

NAME.....INDEX NO.....

ADMISSION NO..... CANDIDATE'S SIGNATURE.....

SCHOOL .....CLASS..... DATE.....

231/2

**BIOLOGY PAPER 2**

**JUNE;2023**

**TIME: 2 HOURS**

## **KASSU JET EXAMINATION**

**Kenya Certificate of Secondary Education (K.C.S.E)**

**2023**

### **INSTRUCTIONS TO CANDIDATE:**

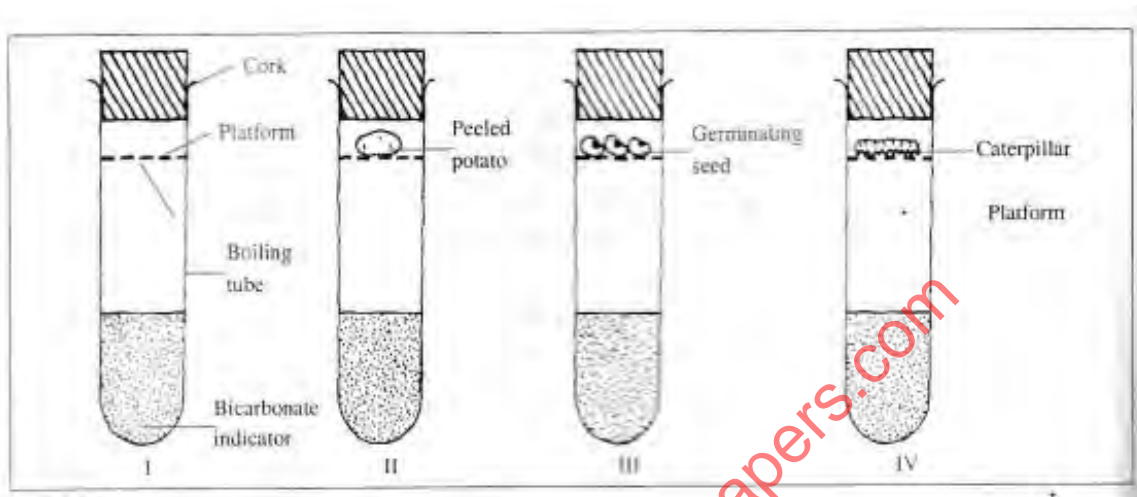
- Write **your name** and **index number** in space provided.
- Answer **all** questions in section **A** in the spaces provided
- In section **B** answer questions **6 (compulsory)** and either question **7** or **8** in the spaces provided

### **For examiners use only:**

<b>SECTION</b>	<b>QUESTIONS</b>	<b>MAXIMUM SCORE</b>	<b>CANDIDATES SCORE</b>
<b>A</b>	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
<b>B</b>	6	20	
	7	20	
	8	20	
	<b>TOTAL</b>	<b>80</b>	

**SECTION A (60 marks) (Answer all questions in this section)**

1. The diagram below illustrates an experimental set up to investigate a process that occurs in living organisms. After every 10 minutes each test tube was gently shaken.



(a) State the aim of the experiment (1mk)

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(b) Name the tubes in which there would be a change in the indicator (2mks)

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(c) (i) Suggest the test tube in which the indicator would change fastest. (1mk)

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(ii) Account for your answer in c (i) above (3mks)

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(d) Give a reason why test tube A was included. (1mk)

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2. (a) A man with sickle cell anaemia married a woman who has sickle cell trait. Work out the genotypic ratio for F1 offspring. (4mks)

(b) Determine the probability of the offspring having sickle cell anaemia (2mks)

(c) Explain why people with sickle cell trait have an adaptation survival advantage over normal individuals in malaria endemic regions (2mks)

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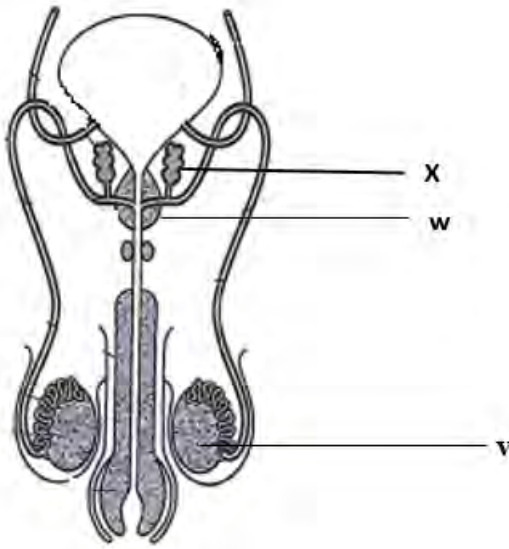
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3. The diagram below shows the front view of a male reproductive system



(i) Label the parts and the functions of the structures (4mks)

X .....

Function.....

V.....

Function.....

b) What is the role of Follicle Stimulating Hormone in male reproduction? (1mk)

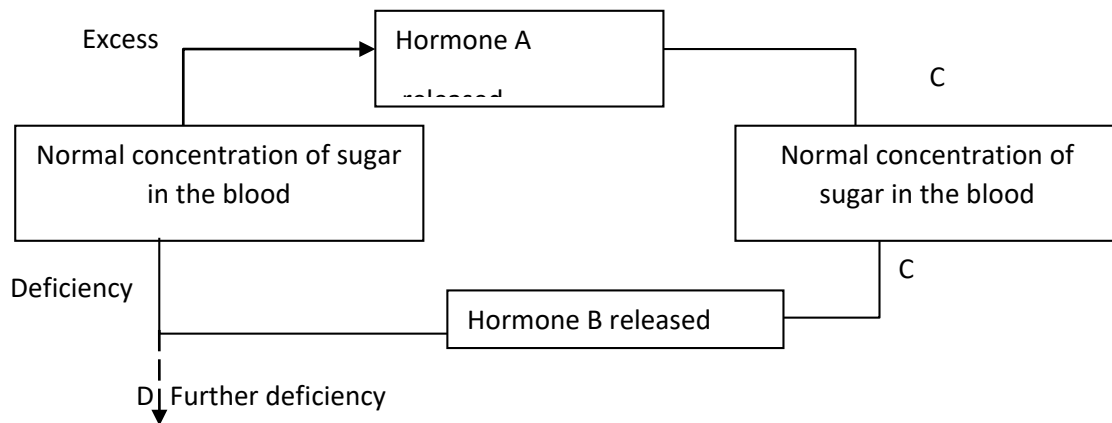
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(c) Explain the nature and role of the fluid secreted by the structure W (2mks)

.....  
 .....

(d) On the diagram label the Cowper's gland (1mk)

4. Study the homeostatic scheme below and answer the questions



(a) Identify the hormone labelled (2marks)

(i) A

.....

(ii) B

.....

(b) Identify the feedback labelled **D** (1mark)

.....

(c) state any two ways in which hormone B causes the blood sugar level to raise back to normal (2marks)

.....

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(d) A student mixed a sample of urine from a person with Benedict's solution and heated, the colour changed to orange.

(i) What was present in the urine sample? (1mark)

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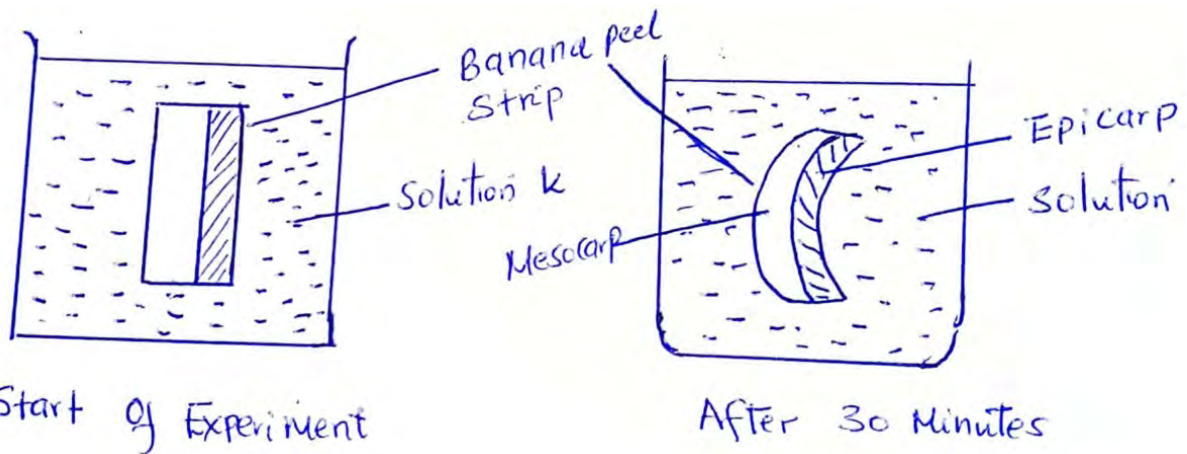
(ii) What did the student conclude on the health status of the person? (1mark)

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(iii) Which organ in the person may not be functioning properly? (1mark)

.....

5. study the diagrams below showing investigation of a certain physiological process.



(a) Name the process being investigated (1mark)

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(b) Identify the nature of solution K (1mk)

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(b) Account for the shape of the strip after 30 minutes (3marks)

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(c) State the importance of the above process in plants (3marks)

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**SECTION B (Answer question 6 and either question 7 or 8)**

6. The length of a grasshopper femur and internode of a seedling were taken and recorded in a period of 20 weeks. The results are as recorded in the table below.

Time(weeks)	1	3	6	9	12	15	18	20
Average length of femur(mm)	6.0	6.0	10.0	10.0	15.0	15.0	19.0	15.0
Average length of internode(mm)	5.0	6.5	10.5	16.5	24.5	30.0	32.5	32.0

a) Plot a graph of length of femur and internode against time on the same axis. (7mk)

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b) (i) What was the average length of internode in the 14<sup>th</sup> week? (1mk)

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(ii) Suggest how average length of internodes was obtained. (2mk)

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c) Name the type of growth curve shown by

(i) Grasshopper (1mk)

.....

(ii) Seedling (1mk)

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d) Account for the change in length of femur between:

(i) 6<sup>th</sup> and 9<sup>th</sup> week (2mk)

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(ii) 15<sup>th</sup> and 18<sup>th</sup> week (2mk)

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e) (i) Which animal phylum exhibits the growth pattern of the femur? (1mk)

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(iii) Name the hormone responsible for the growth pattern in grasshopper. (1mk)

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(iv) Work out the rate of growth of the seedling between week 7 and 14. (2mk)

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7.(a) Discuss how the following structural factors affect the rate of transpiration (6mks)

(i) Cuticle

(ii) Stomata

(b) During a honey hunting adventure, two friends Peter and John stumbled upon a cave full of bees with honey. They decided to raid it, after harvesting the honey and several bee stings later, Peter became severely ill and had to be admitted in the intensive care unit. Describe the events leading up to his incapacitation. (8mks)

8. (a) Explain how the following tissues provide support to herbaceous plants. (4mks)

(i) Parenchyma

(ii) Collenchyma

(b) Describe how a finned fish like tilapia is adapted to locomotion in water (16mks)

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