Name's of student……

School Name……

BIOLOGY PAPER II
P530/2
SENIOR SIX
JUNE-JULY.

COMPREHENSIVE BIOLOGY TRANSFORMATION INITIATIVE.
UGANDA ADVANCED CERTIFICATE OF EDUCATION.
(UACE)

S.6 CANDIDATES- 2024

PAPER 2

RESOURCEFUL EXAMINATION

2 HOURS AND 30 MINUTES

<u>INSTRUCTIONS TO THE CANDIDATES</u>:

This paper consists of section A and B.

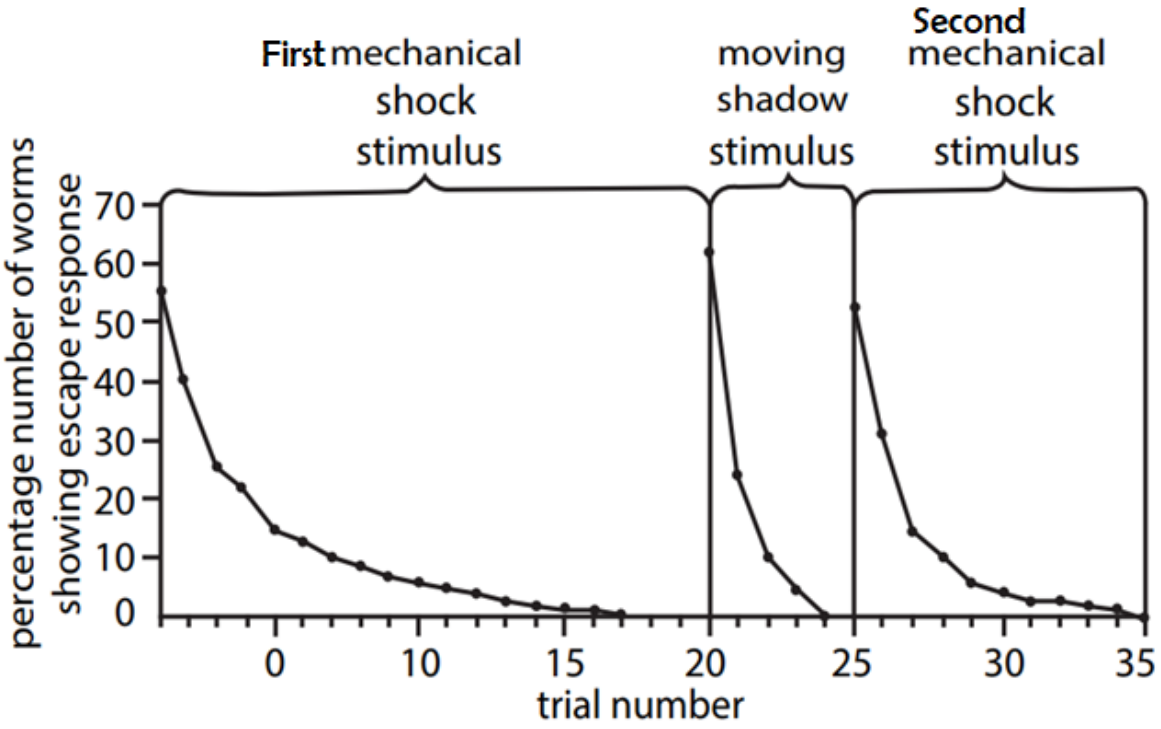
Answer question one in section A plus 3 questions in section B

Candidates are advised to read questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagram wherever necessary.

N.B – <u>QUESTION ONE IS COMPULSORY TO ALL CANDIDATES.</u>

1) **Nereis, *rag worm*** is a **marine worm** which lives in a tube. Its **head** emerges from the tube to feed but it is **quickly withdrawn in response to a variety of stimuli**. The figure shows the results of an investigation into the **effects of two stimuli tried at two two-minute interval** on **40** worms **living in glass tubes in a shallow tank of water**.

Study the graph below and provide **suitable responses**.



a) **Compare** the percentage response of worms to the **first mechanical shock stimulus** with their response **to the moving to the shadow stimulus.** **(05 marks)**

b) **Describe** the **effect of the number of trials on the percentage number of worms showing escape response** on,

(i) Application of first mechanical shock stimulus. **(03 marks)**

(ii) Application of second mechanical shock stimulus. **(03 marks)**

(iii) Moving to shadow stimulus. **(03 marks)**

c) **Explain why the percentage number of worms** showing escape responses **decreases** in all the three investigations. **(10 marks)**

d) **Explain** the differences in the percentage number of worms showing **escape response during the first and second mechanical shock application.** **(07 marks)**

e) **Suggest**

(i) Why there were many **as 40 worms** used in the experiment**?** **(02 marks)**

(ii) Mechanical shocks applied simultaneously **to the worm.** **(02 marks)**

(iii) The unlearned escape response that **nereis** employs to cope up with possible dangers. **(03 marks)**

(iv) Conclusions can you **draw** from the graph**.** **(03 marks)**

SECTION B (60 MARKS)

Answer three Questions From this Section.

2) (a) Explain how plants have **successively overcome** the **problems** of **adapting** to **life** on **land.** **(13 marks)**

(b) Explain how **Organisms** have **evolved Strategies** to take **advantages** of **new niches.** **(07 marks)**

3) (a) Explain how the **body alters blood flow** to **different areas during exercise and at rest.** **(13 marks)**

(b) Describe how the **electrical Signals** from the **SAN** (**Sino-atrial node**) **control the heart rate.** **(07 marks)**

4) (a) Explain the **role** of the **following** in **contraction** of **skeletal muscles.**

(i) Calcium ions. **(05 marks)**

(ii) ATP. **(05 marks)**

(b) Describe the **Sequence** of **events** at **the muscle end plate** which **leads** to the **action potential** passing **along the muscle fibre.** **(10 marks)**

5) (a) Why are **homeostatic systems** described as **detection-correction systems?** **(07 marks)**

(b)(i) Explain the **effect** of **Insulin** on the **liver**, **muscle** and **adipose tissue** in **regulation of blood sugar.** **(07 marks)**

(ii) Explain why a **diabetic individuals** shows the **symptoms of high blood sugar, weight loss** and **glucose appearing in blood.** **(06 marks)**

6) (a) Explain how **flowering is controlled in plants.** **(12 marks)**

(b) Explain the **adaptations** of the **Placenta** to its **role.** **(08 marks)**