

(ii) From your results in the table above.

State the type of germination which occurs in each specimen.

C

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D

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(iii) Explain your answer in a(ii) above.

(02marks)

C

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D

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(b) (i) State the class of plants to which each specimen belongs.

(02marks)

C

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D

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(c) State two structural difference between specimen C and D.

(02marks)

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Specimen C	Specimen D

END