NAME……..ADM NO: …….CLASS……

SCHOOL……..

SULIMO JOINT MOCK

Kenya Certificate of Secondary Education

231/2

BIOLOGY

PAPER 2

THEORY

JULY/ AUGUST, 2024

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

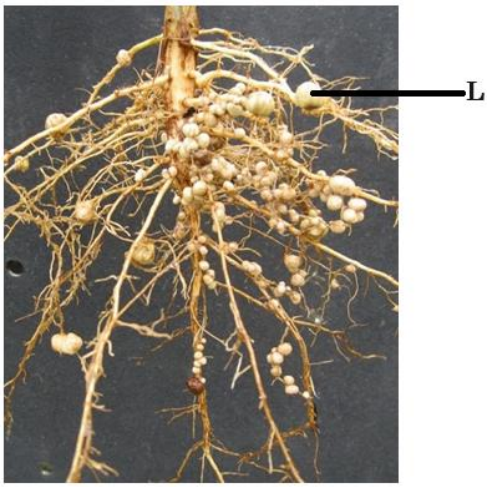
a) Write your name, class and index Number in the spaces provided.
b) This paper consists of **TWO** sections. **A** and **B**
c) Answer **ALL** questions in section as in the spaces provided
d) In section B answer **question 6 (compulsory)** and **EITHER** question **7** or **8** in the spaces provided after question 8.

For examiner's use only

Section	Question	Maximum score	Candidates score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
Total		80	

SECTION A (40 MARKS)

1.The diagram bellow shows a root system of a certain plant.



a. (i). Name structure L(1mark)

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(ii). Explain briefly the significance of having structure L in the root system of the plant represented above.(1mark)

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(b). (i) Name the organism found in the structure L. (1mark)

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(ii). Explain the relationship between the organism named in b (i) above and the plant. (2marks)

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(c). With a reason state the class to which the plant represented in the diagram belong. (2marks)

Class

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Reason

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(d). How do the structure labeled L compare in plant of the same species growing in fertile and poor soils. Explain. (2marks)

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2. In an family, the mother is blood group A while the father is blood group B. they had two children one with blood group B and the other with blood group O.

(a). Determine the genotypes of the parents. (2marks)

Mother

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Father

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b)Using a genetic cross show the possible genotypes of their children. (4marks)

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c)What is the probability of their third child having Blood group O? (1mark)

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d)Inheritance of blood group show multiple allelism.Give a reason .(1mark)

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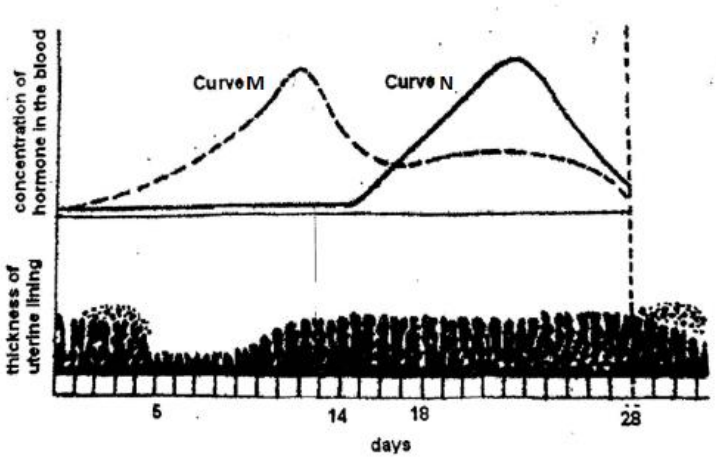
3. The changes that take place during the menstrual cycle in women is represented as shown below.



a) Name the hormones whose concentrations are represented by curves M and N. (2marks)

M…..……

N……

b) State the effects of the hormones named in (a) above on the lining of the uterus. (2marks)

M

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……..

N

…..……

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c) i)Which hormone is released by the pituitary gland in high concentration on the 14th day of the menstrual cycle. (1mark)

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ii)State the function of the hormone named in c (i) above.(1mark)

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d) State 2 roles of testosterone (2marks)

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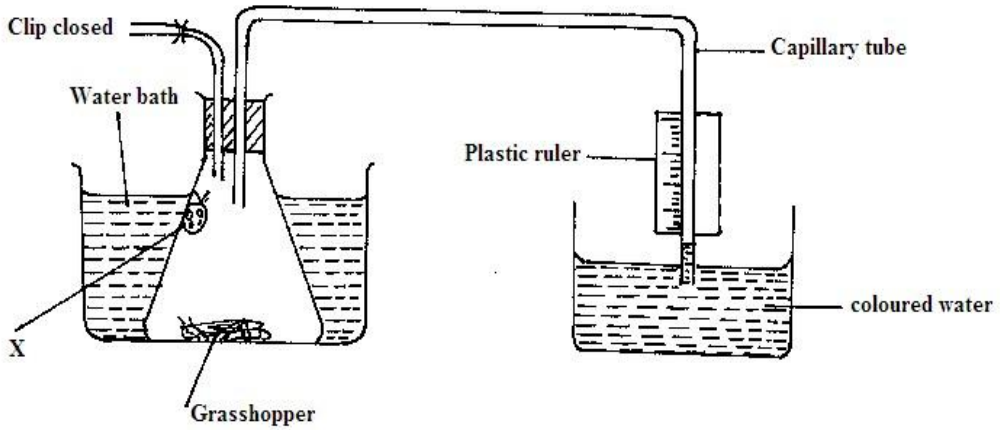
4.Experiment to show that oxygen is used up during respiration



a) Name the substance labeled X and state its role (2marks)

Name……

Role……

b) Explain why the coloured water rose in the capillary tube (3marks)

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c) Explain the use of the closed clip (1 mark)

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d) Name two factors that determines the value of Respiratory quotient (2marks)

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5.Form two students subjected an orange plant growing outside the laboratory to the following;

i) Selected two sized leaves and gently brushed them clean on both sides.

ii) Placed two strips of dry cobalt (ii) chloride paper on both sides of each leaf and opposite each other and covered the cobalt(ii) chloride papers with cellotape. They observed the time taken for any colour change to occur and recorded the following.

Side of leaf	Upper epidermis	Lower epidermis
Time taken	5 minutes	2 minutes

Use the above information to answer the following questions.

a.i) What was the aim of the above experiment. (1mk)

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ii) What was the purpose of brush cleaning the leaf (1mk)

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iii) What was the role of cello-tape in this experiment? (1mk)

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b.i) What was the original colour of dry cobalt chloride paper. (1mk)

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ii) What colour change did the students observe? (1mk)

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c.) Explain the difference in time taken for the colour change observed. (3mks)

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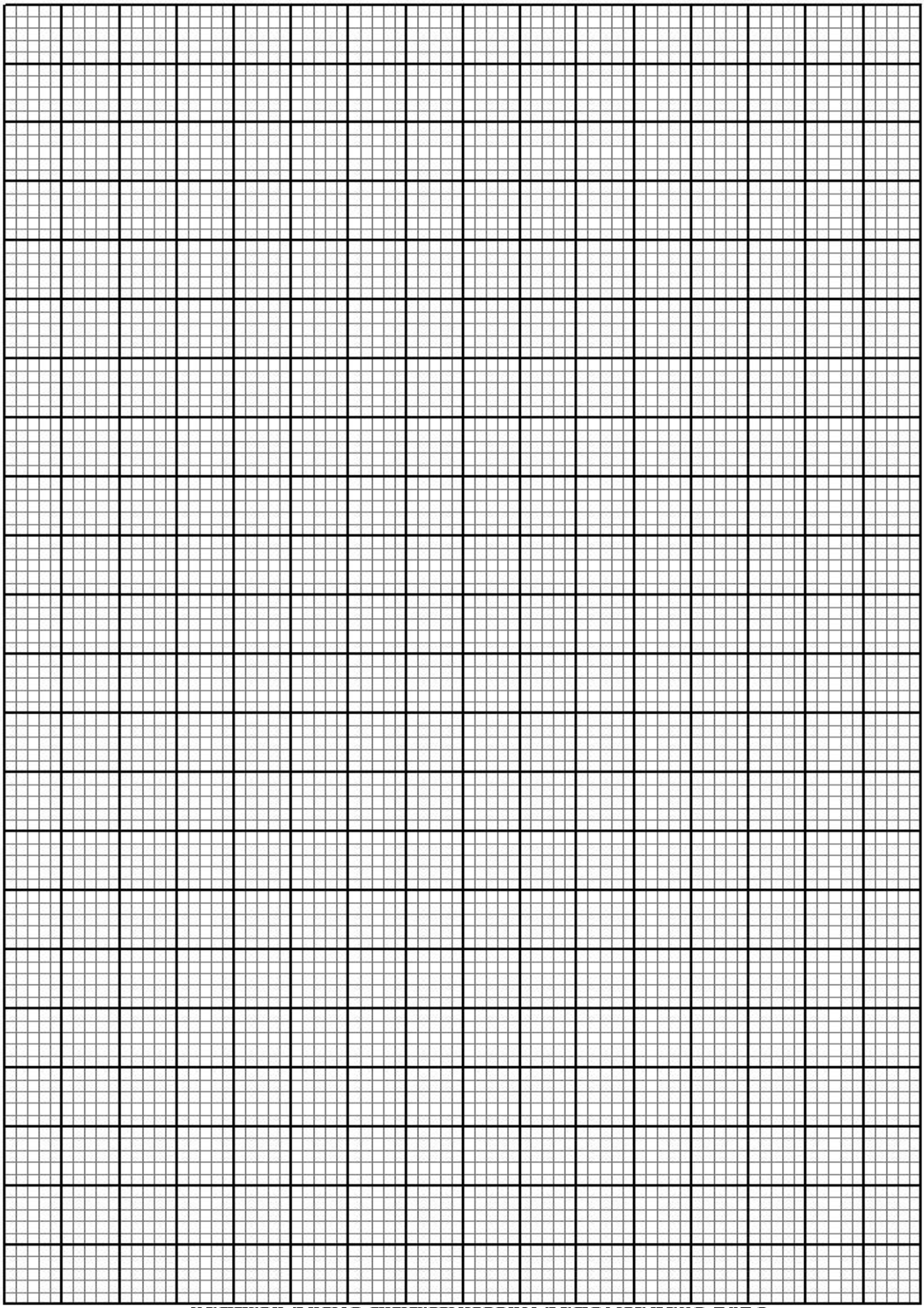
SECTION B (40 MARKS)

6. In a study on immune response, two groups of mice were used. Sheep blood was introduced into both groups of the mice. One group was given 5 doses of a drug Tinorcodine prior to vaccination.The second group was not treated with Tinorcodine prior to vaccination.Blood was collected from each group every three days for one month and the quantities of antibodies determined. The results were as shown in the table below.

Number of days after immunization	***Antibodies produced after immunization***	
	Tinocordine treated mice	***Non-Tinocordine treated mice***
3	15	5
6	20	5
9	30	15
12	60	25
15	122	30
18	250	30
21	122	30
24	60	30
27	37	22
30	27	5

(a)Plot graphs using the same axes of antibodies produced after immunization against number of days after immunization.(8marks)



b)Determine the rate of antibody production between day 13 and 17 in the Tinorcodine treated mice.(2marks)

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c)Account for the difference in the concentration of antibodies in the two groups of mice. (3marks)

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d)What type of immunity will be developed by the mice?(1mark)

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e)Name one disease whose spread is controlled by vaccination in human beings. (1mark)

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f)State 3 ways of controlling HIV/AIDS. (3marks)

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g)State two other ways of controlling highly infectious diseases apart from vaccination. (2marks)

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7. a)Describe the mechanism of inhalation in man. (8marks)

b)Describe the adaptations of aquatic plants to gaseous exchange.(6marks)

c)Describe how the brain regulates breathing.(6marks)

8.a)How is the leaf of a terrestrial plant adapted to perform its function? (10marks)

b)Describe eye accommodation. (10marks)