

231/2
BIOLOGY
PAPER 2
Time: 2 hours

KCSE 2023 PREDICTION MASTER CYCLE 4

Name Index Number.....

Candidate's Signature Date

INSTRUCTIONS TO CANDIDATES

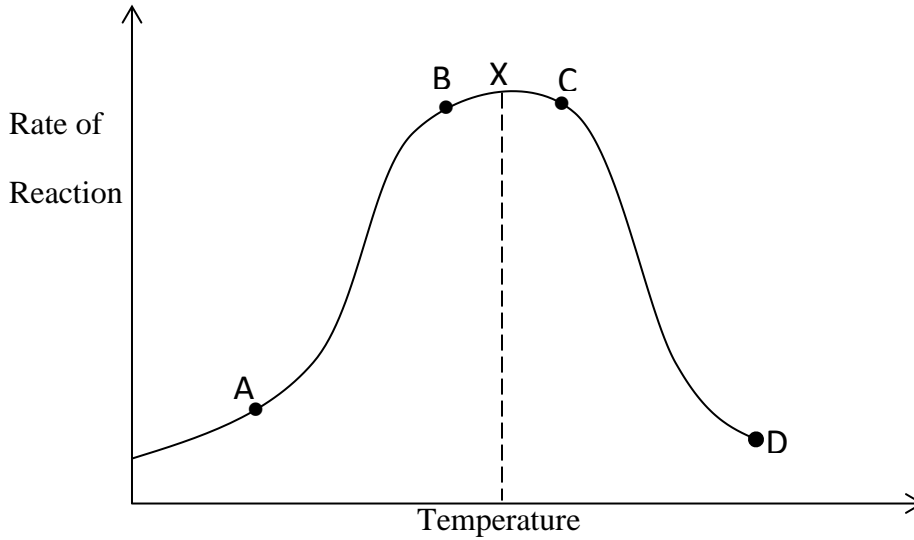
- a) Write your name and class in the spaces provided above.
- b) Sign and write the date of examination in the spaces provided above.
- c) This paper consists of **two** sections: **A** and **B**.
- d) Answer **ALL** the questions in section **A** in the spaces provided.
- e) In section **B** answer **question 6 (compulsory)** and **either question 7 or question 8** in the spaces provided after question 8. Candidates should answer the questions in English.
- f) This paper consists of **12 printed pages**. Candidates should check the question paper to ascertain
- g) that all the pages are printed as indicated and no questions are missing.

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
		20	
TOTAL SCORE		80 MARKS	

Section A (40 marks)

Answer ALL the questions in this section in the spaces provided.

1. The graph below show the effect of temperature on an enzyme catalyzed reaction.



(a) Account for the shape of the curve between.

(i) A and B. (3 marks)

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(ii) C and D. (2 marks)

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(b) What does the point marked X represent? (1 mark)

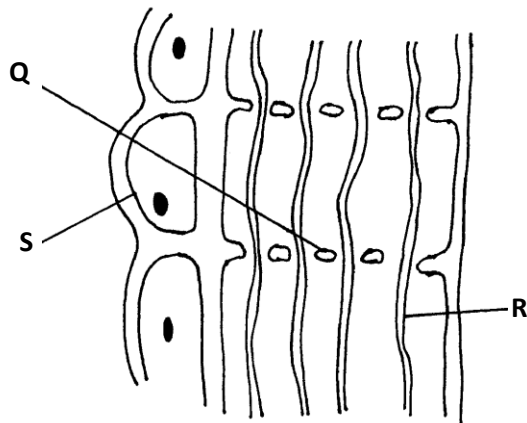
(1 mark)

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- (c) Apart from temperature, state two other factors that affect the rate of enzyme controlled reaction. (2 marks)

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2. The diagram below represents part of plant tissue.



- (a) Identify the tissues. (1mark)

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- (b) Name the structures labeled **Q** and **R** and the cell labelled **S** (3 marks)

Q.....
R.....
S.....

- (c) State the function of the structure labelled **R** (1mark)

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(d) Explain why xylem is a mechanical tissue.

(2marks)

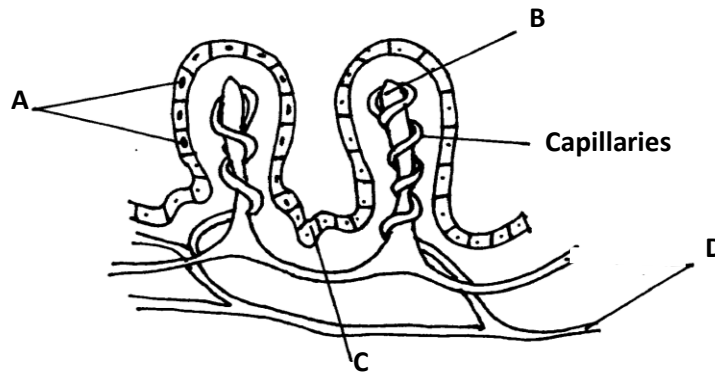
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(e) Supposing the cells marked **S** were treated with Metabolic poison, which physiological process would be affected in the plant tissue

(1 mark)

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3. The figure below represents a structure obtained from the ileum of a mammal



(a) Give the identity of the structure.

(1mark)

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(b) Name the parts labeled **A** and **B**

(2marks)

A.....

B.....

(c) Name **two** enzymes secreted by walls of the structure that bring about digestion

(2marks)

(i).....

(ii).....

(d) Briefly explain how fats are transported in structure labeled **B**.

(2marks)

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(f) Explain **one** role of salts secreted by gall bladder in digestion process. (1mark)

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4. The table below shows the approximate distribution of blood groups in a sample of 100 people in a population.

Blood group	Frequency	Rhesus +ve	Rhesus -ve
A	26	22	4
B	20	18	2
AB	4	3	1
O	50	43	8

(a) Calculate the percentage of Rhesus negative (Rh-ve) individuals in the population? (1 mark)

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(b) Account for

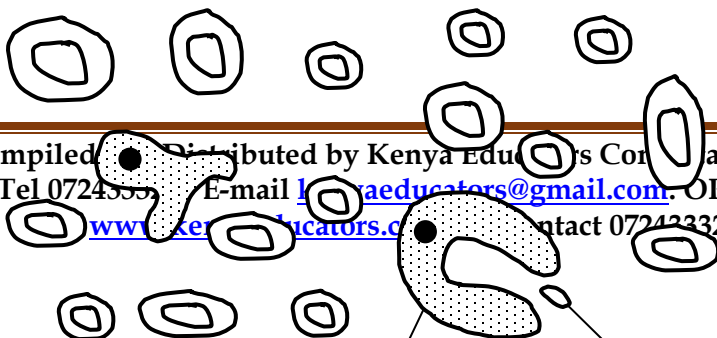
(i) The large number of blood group O individuals in a population. (2 marks)

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(ii) The small number of individuals with blood group AB. (2 marks)

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(c) The diagram below represents a blood smear on a glass slide.



(i) State the importance of structure C being large numbers in the blood smear. (1 mark)

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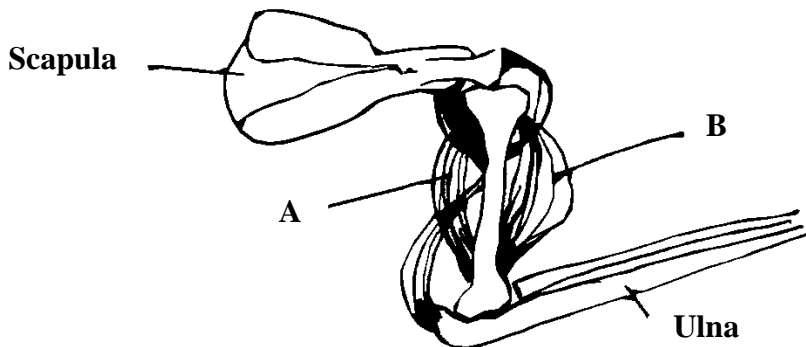
(ii) Give a reason why structure C would be found in large numbers in high altitude than in low altitude. (1 mark)

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(iii) Name the process by which structure A would engulf structure B. (1 mark)

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5. a) The diagram below represents bones and muscles in human arm



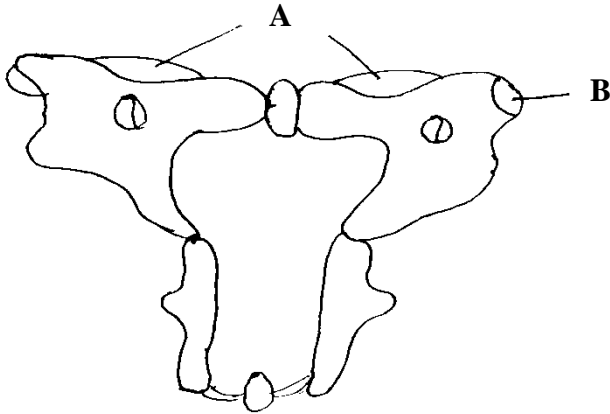
i) Give **two** differences between the type of muscles labeled A and B above and the type of muscles found in the blood vessel (2mark)

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ii) Explain how the muscles labeled A and B above bring about stretching of the arm (2marks)

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b) Below is diagram of above coiled sacrum



i) State the disgusting feature of sacrum

(1mark)

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ii) What is the function of sacrum in the body

(1mark)

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iii)How is sacrum adapted to its function

(2marks)

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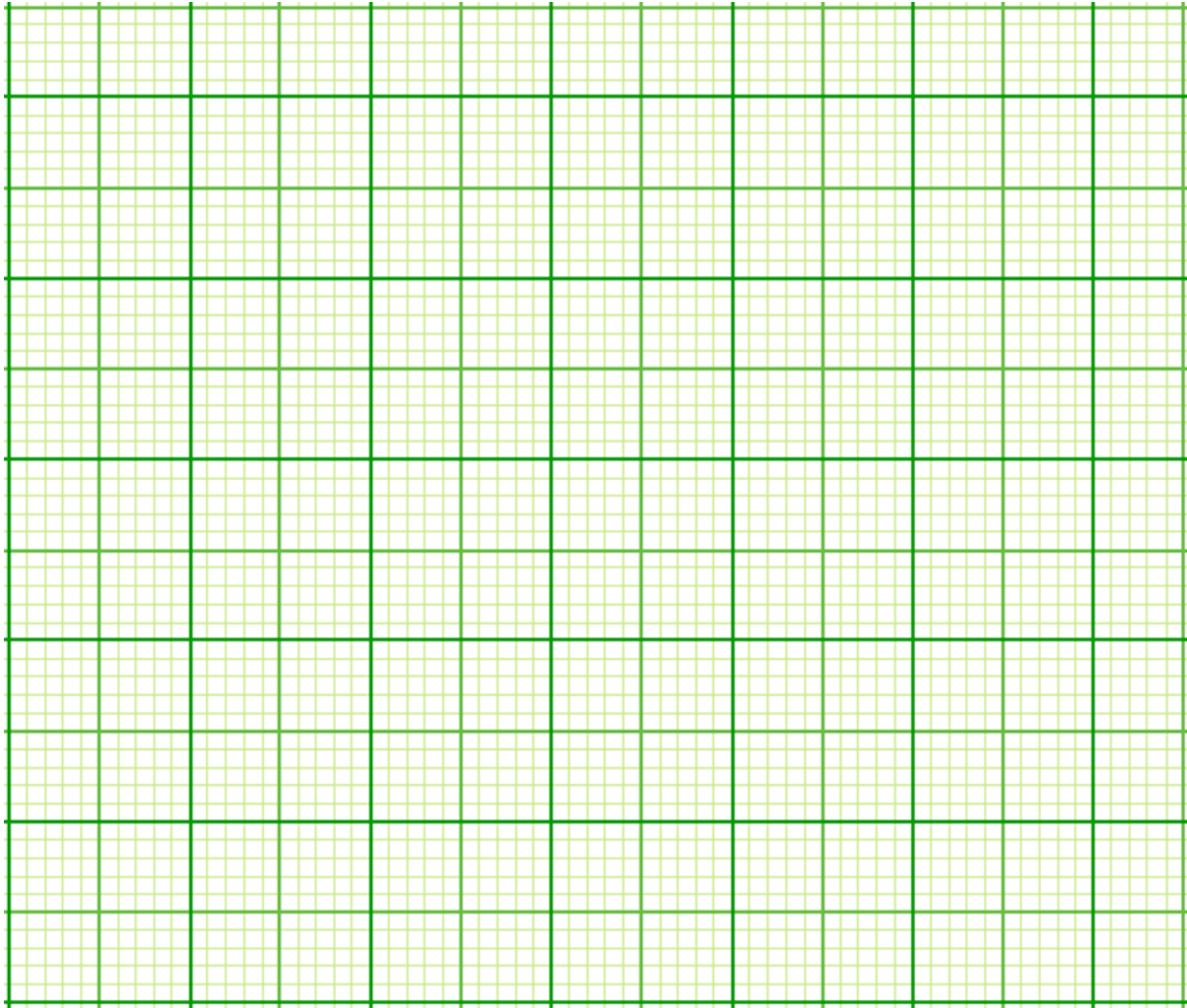
SECTION II

Answer question **6 (compulsory)**
and either question **7** or **8** in the spaces provided after question **8**.

6. You have been provided with the data below on the growth of mice population. The population starts with two sexually mature mice, a male and a female. Every time they reproduce they reproduce in litter of six (3 males and 3 females) at 7 weeks intervals. Assume that they take 14 weeks to sexually mature and produce. They only die of old age when they are 3 years old. The following table shows population growth and litter production.

Time interval in weeks	0	7	14	21	28	35	42	49
Mice population	2	8	14	28	62	104	146	260
Litter population	0	6	6	24	24	42	42	114

(a) Using the same axis draw graphs of population of mice and litter against time. (8 marks)



(b) (i) How many times has the first litter of mice reproduced. (1 mark)

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(ii) How many times has the third litter of mice reproduced? (1 mark)

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(c) State **four** factors that may have affected the population growth of mice. (4 marks)

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(d) Explain the shape of the litter curve. (4 marks)

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- (e) How many pairs of mice reproduced between 14 - 21st weeks and 42 - 49 weeks? (2 marks)
(i) Between 14 – 21st weeks.

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- (ii) Between 42 – 49 weeks.

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7. Describe the

- (i) Process of inhalation in mammals (10 marks)
(ii) Mechanism of opening and closing of stomata (10 marks)

8. Describe the role of hormones in human female menstrual cycle. (20 marks)

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