KAPSABET HIGH SCHOOL

231/2 - BIOLOGY - Paper 2

2HRS

MOCK 2023

Name……Index No. ……

Date ……...Sign…….

BIOLOGY 2023

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

INSTRUCTIONS TO CANDIDATES

- Write your name, index number and the name of the school in the space provided.
- This paper consists of 2 sections **A**, and **B**
- Answer **ALL** the questions in section **A**.
- In section **B**, answer question **6 (Compulsory)** and either question **7** or **8** in the spaces provided after question **8**.

FOR EXAMINERS USE ONLY

Section	Questions	Maximum Score	Candidates Score
A	1 2 3 4 5	8 8 8 8 8	
B	6 7 8	20 20 20	
TOTAL SCORE		80	

This paper consists of 10 printed pages

SECTION A.

1. (a) Viable seed may not germinate even when provided with favorable condition. State the importance of the above phenomena. (2mks)

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(b) Monocotyledonous plants do not undergo secondary growth. Explain. (2mks)

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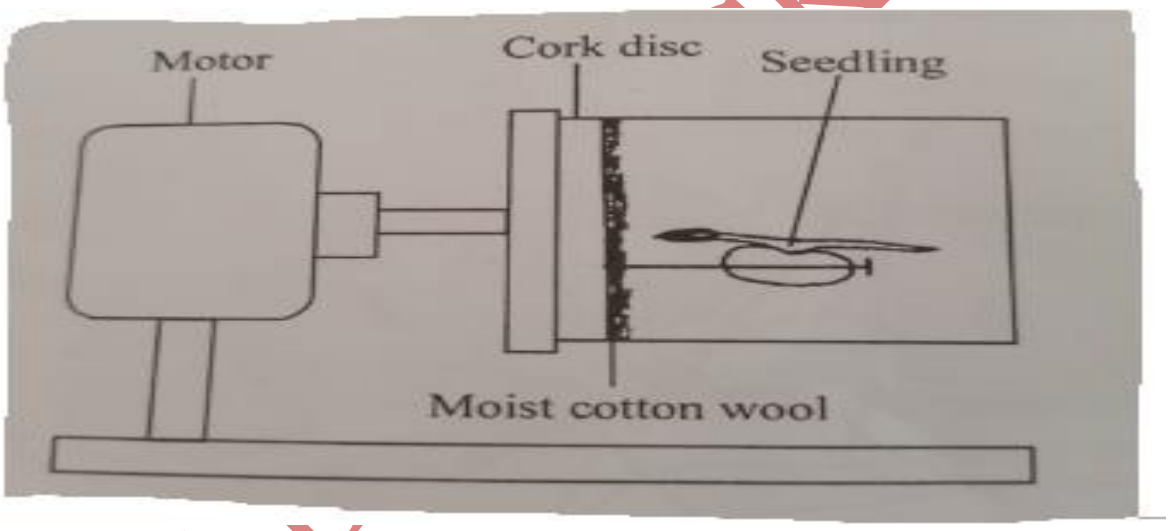
(c) In the diagram below, a bean seedling was pinned in a horizontal position inside a clinostat.



(i) Explain what you would expect to observe after 48 hours if the clinostat was not rotating. (2mks)

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(ii) Explain what you would expect to observe after 48 hours if the clinostat was rotating slowly. (2mks)

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2. (i) Explain the concept of the negative feedback mechanism. (3mks)

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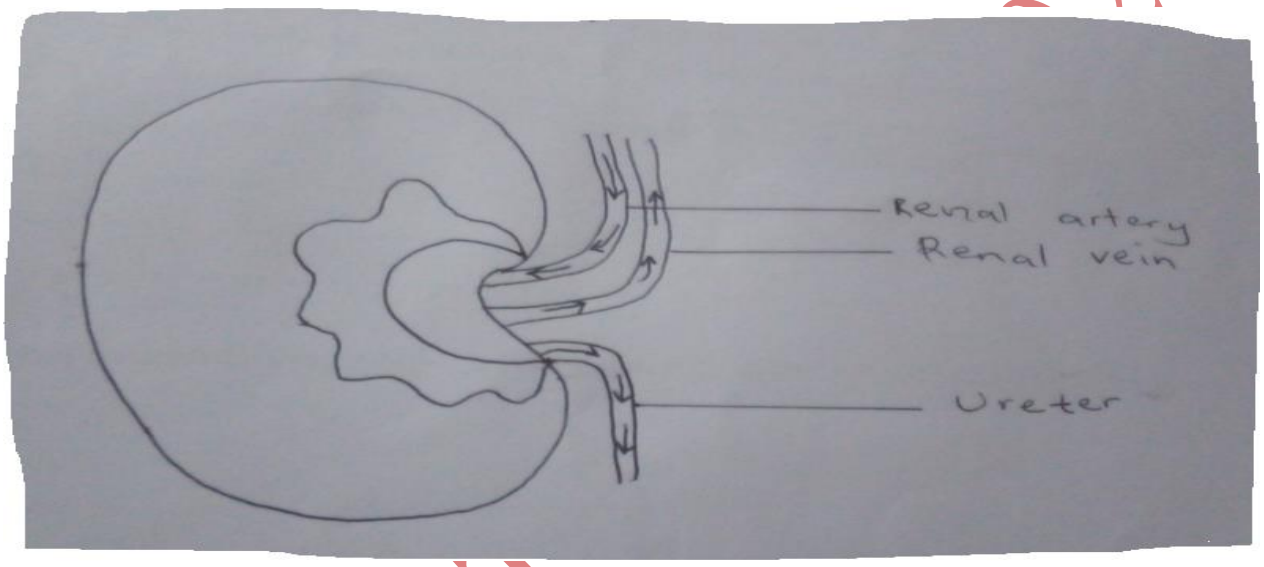
(ii) Study the diagram below and answer the question that follows.



On the organ above, draw a small circle and label it **X** to show where the adrenal gland is located. (1mk)

(i) Explain the effect of the hormone secreted by the adrenal gland in blood sugar regulation. (2mks)

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(ii) Name two diseases that affect organ labeled A. (2mks)

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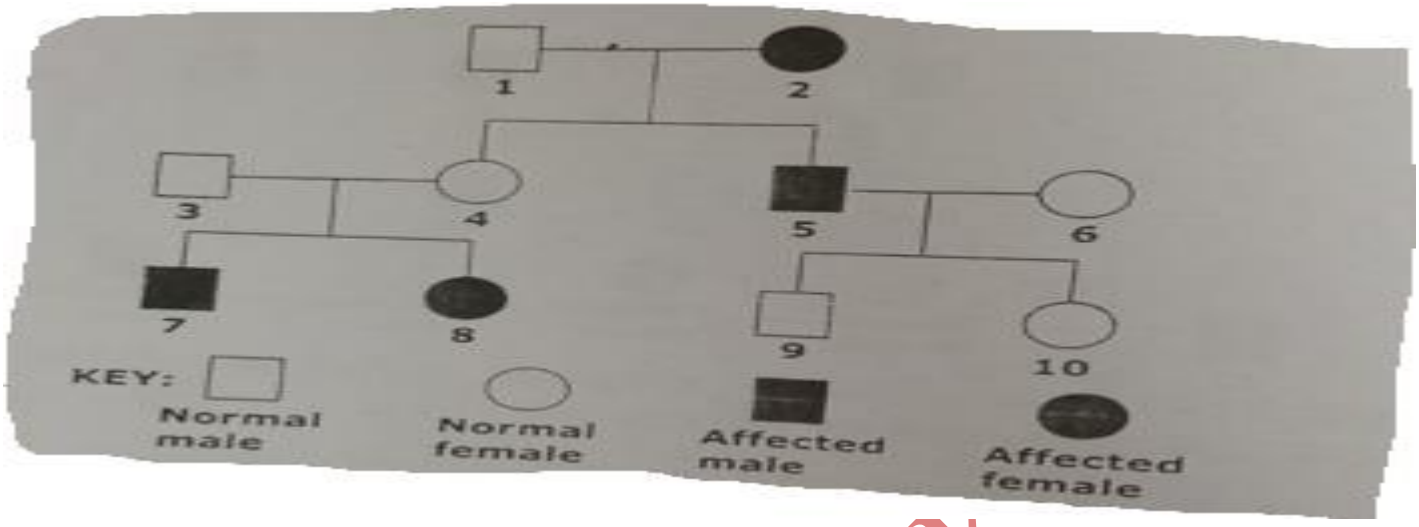
3. The pedigree diagram below show part of a family tree in which the inherited condition of phenylketonuria occurs.



(a) Identify and explain one piece of evidence from this family tree to show that the allele for phenylketonuria is a recessive to allele for the normal condition. (2mks)

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(b) If individual 10 married a man who is the heterozygous for the gene, what is the probability that their first child will be affected? (2mks)

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(c) A garden pea plant was crossed with a dwarf garden pea plant and all the offspring's were tall. Using later T to represent the gene for tallness, determine the genotype of the F_2 if the F1 were test crossed. (4mks)

4. (i) Distinguish between dentition and dental formula. (2mks)

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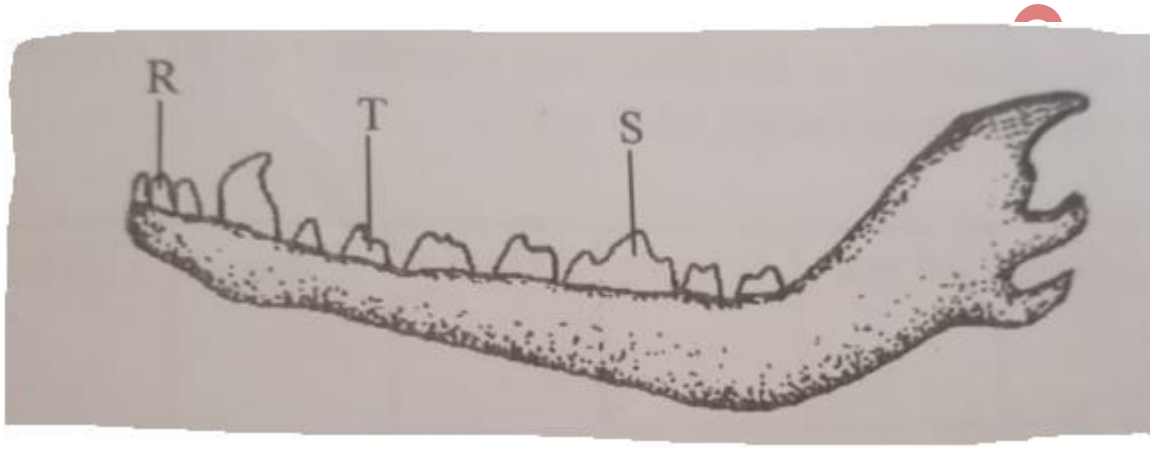
(iii) The diagram below represents the lower jaw of a mammal.



(a) Name the mode of nutrition of mammal whose jaw is shown. (1mk)

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(b) State one structural and one functional difference between the teeth labeled R and T. (2mks)

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(c) (i) Name the tooth labelled S. (1mk)

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(ii) State how the tooth named in C (i) above is adapted to its function. (2mks)

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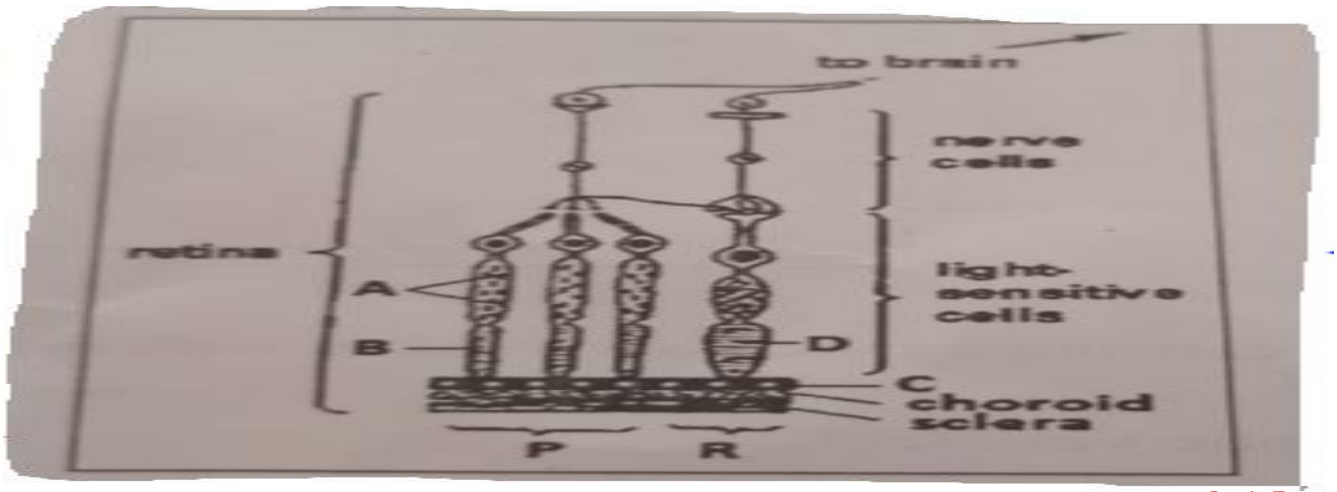
5. The figure bellow is a cross-section of retinol cells of a mammalian eye.



(a) Identify the retinol cells labeled P and R. (2mk)

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(b) Label each of the parts marked A, B, C and D. (2mks)

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(c) Based on the diagram, explain why it takes long for the eye to adjust when one move from a Lit room to a dark room. (3mks)

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(d)State structural difference between cell P and cell R. (1mk)

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SECTION B.

6. The pressure in the flow of blood in a mammal was determined at two different vessels; X and Y. The data was taken within a period of 1 minute and was presented as follows.

Time in seconds	Blood pressure in	
	Vessel X	Vessel Y
0	160	320
10	165	360
20	170	320
30	180	400
40	170	360
50	160	320
60	160	360

(a) Plot the graph of blood pressure in both vessels against time in the same axis. (7mks)

(b) Describe the trend of each curve. (2mks)

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(c) From the graph, suggest the possible identity for:

(i) Blood vessel X. (1mk)

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(ii) Blood vessel Y. (1mk)

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(d) Give reason for your answer in (c) (i) and (ii) above. (2mks)

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(e)Explain a factor that would result in to an increase in blood pressure in both the blood vessels above. (2mks)

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(f) State two structural differences between the two vessels mentioned in C above. (2mks)

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(g) Name two diseases of the circulatory system in humans. (2mks)

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(h) Other than, transport of substances state one other function of blood. (1mk)

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7. (a) Discuss the economic importance of bacteria. (10mks)
   (b) Discuss the adaptation of *Schistosoma mansoni* to its survival. (10mks)
8. (a) Describe the photosynthetic theory. (10mks)
   (b) Describe gaseous exchange in terrestrial plant. (10mks)

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