Name……Index No……..

ADM No……..

231/2
BIOLOGY
PAPER 2
(THEORY)
231/2
July/August 2013

Student's signature……
Date……..

2 HOURS

Kenya Certificate of Secondary Education

SUBUKIA DISTRICT JOINT EXAMINATION
BIOLOGY
Paper 2
2 hours

Instructions.

a) Write your **name**, **ADM** and **index numbers** in the spaces provide above.
b) Sign and write the dates of examination in the spaces provided above.
c) This paper consist of **TWO** sections; **A** and **B**.
d) Answer all questions in section **A** in the spaces provided.
e) In section B answer question 6(compulsory) and either question 7 or 8 in the spaces provided after the question.
f) This paper consist of **10 (ten)** printed pages
g) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

FOR EXAMINERS USE ONLY.

Section	Question	Maximum score	Candidates score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
Total		80	

Section A (40 Mks)

Answer all questions in this section.

1. In a particular species of tropical beetles, the wings have either red or orange marks. A cross between red marked beetles with orange marked beetles produces off-springs with yellow marks only. When the F_1 generation off-springs are selfed, they produce F_2 generation in the ratio of 1 red: 2 yellow: 1 orange.

   (a) Explain the absence of red and orange marks in the F_1 off-springs. *(1 mk)*

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   (b) If the gene responsible for red marks is **R** while the gene responsible for orange marks is **O**, use a genetic cross to show how the F_2 generation was obtained. *(4 mks)*

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   (c) Give ***two*** examples of sex-linked traits in man. *(2 mks)*

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   (d) What is non-disjunction? *(1 mk)*

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   ……

2. During an ecological study, students collected and marked 120 ants and released them. After48 hours, the students captured another 90 ants, 20 of which had been marked previously.

   (a) How many ants were there in the compound? Show your working. *(3mks)*

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   (b) What are the limitations of this method in sampling animal populations? *(4mks)*

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   (c) State ***two*** other methods which could be used to determine the population. (1mk)

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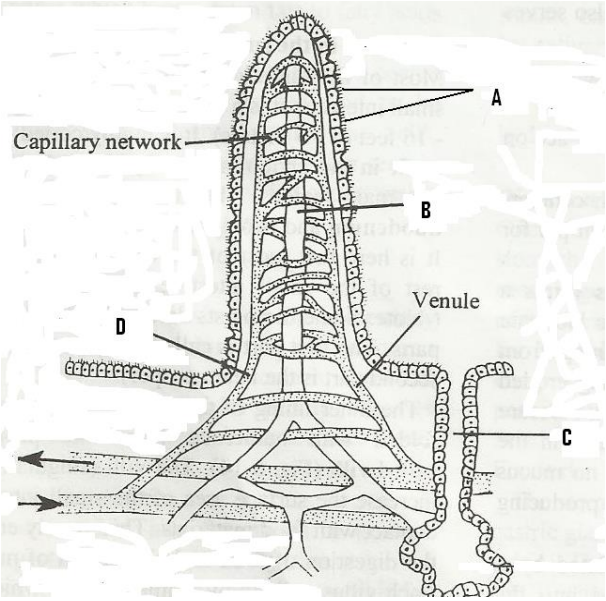
3. The figure below represents a structure obtained from the ileum of a mammal.



(a) Give the identity of the structure. *(1 mk)*

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(b) What is the importance of the structure named in (a) above? *(1 mk)*

……

Name the parts labeled A, B and D. *(3 mks)*

A
……

B
……

D
……

(c) (i) Name the juice secreted by the part labeled C. *(1 mk)*

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(ii) List ***two*** enzymes present in the juice named in d (i) above. *(2 mks)*

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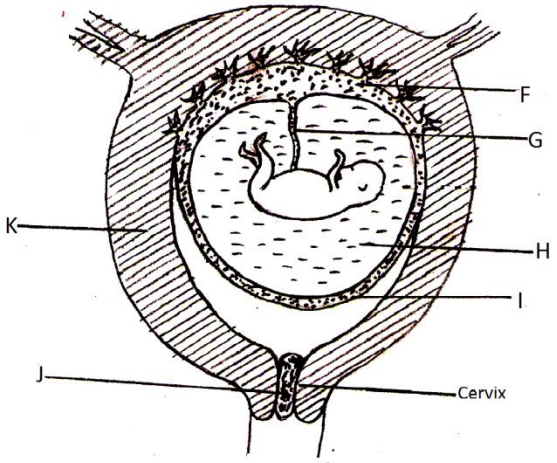
4. The diagram below represents a developing foetus.



(a) Name the parts labeled **F**, **I** and **J**. *(3 mks)*

F

……

I

……

J

……

(b) Give ***two*** functions of the part labeled **H**. *(2 mks)*

……

……

(c) Name ***two*** substances that pass through the part labeled **G** from the foetus to the mother. *(2 mks)*

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(d) If the ovary of the expectant mother was removed after three months, the pregnancy goes to full term without being interrupted. Explain this observation. *(1 mk)*

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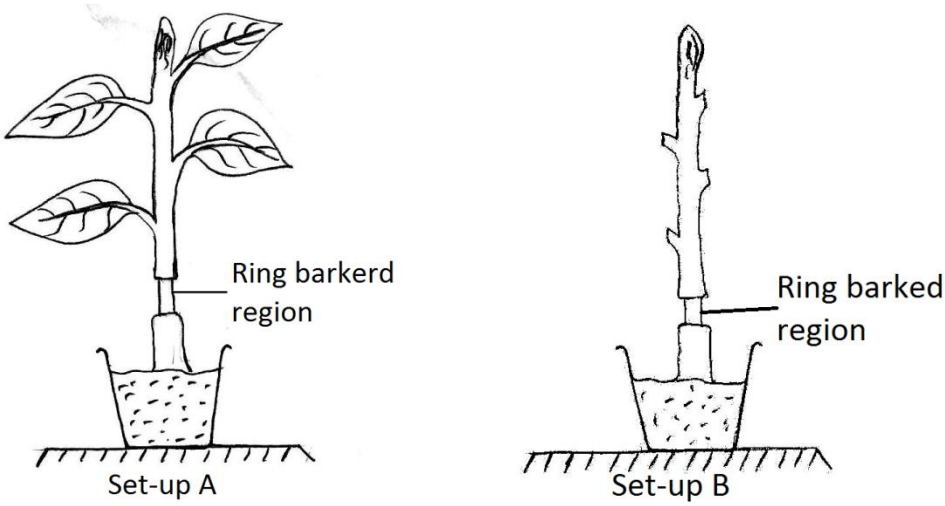
5. Form two students from Kabazi Secondary School wanted to investigate a certain process using potted plants as shown below.



In set-up A, the potted plant was ring barked but the leaves retained. In set-up B, the potted plant was ring barked and leaves plucked so that it was always without leaves. The set-ups were maintained for two months.

(a) What process was being investigated? *(1 mk)*

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(b) What observations did the students make in their experiment? *(2 mks)*

Set-up A

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……

Set-up B

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(c) Give an explanation for the observations in (b) above. *(4 mks)*

Set-up A

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Set-up B

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(d) Name another method that can be used to investigate the same process. *(1 mk)*

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Section B (40 mks)

*Answer question **6 (compulsory)** and either question **7** or **8**.*

6. The following results were obtained from a study of germination and early growth of maize. The grains were sown in soil in a greenhouse and at two days intervals. Samples were taken, oven-dried and weighed.

Time after sowing (days)	0	2	4	6	8	10	12
Dry mass of embryo (g)	0.002	0.002	0.008	0.016	0.024	0.034	0.035

(a) Plot a graph of dry mass of embryo against time after sowing. *(6 mks)*

(b) What name is given to the curve you have obtained in (a) above? *(1 mk)*

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(c) Why is rate of increase low between day one and day three? *(2 mks)*

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(d) Give reasons for the limited rate of increase between day nine and day eleven. *(3 mks)*

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(e) (i) Name a phylum whose growth does not take the shape of the curve drawn above. *(1 mk)*

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(ii) What name is given to the curve exhibited by organisms in the phylum you have named in (e) (i) above? *(1 mk)*

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(iii) What causes the behavior of the curve mentioned in (e) (ii) above? *(1 mk)*

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(f) Apart from temperature, give three external factors necessary for germination. *(3 mks)*

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(g) Explain what effect would temperature below $10^{o}C$ have on the above seeds? *(2 mks)*

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7. (a) Discuss factors that affect the rate of photosynthesis. *(8 mks)*
   (b) Discuss the environmental factors that affect the rate of transpiration. *(12 mks)*
8. Describe the structural adaptations of the mammalian heart to its functions. *(20 mks)*

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ANSWERS:

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