NAME……………………………………………………………… INDEX NO………

231/2
BIOLOGY
PAPER 2
JULY/AUGUST 2010
TIME: 2 HOURS

KENYA CERTIFICATE OF SECONDARY EDUCATION

FORM FOUR EVALUATION EXAMINATION

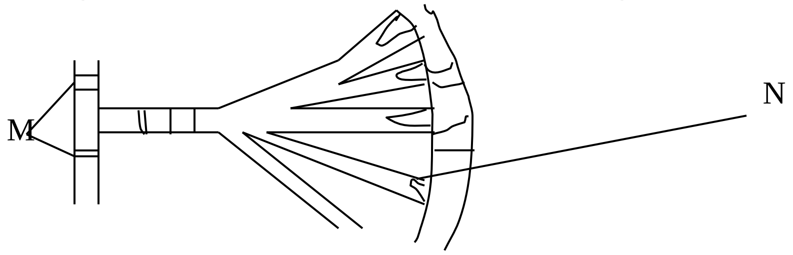
INSTRUCTIONS TO CANDIDATES

1. This paper consists of two sections A & AB
2. Answer ALL the questions in section A in the spaces provided.
3. In section B answer question 6 (Compulsory) and either question 7 or 8 in spaces provided.

FOR EXAMINERS USE ONLY

NOS	MARKS	SCORE
1	8	
2	8	
3	8	
4	8	
5	8	
6	20	
7	20	
8	20	
TOTAL	80	

1. The diagram below represent part of a cockroach gaseous exchange system.



a) State the function of the part labelled M (1 mark)

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b) Suggest how the part N is adapted for gaseous

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c) How does the movement of oxygen in an insect and mammals from atmosphere to the tissue of the body differ. (4 marks)

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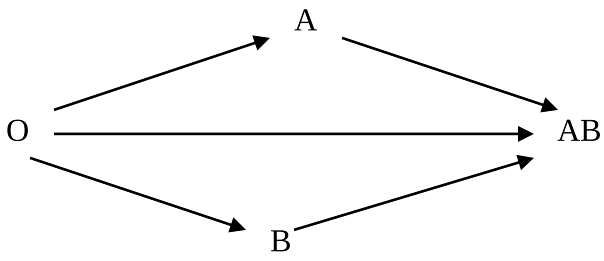
2. The flow chart below shows blood transfusion pathway



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

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

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c) Apart from knowledge of blood groups state two precautions that must be observed during blood transfusion. (2 marks)

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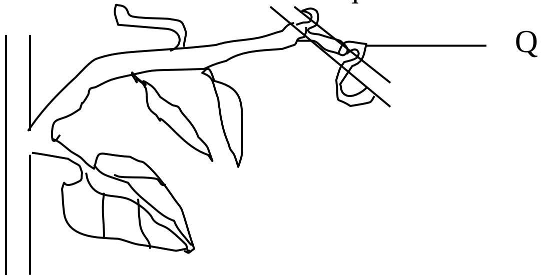
3. Study the diagram below and answer the questions that follow.



a) Identify the part labelled Q. (1 mark)

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b) (i)What type of response is shown above? (1 mark)

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(ii) What is the importance of the above response? (1 mark)

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c) Explain how the response exhibited by part Q occurs. (4 marks)

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d) Name the plant hormone that is responsible for this response. (1 mark)

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4. The genetic disorder haemophilia is due to a recessive sex linked gene. A man who is haemophilia married a woman who is a carrier for the condition.
a) Using the letter (H) to represent the normal condition and (h) for the haemophiliac condition.
(i) What is the genotype of the man and woman? (2 marks)

Man……………………………………………………………………………………

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Woman…………………………………………………………………………………

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(ii) Work out a cross between the man and woman. (3 marks)

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b) What is the chance that both the first and second sons will be haemophiliac? (2 marks)

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c) Hemophilia is more common in males than in female humans. Explain. (1 mark)

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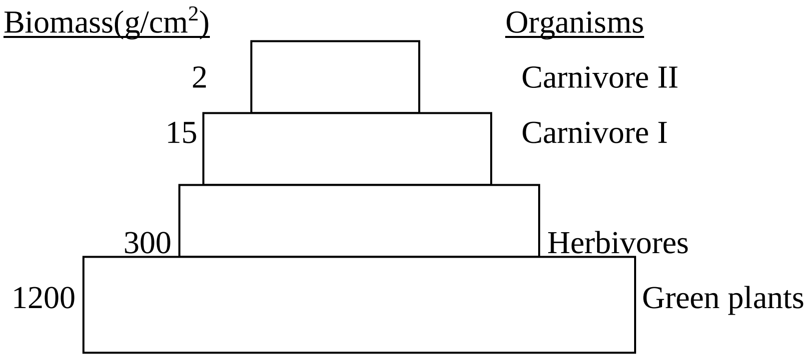
5. The diagram below shows different groups of organisms and their biomass.



a) Define the term biomass. (2 marks)

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b) Account for the decrease in biomass in the successive group of organisms. (3 marks)

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c) Describe how energy from the sun is made available for Carnivore II (3 marks)

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SECTION B(40 MARKS)

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

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

Time in days	Oestrogen mg/100cm of blood	Progesterone mg/100cm^3 of blood	Temperature in 0^{o}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	37.2
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 axis draw graphs of oestrogen and progesterone against time. (days) (8 marks)

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

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

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

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

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

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d) State the function of the following.

(i) Ovary (1 mark)

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(ii) Progesterone (1 mark)

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(iii) Oestrogen (1 mark)

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7. Describe how xerophytic plants are structurally adapted to their habitat.

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8. (i) Blood has two broad functions namely protective and transport.

Describe how the blood protects the body. (4 marks)

(ii) Describe the structural adaptation of the mammalian heart to its function. (16 marks)

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