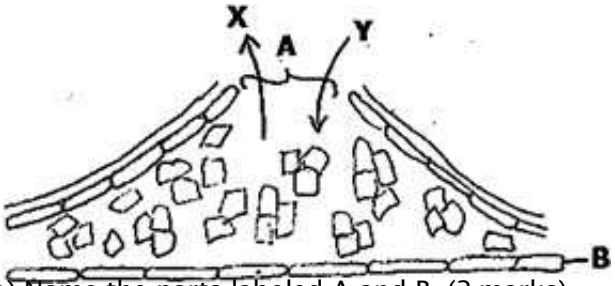
FORM FOUR CLUSTER KCSE MODEL2

BIOLOGY PAPER 2 QUESTIONS

SECTION A (40 Marks)

Answer all questions in the spaces provided after every question.

1. The diagram below represents a structure used for gaseous exchange in a woody plant.



a) Name the parts labeled A and B. (2 marks)

A .....

B .....

b) Name the gases marked by arrows X and Y. (2 marks)

X .....

Y .....

c) Give the function of the part labeled B. (1 mark)

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.....

d) Name the physiological process that results in the production of gas in the plant tissues. (1 mark) .....

e) Why does low oxygen concentration in the soil result in reduced mineral ion absorption by root hairs of plants.

(2 marks)

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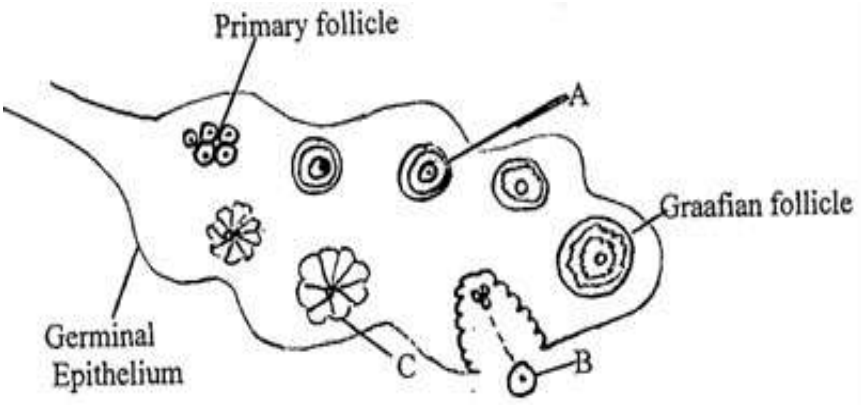
2. The diagram below shows a section through the human ovary. Study it and answer the questions that follow.



a) Name the part labeled A. (1 mark)

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b(i) Which part of the ovary divides to form the primary follicle. (1 mark)
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(ii) Which type of cell division is responsible for the production of primary follicles? (1 mark)
……

c) Follicle stimulating hormone reaches the ovary so that part A begins to mature.

(i) Name the first hormone which is secreted by the ovary as a result of arrival of FSH (1 mark)
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(ii) What is the role of this hormone in the menstrual cycle? (1 mark)
……

d) Structure B leaves the ovary

(i) Where does structure B enter immediately after leaving the ovary? (1 mark)
……

(ii) Which hormone level peaks just before structure B leaves the ovary? (1 mark)
……

e) State the role of structure C. (1 mark)

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3. a) Define the following genetic terminologies.

(i) Phenotype (1 mark)

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(ii) Allele (1 mark)

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(iii) Recessive gene (1 mark)
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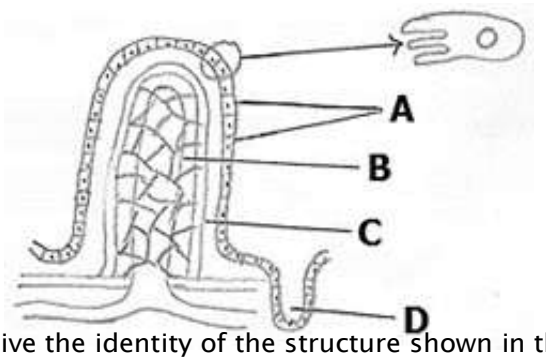
……
b) A cross is made between a red flowered plant and a white flowered plant and all the F1 plants are pink flowered. Using letter R to represent read flowers and W for white flower colour, determine the genotypes for the F2 plants. Show your working. (5 marks)

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



a) Give the identity of the structure shown in the diagram. (1 mark)

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b) What is the importance of the structure named in (a) above. (1 mark)
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……

c) Name the parts labeled A, B, and C. (3 marks)

A ……..

B ……..

C ……..

d) (i) Name the juice secreted by the part labeled D. (1 mark)

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(ii) List two enzymes present in the juice named in d(i) above. (2 marks)
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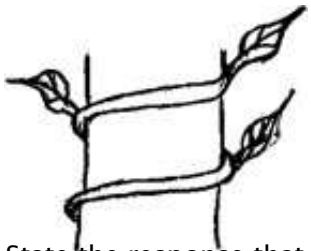
5. The figure below shows the stem of a plant growing around a tree trunk.



a)(i) State the response that causes the twisted growth. (1 mark)
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(ii) Name the hormone responsible for the growth. (1 mark)

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b) Explain how the twisting process is accomplished. (2 marks)

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c)(i) Name two other growth hormones in plants. (2 marks)

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(ii) State one way in which each of the hormones in (i) affect growth. (2 marks)
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SECTION B (40 Marks)

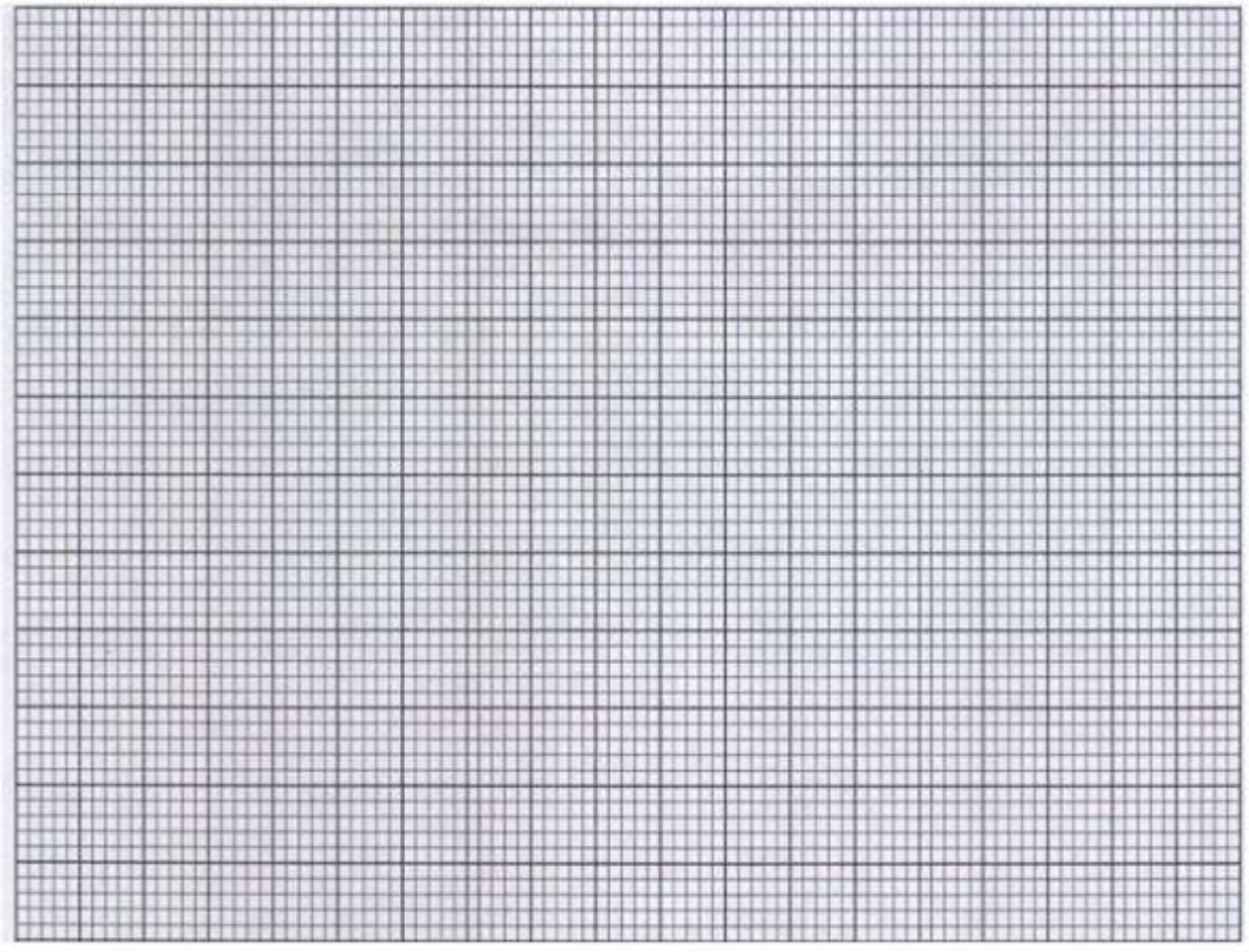
Answer question 6 (compulsory) in the spaces provided and either question 7 or 8 in the spaces after question 8.

6. In an experiment, several cubes of liver of same mass were put in separate test tubes each with equal amount of hydrogen peroxide.

Each test tube was placed in a water bath at various temperatures. The time taken for the hydrogen peroxide to decrease in each test tube was determined and recorded results are shown in table below.

Temperature in ^0C	15	20	25	30	35	40	45	50
Time taken for Hydrogen peroxide to decrease (minutes)	45	30	15	10	4	4	30	57

a) Using appropriate scale, plot a graph of duration of reaction against temperature. (7 marks)



b) From your graph, determine the optimum temperature for the decomposition of hydrogen peroxide. (1 mark) .....

c) Account for the changes that occur between

(i) 150 C - 350C (2 marks)

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(ii) 350C - 400C (2 marks)

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(iii) 400C - 350C (2 marks)

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d) Name the enzyme in the liver that decomposes hydrogen peroxide. (1 mark)

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e) Other than temperature, state three other factors that affect enzyme controlled reactions. (3 marks) .....
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f) Name two types of enzyme inhibitors. (2 marks)

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7. Discuss the evidence of organic evolution in living organisms.

8. Describe the process of Inhalation and Exhalation in mammals.