

Name: Index no

School: Candidate's sign

Date:

231/2
BIOLOGY
THEORY
PAPER 2
JULY /AUGUST 2014
TIME: 2 HOURS

ALLIANCE GIRLS HIGH SCHOOL

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

**Biology
Paper 2**

INSTRUCTIONS TO CANDIDATES:

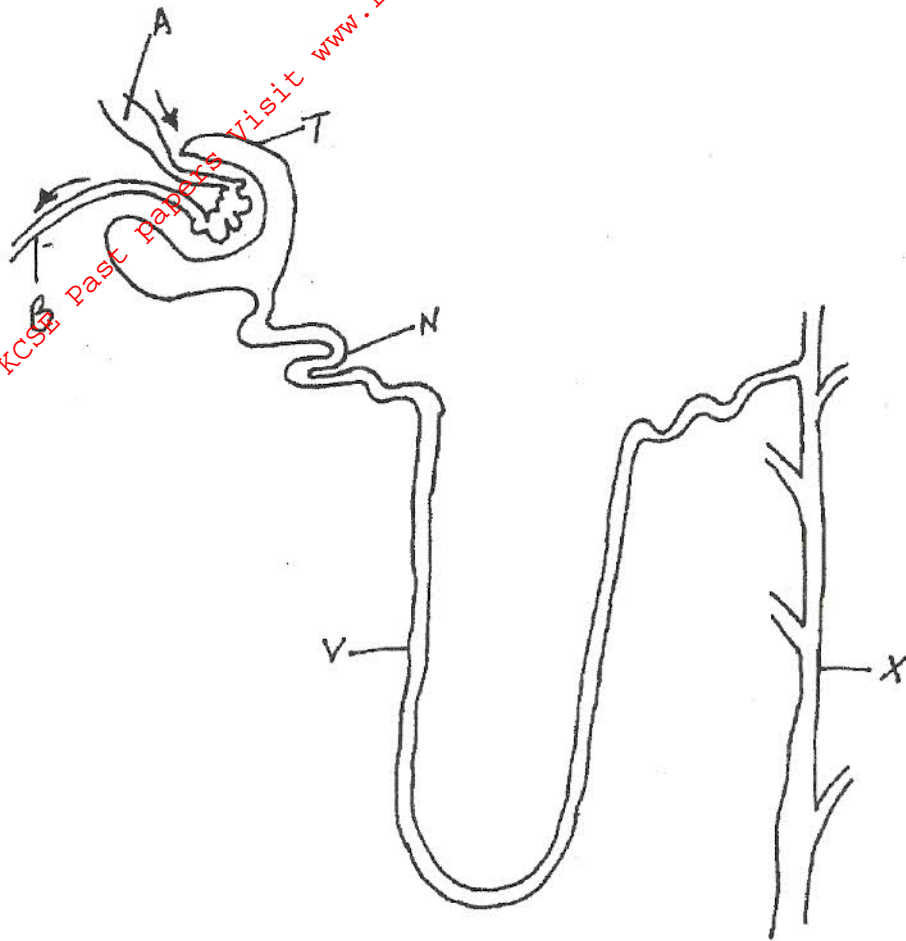
- Write your name and index number in the spaces provided.
- Answer all the questions in Section A in the spaces provided.
- In section B answer questions 6 (compulsory) and either question 7 or 8 in the spaces provided

For Examiner's Use Only:

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES 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 12 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing

1.) The diagram below Shows a section through the mammalian nephron. Use it to answer the questions that follow.



a) Name the structures labeled:- (2mks)

A

N

b) Name all structures in a nephron which are normally present in the cortex region of kidney. (1mk)

.....

c) Which region in the Nephron deals with conservation of body water (1mk)

.....

d) Name **one** hormone that has an effect on part labelled X. (1mk)

.....

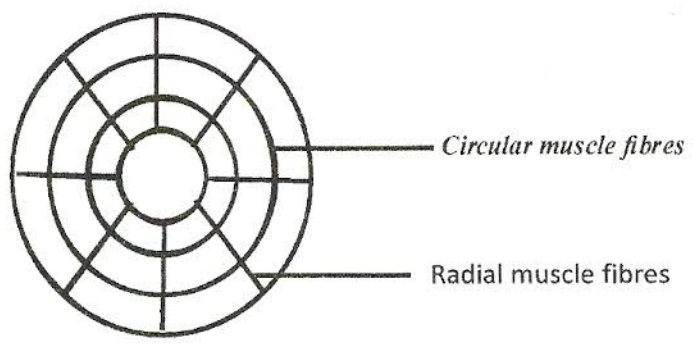
(e) How is part labeled N adapted to its function. (3mks)

.....

.....

.....

2) The diagram below shows the internal arrangement of muscles of this iris of the eyes



a) How is the pupil affected by contraction of
i) Circular muscles (1 Mark)

.....

ii) Radial muscles (1 Mark)

.....

b) Where are light sensitive cells located in the eye (1 Mark)

c) What is shortsightedness (1 Mark)

d) Explain why cones have a higher visual activity as compared to rods (2 Marks)

e) Which structure in the ear detects

i) Sound waves (1 Mark)

ii) Change in posture (1 Mark)

In a certain species of chicken, the genes for black feather and white feather colours are co-dominant. A white chicken was crossed with a black chicken, all the F1 chicks were blue feathered. Using the symbols B and W to represent the genes for black colour and white colour respectively: -

(a) What is the phenotypic ratio if the F1 offspring were selfed?

Show your working

(3mks)

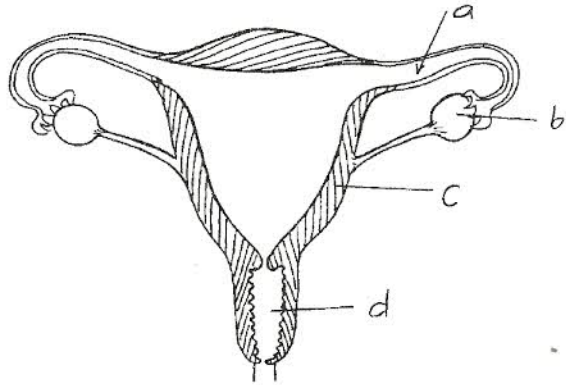
(b) State the possible genotypes when a black-feathered cock is crossed with a blue-feathered hen.

(2mks)

(c) Name one sex-linked characteristic in human beings.

(1mk)

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



a) Which part(s) marked a-d, when defective after implantation may lead to abortion. Give a reason for your answer. 2mks

.....
.....

b) The part labelled b can be removed after 4 months of pregnancy without interfering with the pregnancy. Explain. 2mks

.....

c) Under each of the following, state the name of the causative organisms.

- i) Syphilis ½mk
- ii) Candidiasis ½ mk
- iii) Gonorrhoea ½ mk
- iv) AIDS..... ½ mk

d) State two disadvantages of external fertilization. 2mks

.....

.....

4 (a) (i) In plants, lateral buds do not sprout into side branches in the presence of a growing terminal bud. Explain why this happens. (1mk)

.....

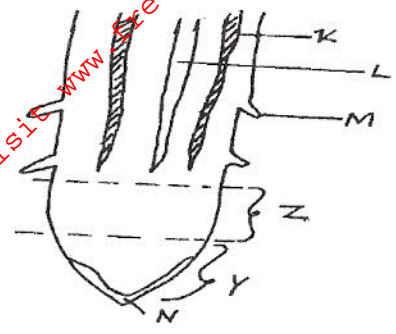
(ii) Name one area in agriculture where the knowledge in 2 (a) above is applied and give a reason why. (1mk)

.....

(iii) Explain the effect of removing the terminal bud from a plant. (1mk)

.....

b) The diagram below represents a longitudinal section through a dicotyledonous root tip.



(i) Name the parts labeled k,l,m. 1½ mk)

- K.....
- L.....
- M.....

(ii) State the function of the part labeled N. (1mk)

.....

(iii) Name the process by which water moves from the soil particles into plant root (½ mk)

.....

(iv) How is the structure labeled L different from that of the stem of the plant (1mk)

.....

(v) Name the zones labeled Y and Z (1mks)

- Y.....
- Z.....

5. In an experiment the table below shows the approximate distribution of blood groups in a sample of 100 people in a population.

Blood group	Frequency	Rhesus +ve	Rhesus -ve
A	26	22	4
B	20	18	2
AB	4	3	1
O	50	42	8

A) Account for;

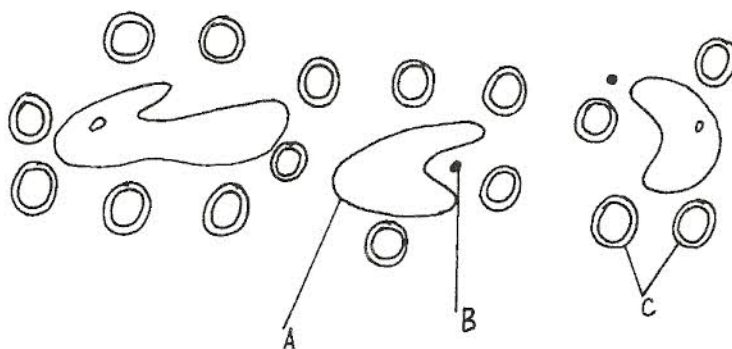
(i) The large number of blood group O individuals in a population. (2 mks)

.....

(ii) The small number of individuals with blood group AB (2 mks)

.....

B) The diagrams below represent a blood smear on a glass slide.



(i) State the importance of structure being in large numbers. [1mks]

.....

(ii) Give a reason why structure C would be found in large numbers at high altitude than at low altitude [2 mks]

.....

(iii) Name the process by which structure A would engulf structure B.

.....

SECTION B (40 MARKS)

Question 6 is compulsory. Then answer either 7 or 8

6. An experiment was carried out to test the level of glucose and amino acids in a certain person after being starved for 48 hrs. Then he was served with a well balanced meal, after which the concentration of glucose and amino acids in the blood were determined every one hour for the next 8 hours after the meal. The concentration were measured as blood passed through the hepatic portal vein and hepatic vein. The results were as shown in the data below.

Time in hours	Concentration of Glucose and amino acids in blood (mg/100cm ³ of blood)			
	HEPATIC PORTAL VEIN		HEPATIC VEIN	
	GLUCOSE	AMINO ACIDS	GLUCOSE	AMINO ACIDS
0	79	1.0	85	1.0
1	79	1.0	85	1.0
2	160	1.0	110	1.0
3	140	4.0	100	3.0
4	120	6.0	90	3.0
5	100	5.0	90	2.0
6	90	2.0	90	1.0
7	90	1.0	90	1.0
8	90	1.0	90	1.0

a) On the same axis plot graphs of glucose concentration in hepatic portal vein and hepatic vein against time. 7mks.

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b) Account for the difference in blood sugar level in hepatic portal vein and hepatic vein;
(i) between 0 – 1 hours 4mks.

.....
.....
.....
.....

(ii) Between 2 – 4 hours. 5mks

.....
.....
.....
.....

c) (i) Give one reason that delayed increase in amino acids concentration in hepatic portal vein. 1mk

.....
.....

ii) Account for the difference in concentration of amino acids in hepatic portal vein and hepatic vein between 3rd – 6th hours. (2mks)

.....

d) Name the enzyme that completes fat digestion in man. (1mk)

.....

7. Describe how mammalian heart is adapted to its function. (20mks)

8. Describe the process of digestion that takes place when one eats an egg and ugali. (20 mks)

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