MASENO SCHOOL

Kenya Certificate of Secondary Education 2021

BIOLOGY – Paper 2

DEC. 2021 - 2 hours

THE MASENO SCHOOL MOCK

Name …… ADM NO: ……. Class: ……..

Instructions to candidates;

(a) Write your name, index number, date and sign on the spaces provided above.
(b) Answer ALL questions in section A.
(c) In section B, answer question 6 (compulsory) and either question 7 or 8.
(d) This paper consists of 12printed pages.
(e) Candidates should answer the questions in English.

For Examiners' Use Only

Section	Question	Maximum score	Candidate's score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

This paper consists of 10 printed pages.

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

SECTION A.

1. A common species of rats has individuals with white, black or grey coats. During a study, a rat with white coat was crossed with a rat with black coat. Both parents were pure lines. All the off springs in F_1 generation had grey coats. Using letter B to represent the gene for black coat and W for white coat, answer the questions that follow.

a) Work out the phenotypes of the F_1 generation. (4marks)

b) Give a genetic explanation of the nature of off springs in the F_1generation. (1mark)

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c) State the significance of a Test cross in the study of genetics. (1mark)

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d) State the importance of crossing over in meiosis. (1mark)

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e) Name one example of a characteristic in man that is transmitted by multiple alleles. (1mark)

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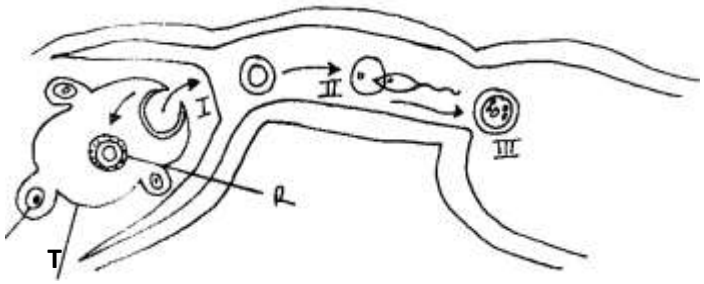
2. The diagram below shows some of the processes that take place in a female reproductive system.



Ovary

a) Name process labeled; (1mark)

I. ……

b) Name structures labeled; (2marks)

T. …….

R. …….

c) Identify hormones responsible for formation of structures. (2marks)

T. …….

R. …….

d) Explain what leads to process at II. (3marks)

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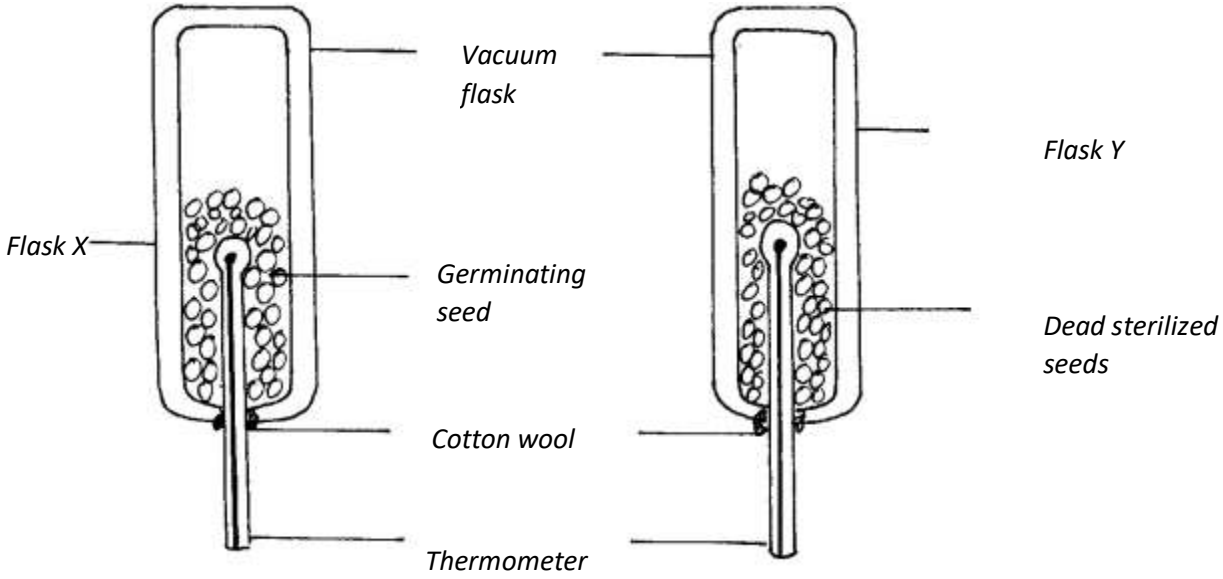
3. A group of students set up the apparatus below to investigate a physiological process. Temperature changes were recorded for a period of one week.



(a) State the observation made in temperature reading in flask X (1 mark)

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Give a reason (2marks)

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b) Why are micro-organisms killed in boiled beans? (1mark)

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c) Give a reason as to why the flasks were not fully filled with seeds (1mark)

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d) Why were flasks inverted upside down? (1mark)

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e) Why is the experiment carried out in a vacuum flask? (1mark)

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f) What alteration would be made in the set up to make the results more reliable? (1mark)

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4. Gastrin is a hormone produced by mammals.

(a) (i) Where is the hormone produced. (1mark)

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(ii) What is the function of gastrin? (1mark)

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(b) What stimulates the production of gastrin? (1mark)

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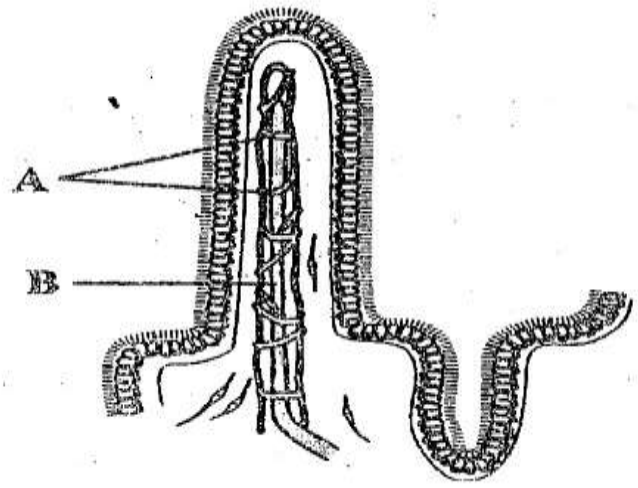
(c) The diagram below shows part of the human intestine.



(i) Identify the parts labeled **A** and **B.** (2marks)

A…….

B……..

(ii) To which circulatory system does the part labeled **B** belong. (1mark)

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……

(d) State any **two** adaptations of the human large intestine to its function. (2marks)

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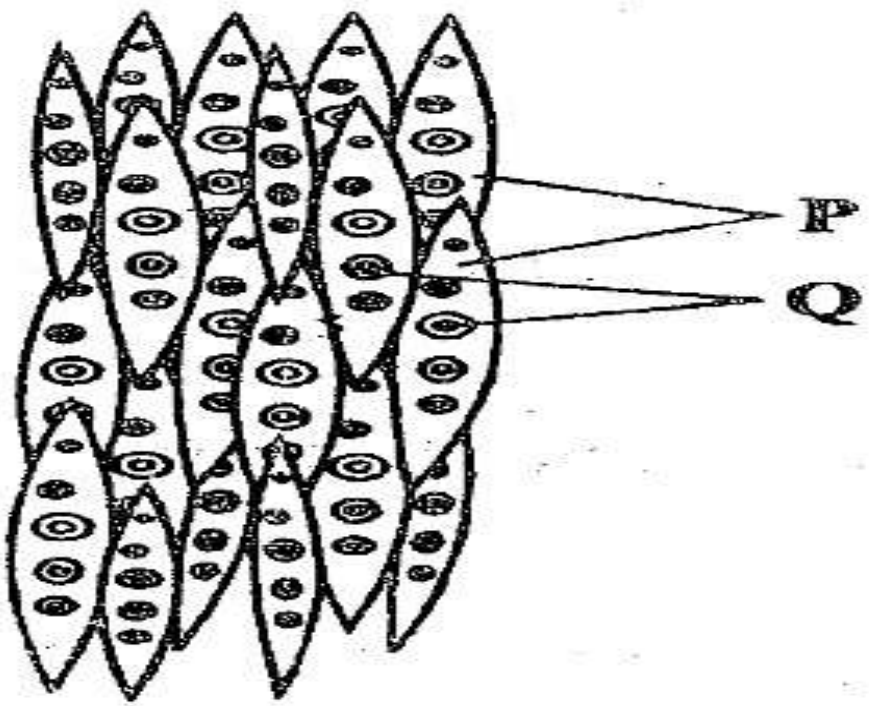
5. The diagram below represents part of a xylem tissue.



(a) (i) Name the parts labeled **P** and **Q** . (2marks)

P ……

Q ……

(ii) Give the function of the part labeled **P**. (1mark)

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(b) State the function of the phloem tissue. (1mark)

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(c) (i) State how the functioning of the phloem tissue is affected if the companion cell is destroyed. (1mark)

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(ii) Give a reason for your answer. (1mark)

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(d) State any **two** structural differences between phloem and xylem tissues. (2marks)

Phloem	**Xylem**

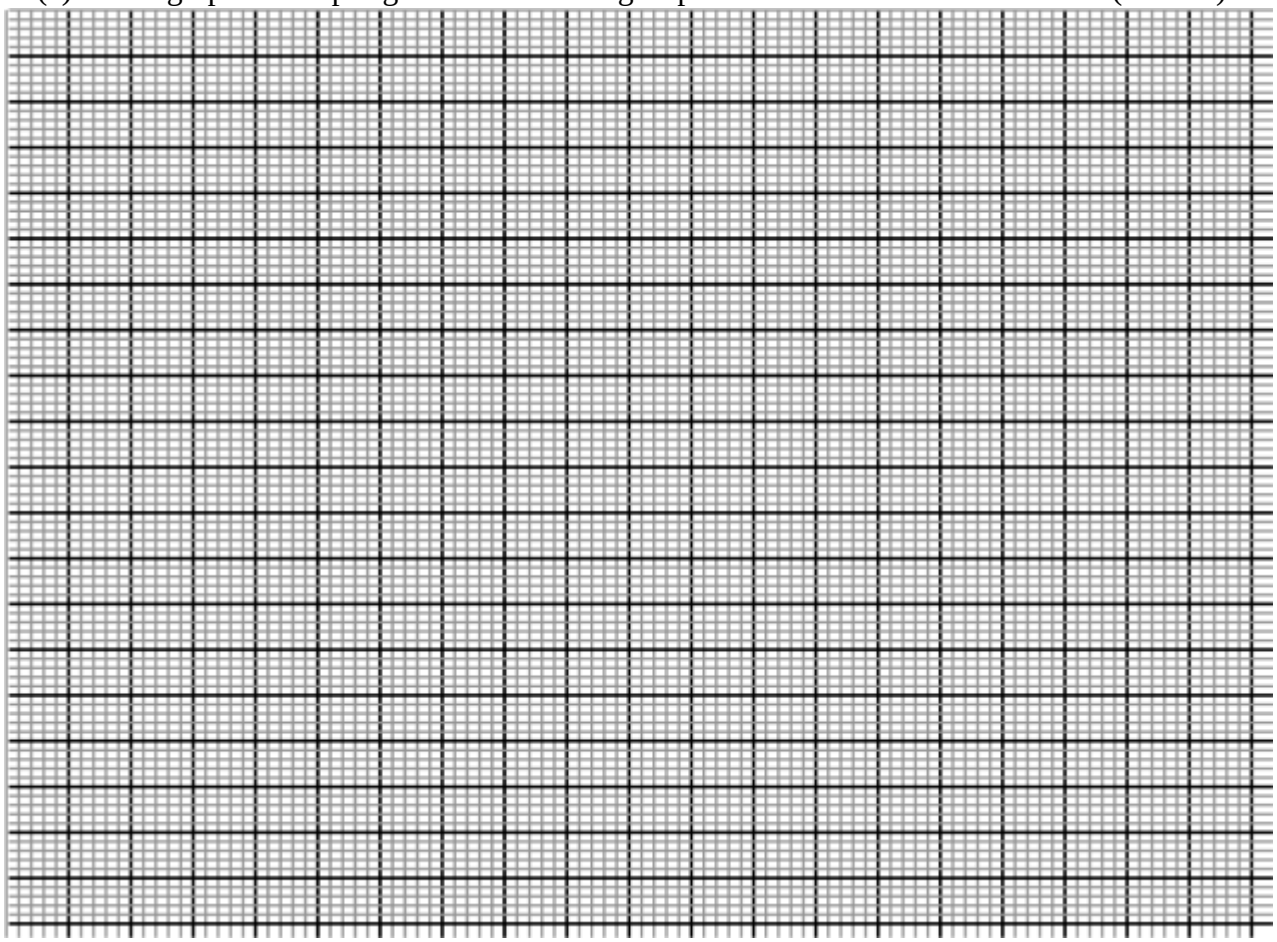
SECTION B (40 MARKS)

Answer question 6 (Compulsory) and either question 7 or 8 in the spaces provide after question 8.

6. Two species of parasitic wasps X (*Vespula vulgaris*) and Y (*Vespula acadica*) were introduced in an orchard in order to control to control the population of aphids. The numbers of each species of wasps were counted at two-month intervals and recorded. The table below shows the population of the two wasps over a 18-month period in the orchard.

Time		0	2	4	6	8	10	12	14	16	18
Population	Species X	400	1000	2800	4400	5400	6000	6400	6400	6200	6400
	Species Y	400	1800	2400	2200	1800	1400	800	600	400	600

(a) Plot a graph of wasps against time on the grid provided. (7marks)



a) State the type of relationship between the two wasp species. (1mark)

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b) Account for the differences in population of the two wasp species between:

i. 0 – 3 years (3marks)

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ii. 4 – 14 years (3marks)

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c) The experiment was continued for another 8 months. On the 18th month the population of species X increased and surpassed that of Y. account for this observation. (3marks)

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d) Explain how the population of the wasps was determined. (3mks)

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7. Describe the role of the following organs in excretion and homeostasis.

a) The liver (10 marks)

b) The skin during hot environmental conditions (10 marks)

8. Discuss the various evidences, which show that evolution has taken place. (20marks)

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