Name……..Index Number……

Candidate's Signature:…….....Date.....

231/3

FORM FOUR

BIOLOGY
PAPER 2
TIME:2HOURS

Instructions to Candidates:

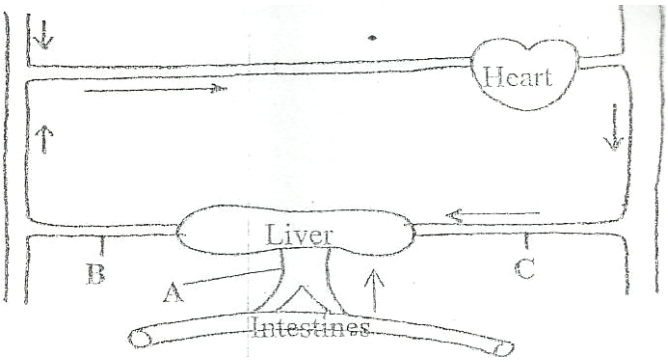
a)Write your name, admission number and class in the spaces provided
b)Answer all the questions in Section A in the spaces provided
c)In section B answer questions 6(compulsory) and either question 7 or 8 in the spaces provided.

For Examiner's use only:

SECTION	QUESTION	M8AXIMUM SCORE	CANDIDATE SCORE
	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
	7	20	
	8	20	
	TOTAL	80	

This paper consists of 10 printed ages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing.

1.The diagram below represents part of the mammalian blood circulatory system and some associated glands.



(a) Name the blood vessels A and B. (2marks)

A……..

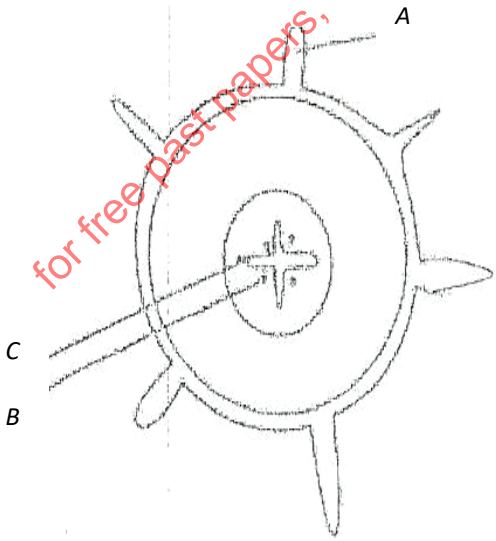
B……

(b) State two structural differences between the blood vessels labeled A and C. (2marks)

(i).....

(ii).....

(c) The diagram below represents a cross-section obtained from a plant. Use it to answer the questions that follow.



i) Identify the parts labeled A and C (2marks)

A……

B……

ii) Explain how the part labeled A is adapted to fits function. (2marks)

(i).....

(ii).....

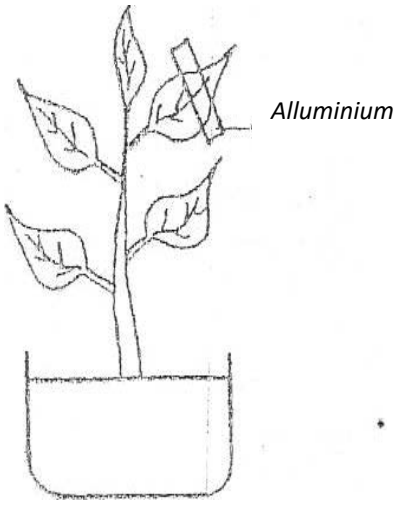
2. Pure breed of red cows and pure breed of white bulls were crossed to give F_1 calves which had a mixture of red and white coat known as roam. The F1 were selfed.

(a) Using letter R to represent gene for red colour and W to represent gene for white color work out the phenotypic ratio of F_2

(b) Work out the genotypic ratio of a cross between F1 offspring and white bull. (3marks)

(c) Comment on the Gene(s) controlling the colour of coats in cattle mentioned above(1 mark)

3. In an experiment to investigate a factor affecting photosynthesis, a leaf of a potted plant which had been kept in the dark overnight was covered with aluminium foil as shown in the diagram below.



Set up was kept in sunlight for three hours after which a food test was carried out on the leaf.

(a) Which food test was carried out? (1mark)

(i).....

(b) State and explain the results of food test. (2marks)

(i).....

(ii).....

(c) Why was the set up kept in sunlight for three hours? (1mark)

(i).....

(d) (i)Explain why breast milk is important to newborn babies. (1mark)

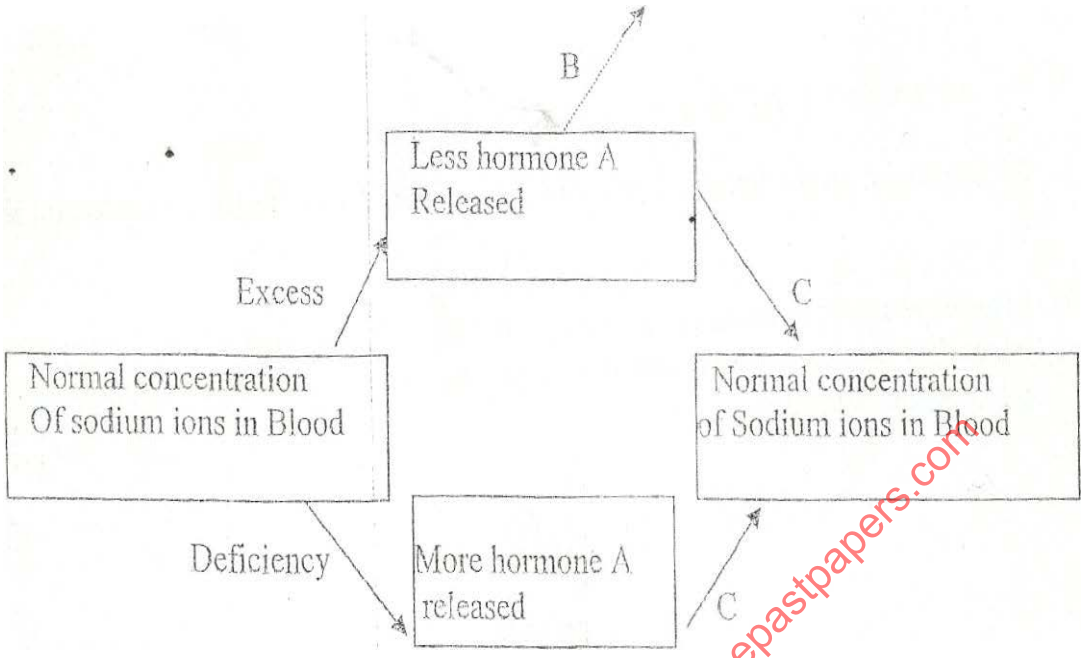
(i).....

(ii) State two functions of mucus secreted in the alimentary canal (2marks)

(i).....

(ii).....

4. Study the homeostatic scheme below and use it to answer the questions that follow.



a) Identify the hormone labeled A. (1mark)

(i).....

b) Name the gland which releases hormone A (1mark)

(i).....

c) Outline two major sites of action of hormone A. (2marks)

(i).....

(ii).....

d) Identify the feedback labeled C. (1mark)

(i).....

e) State the effects of the feedback labeled B in humans. (1mark)

(i).....

f) Name the self regulatory process represented by the above schematic diagram.(1mark)

(i).....

g) A person was found to pass out large volumes of dilute urine frequently. Name the disease the person was suffering from. (1mark)

(i).....

5. (a) State the functions of each of the following parts of male reproductive system. (3marks)

(i) Sertoli cells

(i).....

(ii) Epididymis

(i).....

(iii)Seminiferons tubules

(i).....

(b) A certain species of flowering plant relies entirely on sexual reproduction for propagation. The chromosome number of the cell in the ovarian wall is 16. What is the chromosome number in:-

i) The pollen tube nucleus. (1mark)

(i).....

ii) A cell of the endosperm (1mark)

(i).....

iii) Name a hormone produced from the ovary during menstrual cycle in human (1mark)

(i).....

SECTIION B (40Marks)

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

6. In an ecological study, a glass hopper population and that of a crows was estimated in a certain grassland area over a period of one year. The results are as shown in the table below.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Number of adult grasshoppers × 10^2	90	20	11	25	2500	1652	120	15	10	35	195	456
Number of crows	4	2	1	1	8	22	7	2	1	1	5	15
Amount of rainfall	20	0	320	350	520	350	12	10	25	190	256	350

(a) (i) What is the relationship between the rainfall and grasshopper population? (1mark)

(i).....

(ii) Account for the relationship stated in a (i) above. (3marks)

(i).....

(ii).....

(iii).....

(b) Explain the relationship between the grasshopper population and that of the crows. (3marks)

(i).....

(ii).....

(iii).....

(c) If the data was used in the construction of pyramid of numbers, what would be the trophic level of; (3marks)

Grasshopper…….

Crows……..

The grass in the study area……

(d) If the area studied was one square kilometer, state;

(i) One method that could have been used to estimate the crow population (1mark)

(i).....

(ii) One method that could have been used to estimate the grasshopper population (1 mark)

(i).....

(e) Suggest what would happen if a predator for grasshoppers entered the study area.(2marks)

(i).....

(ii).....

(f) What is meant by the term carrying capacity? (1mark)

(i).....

(g) Why would the carrying capacity of wild animals in woodland grassland be higher than that of cattle? (2marks)

(i).....

(ii).....

(h) What is an ecosystem? (3marks)

(i).....

(ii).....

(iii).....

7. (a) (i) Define the term evolution (1mark)

(i).....

(ii) State and explain the origin of life (4marks)

(i).....

(ii).....

(iii).....

(iv).....

b) Discuss palaentology/fossil records and comparative anatomy as evidence of organic evolution. (15marks)

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8. (a) Explain the following terms: (3marks)

i. Moulting

(i).....

ii. Metamorphosis

(i).....

iii. Instar

(i).....

b) Describe the role of indole acetic acid, giberrellins and cytokinnins as plant growth hormones in the growth and development of plant (17marks)

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