MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education

THE MOCK EXAMINATIONS, 2025

231/2 **BIOLOGY** **PAPER 2**

May/June, 2025 **TIME: 2 Hrs**

Name: ……..…… Admission No: ……

Stream: …….. Signature: ……..... **Thursday, 29th May, 2025; 2:00-4:00pm**

Instructions

(a) Write your name, admission number, date, stream and signature in the spaces provided above.

(b) All answers must be written in the spaces provided in this question paper.

*(c) This paper consists of **13** printed pages with **8** questions.*

(d) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing

(e) Candidate should answer the questions in English

FOR EXAMINERS'USE ONLY

Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
B	7	20	
	8	20	
		Total Score	

1.Albinism is a condition in which the external pigment fails to develop in human beings resulting in a person having light skin, white hair and pink eyes. It is caused by a recessive allele(a) and its effects are only observed in the homozygous state. The allele for the normal skin pigmentation(A) is dominant.

(a)Predict the genotype of the offspring of a cross between a carrier man a carrier woman (4marks)

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(b) i) What is the probability that a child is born with normal skin pigmentation (1mark)

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ii) Name the cell in humans that secretes the pigment responsible for skin colour. (1mark)

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(c) A part from gene mutation, state other two possible causes of variation in human being (2marks)

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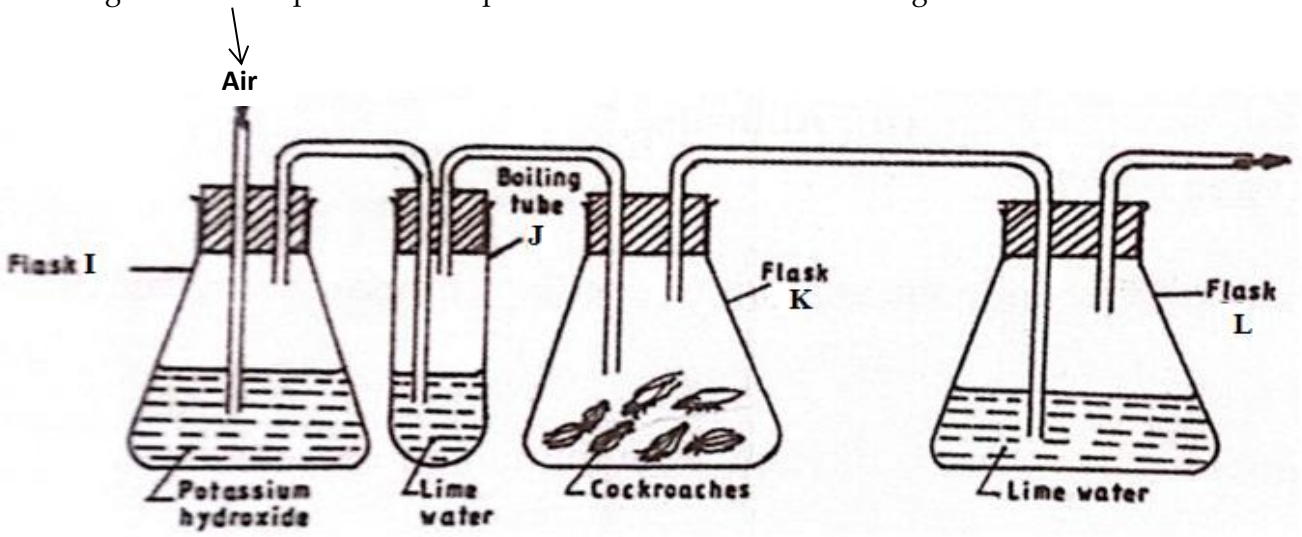
2.The diagram below represent a set-up that students used in an investigation.



(a)Name the physiological process that was being under study. (1mark)

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(b)State the role of lime water in boiling tube **J** . (1mark)

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(c) Account for the observation in boiling tube **J** and **L** . (2marks)

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(d) Name **two** end products of process named in 2(a) in plants if it was carried out in a vacuum for a long period of time. (2marks)

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(e) State **two** reasons why accumulation of lactic acid in body tissues leads to an increase in heartbeat. (2marks)

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3.The equation below represents a process which may occur in the human body.

Molecule A ⟶ Amino acid B+ Amino acid C

(a) Name the molecule labeled **A**. (1mark)

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(b)(i) Where in a cell does the process take place? (1mark)

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(ii)Name **two** enzymes in the human body which can catalyze the process in (a) above (2marks)

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(c) Name the processes involved in (i)and (ii) (2marks)

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(d) Where in the human body does process in (c) takes place (1mark)

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(e) State **one** function of molecule **A** (1mark)

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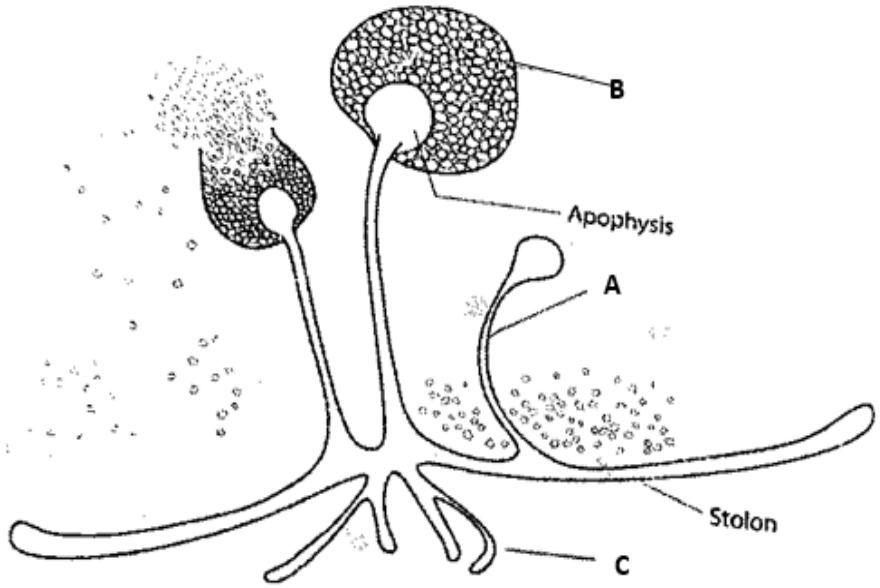
4.Below is a diagram of an organism found on the surface of the decomposing piece of bread.



(a) State genus in which the organism belongs (1mark)

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(b)Identify structure **A** and **B** (2marks)

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(c) A part from anchorage state two other functions of structure **C** (2marks)

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(d) Structure **A** is said to be non-septate. Explain (1mark)

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(e) What name is given to structure **C** in parasitic fungi (1mark)

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(f) Name the type of asexual reproduction exhibited by the organism (1mark)

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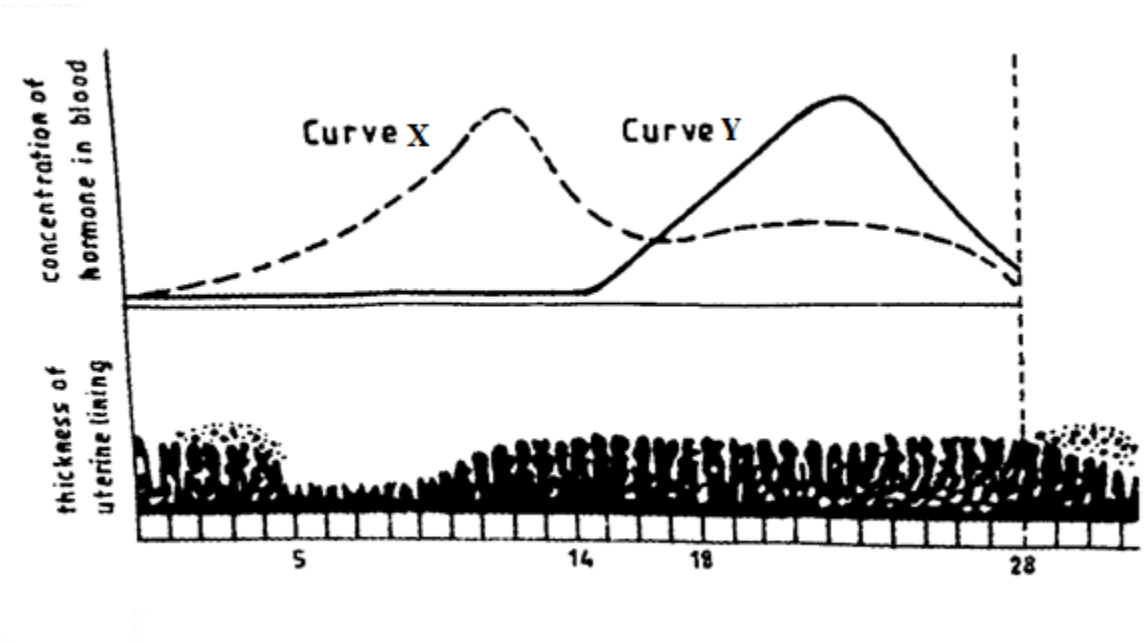
5.The figure shows changes that take place during menstrual cycle in human



(a) Name the hormone whose concentrations are represented by curves **X** and **Y** (2marks)

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

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(c)(i) Name the hormone that is released by the pituitary gland in high concentrations on the fourteenth day of the menstrual cycle. (1mark)

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(ii) State **two** functions of the hormone named in5(c)(i) above. (2marks)

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(d) State the fertile period during the menstrual cycle. (1mark)

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6.A farmer wished to plant certain species of *Erythrina* tree on his farm. However, their seeds normally take a long time to germinate after sowing. To overcome this problem, he did the following; several *Erythrina* seeds were put in hot water maintained at 50^0C.Batches of 20 seeds were removed at one minute intervals when planted in trays containing moist soil. After 15 days, the number of seedlings that grew were counted and the results obtained were as shown in the table below.

Batch order	Time intervals(minutes)	Germinated seeds	Germination percentage
1	0	3	
2	1	3	
3	2	8	
4	3	15	
5	4	18	
6	5	13	
7	6	10	
8	7	6	
9	8	2	
10	9	0	
11	10	0	

(a) Calculate the percentage germination rate and fill in the table (2marks)

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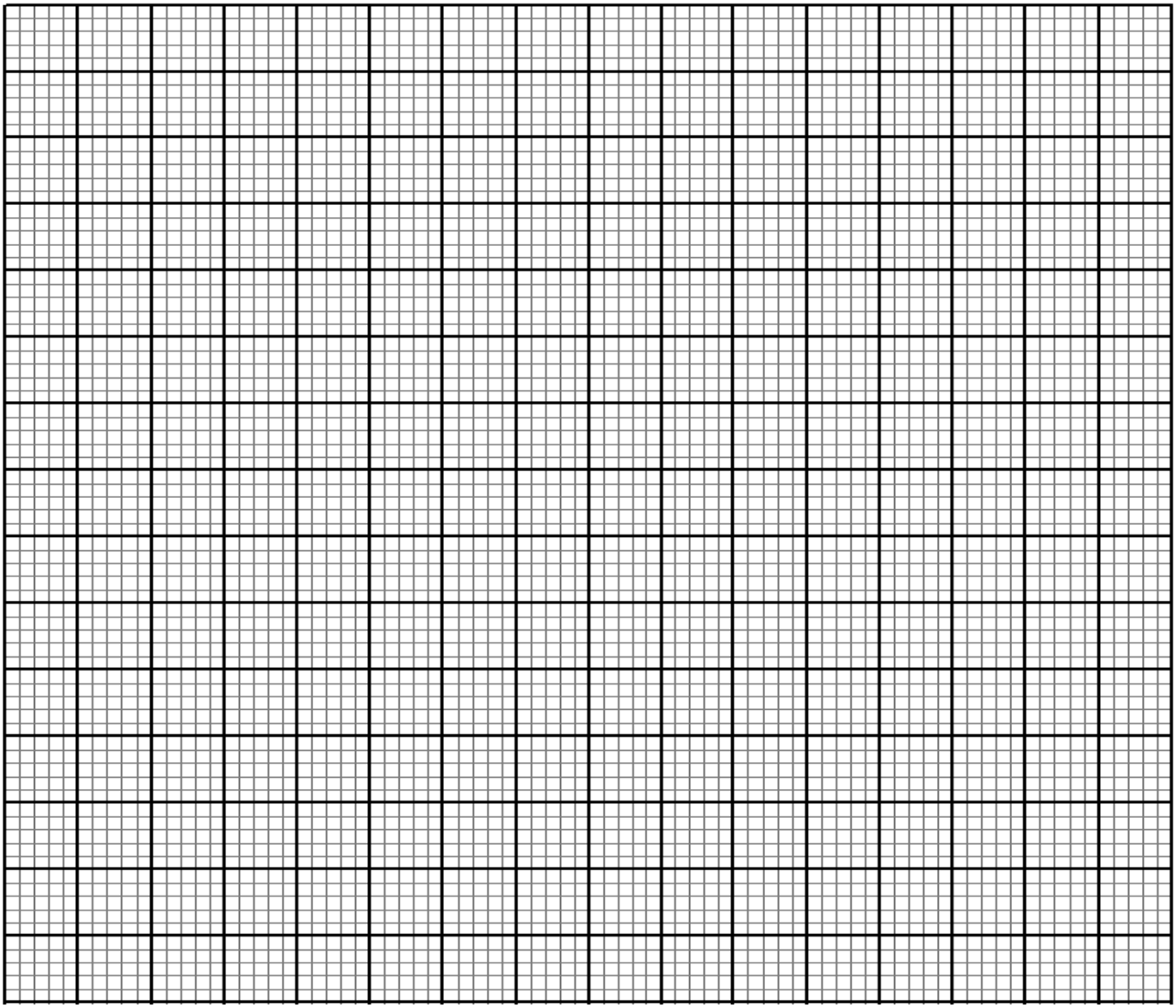
(b) Use your result to plot a graph showing percentage germination against the duration in which the seeds soaked in hot water (6marks)



(c) From the graph derive the expected number of seeds that would germinate if they were soaked for 4.5 minutes (1mark)

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(d) Using the graph, briefly describe the effect of hot water treatment on seed germination of *Erythrina*

(3marks)

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(e) Explain the difference in germination success between seeds soaked in hot water for up to the eight minutes and those not soaked (3marks)

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(f) Explain why there was no germination of seeds soaked for nine to ten minutes (2marks)

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(g) Besides hot water treatment, suggest another simple method that could be used to speed up germination in Erythrino (1mark)

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(h) Other than suitable temperature state any other external conditions necessary for germination (2marks)

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7. (a) How is the tracheal system adapted to its functions (6 marks)

(b) Describe how various stomatal factors lower the rate of transpiration (14 marks)

8. (a) Briefly describe how a nerve impulse is transmitted across a synapse (8 marks)

(b) Explain how auxins bring about;

(i)Geotropism (6 marks)

(ii) Phototropism (6marks)

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