Name…… **Index No. …….**

School ……...

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY / AUGUST
2 HOURS

NYAMIRA DISTRICT MOCK EXAMINATION-2007

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

231/2
BIOLOGY
PAPER 2
(THEORY)
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INSTRUCTIONS TO CANDIDATES

- Answer ALL questions in section A. In section B, answer question 5 (compulsory) and either question 6 or 7 in the spaces provided at the end of this paper.

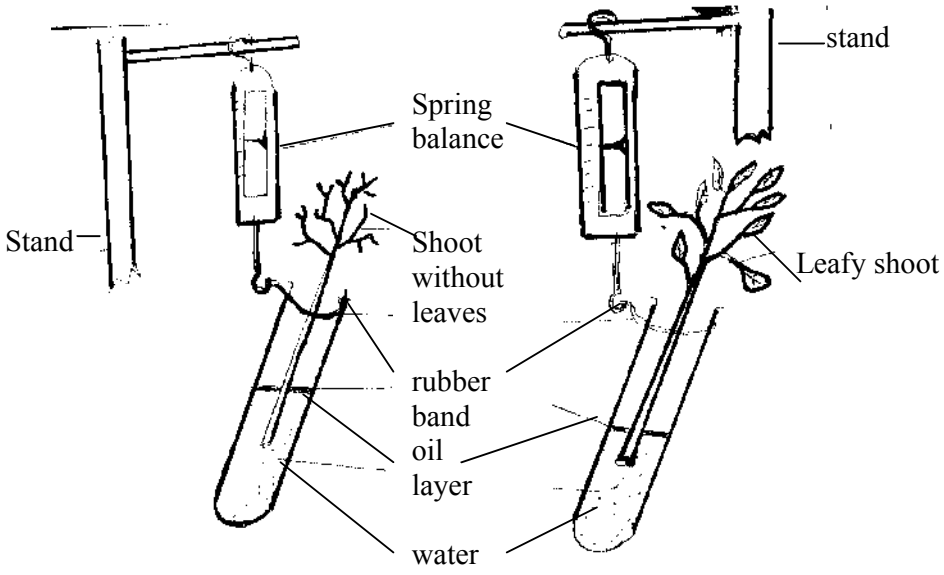
For Examiner's Use only.

Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7 & 8	20	
	Total	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A (40 MARKS)

1. Two leafy shoots from the same plant species were cut under water and placed in two separate boiling tubes. One shoot had its leaves removed. A layer of oil was poured over the water in the boiling tubes. Both boiling tubes were tied by a rubber band to separate spring balances as shown below and placed in bright sunlight.



a) Suggest the aim of the experiment. (1mk)

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b) State the observations that would be made on the set ups after a few hours. (1mk)

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c) Explain the observation in (b) above (1mk)

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d) Give the use of the layer of oil in this experiment. (2mks)

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e) Apart from sunlight, name two other environmental factors likely to influence the process being investigated in this experiment. (2mks)

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f) State one biological importance of this process being investigated to plants. (1mk)

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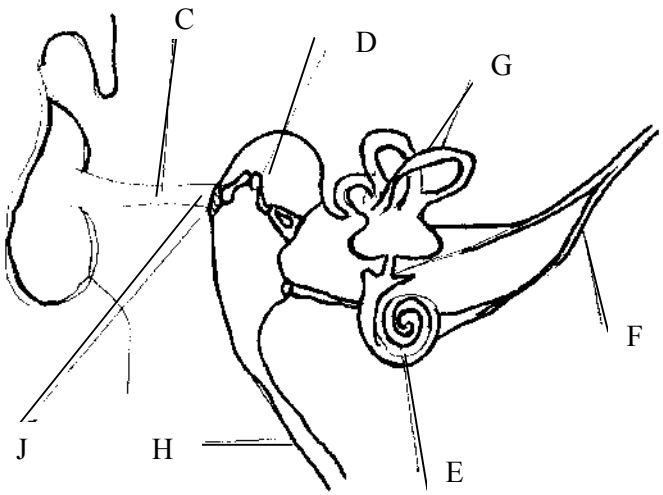
2. The diagram below shows the structure of its human ear.



a) State the functions of the ear. (2mks)

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b) Give the names of the structure labelled C,G and F. (3mks)

(i) C ……..

(ii) G …….

(iii) F …….

c) (i) What is the function of the structure labeled H? (1mk)

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(ii) Name the structure in the ear that detects sound waves. (1mk)

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d) In which structure of the ear is the velocity of the sound waves fastest? (1mk)

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3. (a) Define the term balanced diet. (2mks)

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b) State two factors that determine energy requirement in humans (2mks)

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c) A certain mammal has the following dental formula:

$$I\ \frac{3}{3}\quad C\ \frac{1}{1}\quad PM\ \frac{4}{4}\quad M\ \frac{2}{3} = 42$$

Suggest the mode of nutrition for this mammal. (1mk)

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d) Name **three** components of gastric juice. (3mks)

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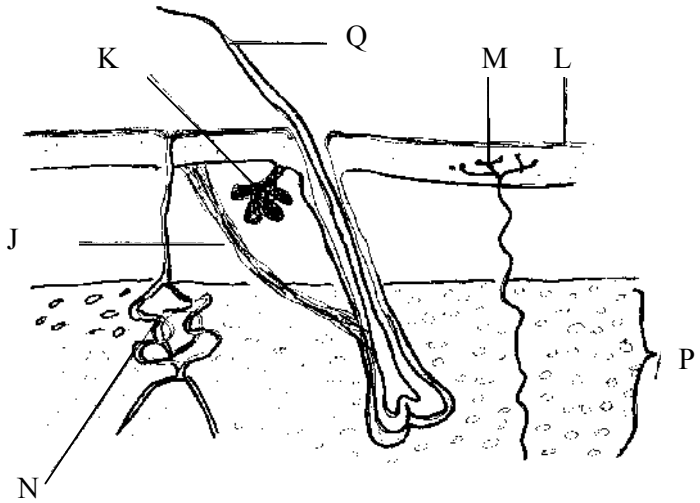
4. The diagram below represents a transverse section through a human skin.



(a) Name the structure labelled M,P and Q. (3mks)

(i) M ……..

(ii) P ……

(iii) Q ……..

(b) Give the function of the structure labelled K. (1mk)

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c) State the role played by the part labelled L. (1mk)

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d) A person is exposed to extremely hot conditions. Suggest what would happen to the following parts of the skin. (2mks)

(i) J

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(ii) N

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e) Name the structure in the brain that controls body temperature. (1mk)

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5. In a breeding experiment, two purple flowered pea plants were crossed. The seeds obtained were sowed and produced 705 purple flowered plants and 224 white flowered plants.

(a) (i) What trait was dominant? (1mk)

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(ii) Give a reason for your answer in a(i) above. (1mk)

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b) Using F to represent the gene for purple flower colour and F, the gene for white flower colour, illustrate using a punnet square the cross between the two purple – flowered pea plants. (3mks)

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c) What will be the phenotypic ratio of the offs springs if the parental purple flowered plant and a white flowered plant were crossed? (1mk)

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d) (i) Suggest a reason why sickle cell trait is common in the inhabitants of tropical Africa?

(1mk)

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(ii) What is gene mutation? (1mk)

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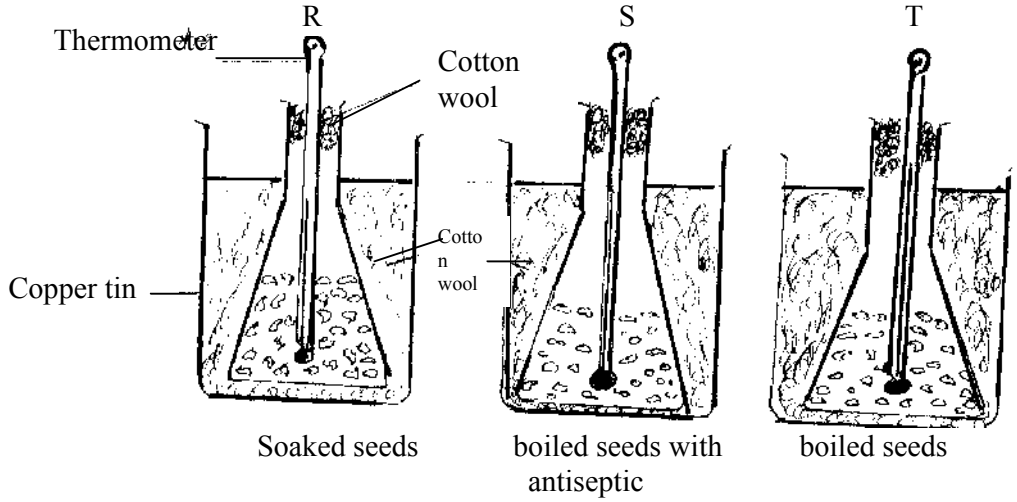
SECTION B (40 MARKS)

Answer Question 6 (compulsory) in the spaces provided. Answer either Question 7 or 8 in the spaces provided at the end of this paper.

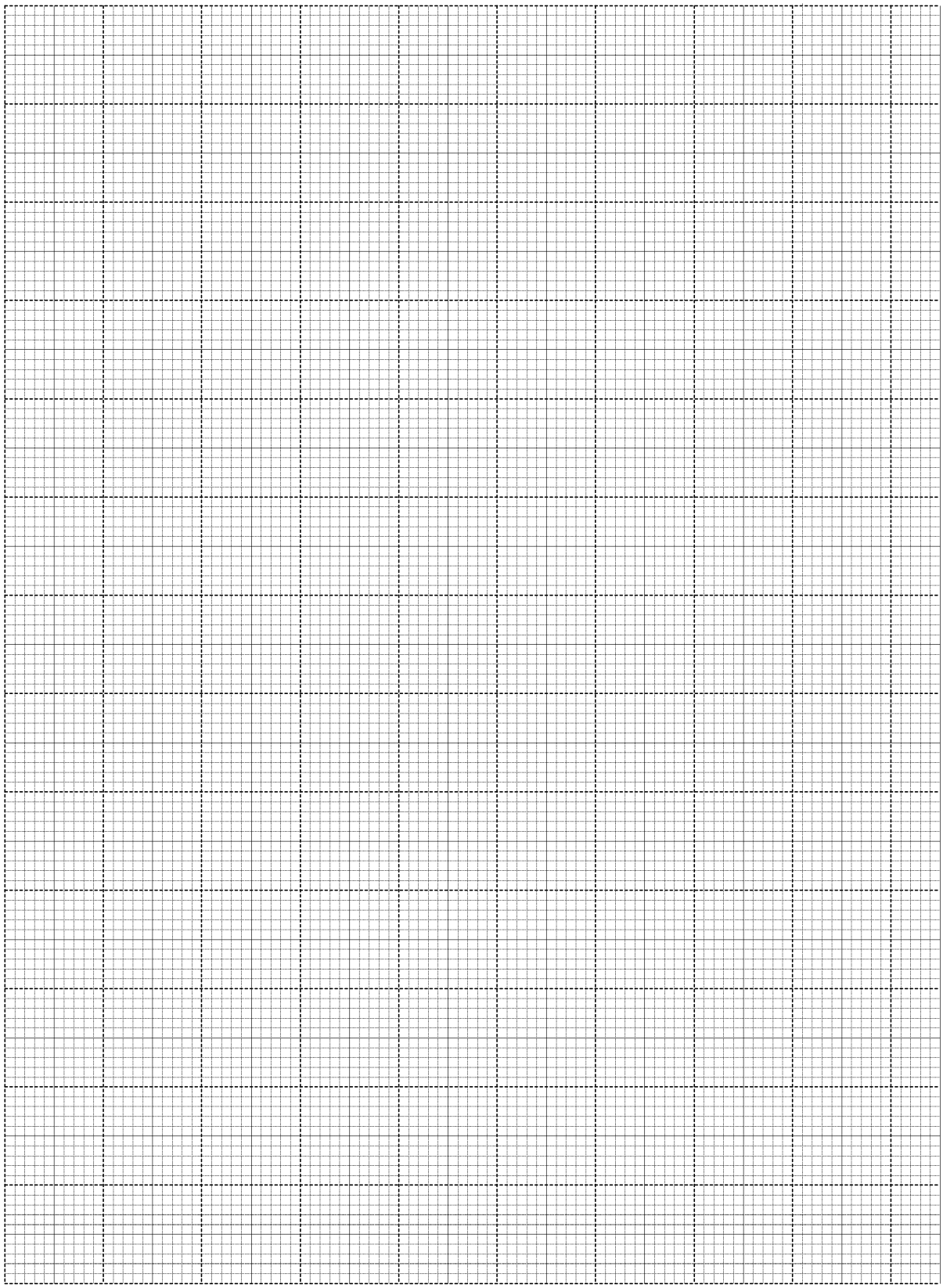
6. The following experiment was set up to investigate a certain physiological process. In R seeds soaked in water were introduced, in S boiled seeds sprinkled with an antiseptic and in T boiled seeds only.



The temperature in each set of R, S and T was recorded daily for one week. The results obtained are shown in the table below.

Set up	Temperature ^{0}							
	Day	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
	R	19.0	25.0	29.0	32.0	36.5	31.0	24.0	24.0
	S	19.0	20.0	20.0	20.5	20.0	20.0	20.0	20.0
	T	19.0	21.0	24.0	25.0	25.5	26.0	32.0	38.0

On the same axis plot graphs of temperature ^{o}C against time in days. (7mks)



(b) Suggest the aim of the experiment. (1mk)

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c) Account for the differences in the temperature for set ups R and T.

(i) Day 0 to 5. (3mks)

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(ii) After day 5. (4mks)

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d) (i) Explain the shape of graph for set up S for the whole week. (2mks)

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(ii) Why was set up S included in the experiment? (1mk)

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e) State two internal factors that cause seed dormancy. (2mks)

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7. a) Name the parts of the body, where mammalian blood cells are manufactured. (3mks)

b) Describe the functions of mammalian blood. (17mks)

8. a) Compare the nervous and endocrine systems. (8mks)

b) A barefooted man suddenly steps on a sharp thorn and quickly jumps up. Describe the changes that occur in the man's body that brings about this response. (12mks)

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