

Name..... Index No:.....

231/2

Candidate's Signature

BIOLOGY

Date:

Paper 2

(Theory)

March/April 2014

Time: 2 Hours

KAKAMEGA CENTRAL SUB-COUNTY JOINT EVALUATION EXAM

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

Biology

Paper 2

(Theory)

INSTRUCTIONS TO CANDIDATES

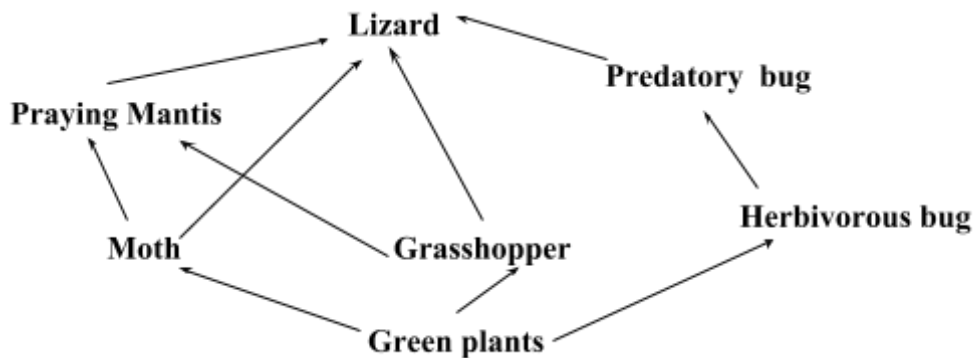
- Write your **name** and **index number** in the spaces provided above
- **Sign** and write the **date** of examination in the spaces provided.
- Answer **all** the questions in the spaces provided.

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		80	

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. The figure below represents a feeding relationship



(a) What is the difference between a food chain and a food web? (2mks)

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(b) Construct **two** food chains ending with a tertiary consumer. (2mks)

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(c) Name **one** secondary consumer in the food web. (1mk)

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(d) Name **one** organism through which energy from the sun enters the food web. (1mk)

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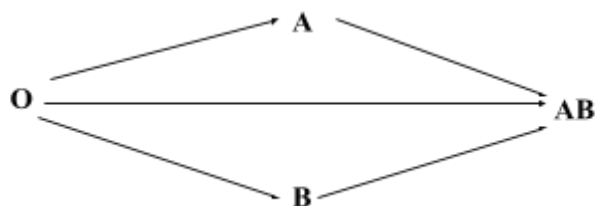
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(e) Suggest **two** ways in which the ecosystem would be affected if there was prolonged drought (2mks)

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2. The flow chart below shows blood transfusion pathway.



(a) What **five** conclusions can you draw from the flow chart? (5 mks)

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(b) Why is the knowledge of blood groups necessary before blood transfusion (1mk)

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(c) A part from knowledge of blood groups, state two precautions that must be observed during blood transfusion (2 mks)

3. A drop of blood was placed in each of the three test tubes A, B and C. The conditions in each test tube were as follows:-

A - 1 cm³ of distilled water

B - 1 cm³ of 0.8 5% sodium Chloride solution (Isotonic with blood plasma)

C - 1 cm³ of 1.70% sodium chloride solution

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

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(b) (i) From which test tube were red blood cells observed (1 mk)

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.....
(ii) Give a reason for your answer in b (i) above (2 mks)

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.....
(c) (i) What observation was made of the appearance of red blood cells on the slide prepared from tube C? (1 mk)

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

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.....
(d) What is the functions of red blood cells in human blood. (1 mk).

4. The diagram below shows a portion of a lower epidermis of a sukuma wiki leaf.

Q

P

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

P

Q

(b) Briefly describe the photosynthetic theory of stomatal opening. (5mks)

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(c) State **one** modification in the stomata of xerophyte plant other than being sunken and hairy (1mk)

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5. In maize the gene for purple colour is dominant to the gene for white colour. A pure breeding maize plant with purple grains was crossed with a heterozygous plant.

(a) (i) Using letter **G** to represent the gene for purple colour, work out the genotypic ratio of the offspring. (5 mks)

(ii) State the Phenotype of the offspring. (1mk)

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(b) What is genetic engineering?

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(c) What is meant by hybrid vigour?
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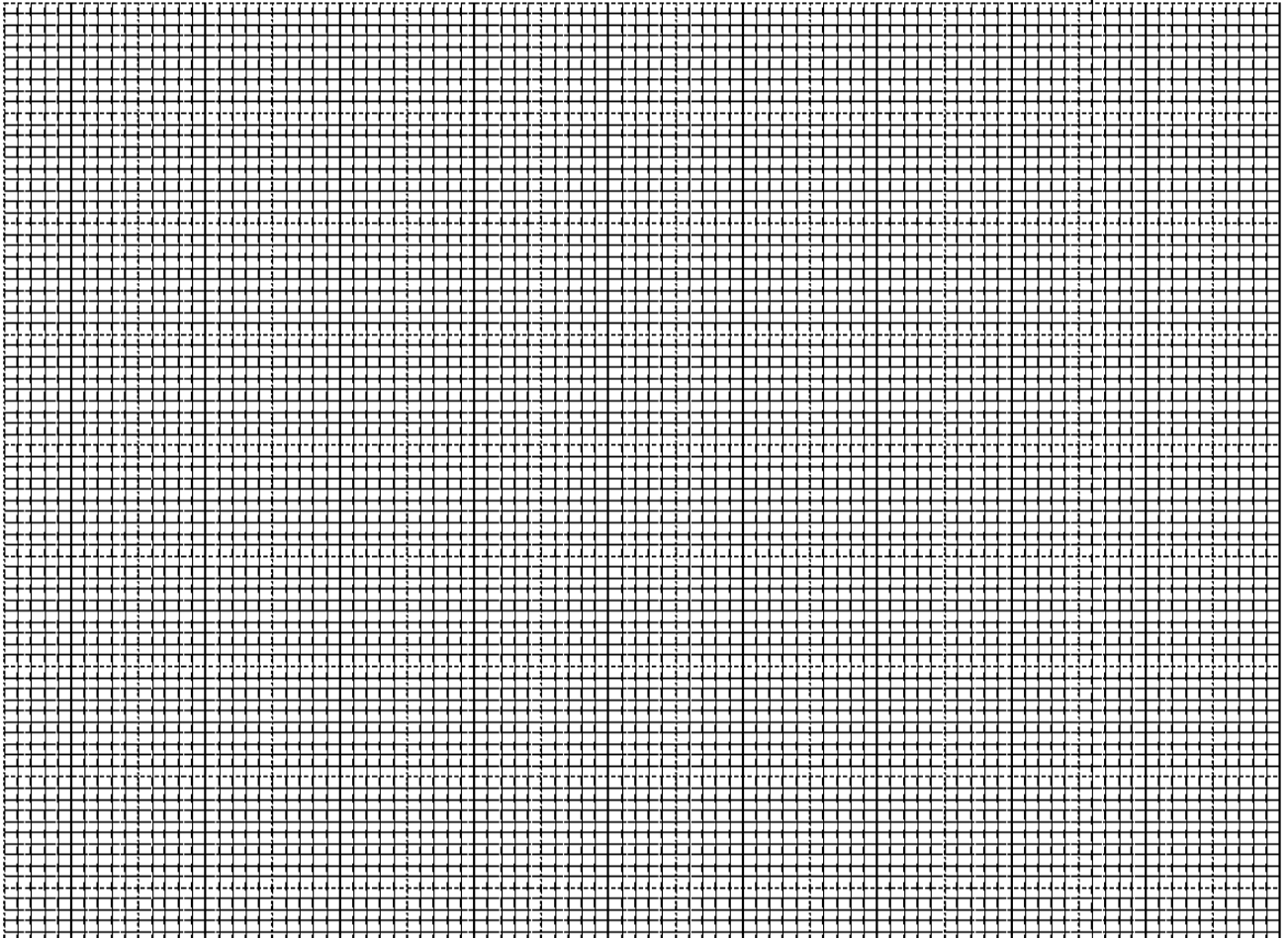
SECTION B (40 MARKS)

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

The menstrual cycle is a sequence of events repeated monthly in the female reproductive system. The table below shows the concentration of oestrogen and progesterone hormones and body temperatures of female against time.

Time in days	Oestrogen ng/100cm of blood	Progesterone ng/1-00cm ³	Temperature in 0°C
1	20	0	36.4
2	20.5	0	36.6
3	25	0	36.7
4	27.5	0	36.8
5	30	0	36.7
6	32.5	0	36.6
7	35	0	36.8
8	40	0	36.7
9	48	0	36.6
10	56	0	36.8
11	64	0	36.7
12	72	0	36.6
13	80	0	36.4
14	170	20	36.3
15	140	50	36.6
16	80	80	37.0
17	70	130	37.7
18	65	170	37.0
19	60	160	37.1
20	65	150	37.15
21	130	130	37.2
22	140	110	37.1
23	130	90	37.0
24	100	70	37.1
25	80	50	37.2
26	60	20	37.0
27	20	0	36.4

(a) Using the same axes draw graphs of oestrogen and progesterone against time (days). Use the graph paper provided. (8mks)



(b) State the possible event taking place in the uterus during the first week? (1mk)

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(c) State the events taking place in the ovary between day 1 and day 13. (2 mks)

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(d) Account for the sudden increase in the progesterone concentration day 14 and day 18 (2 mks)

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(e) Account for the change in temperature between day 14 and 17. (1mk)

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(f) Account for the change of the curve of progesterone between day 19 and 27. (2 mks)

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(g) State the function of the following (1 mk)

(i) Ovary

.....
.....

(ii) Progesterone (1mk)

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ANSWERS:

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