NAME……**INDEX NO**……

SCHOOL ……

SIGNATURE……**DATE**……

231/2

BIOLOGY

PAPER 2

JULY/AUGUST 2012

2HRS

KISUMU NORTH AND EAST DISTRICTS JOINT TEST

Kenya Certificate of Secondary Education 2012

231/2

BIOLOGY

PAPER TWO

JULY/AUGUST 2012

Instructions to candidates;

- Write your name, index number and name of your school in the spaces provided
- This paper consists of two parts A and B.
- Answer **ALL** 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 after question 8.

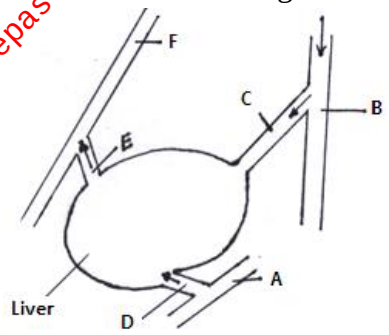
For examiners only

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

SECTION A (40MARKS)

Answer all the questions in this section in the spaces provided.

1. The diagram below illustrates blood circulation in certain organs in humans.



a) Name the part labeled A. (1mrk)

.....

b) Name the blood vessels labeled B and F. (2mks)

B.....

F.....

c) State how the composition of blood in vessel E differs from that in vessel D. (3mks)

E	D

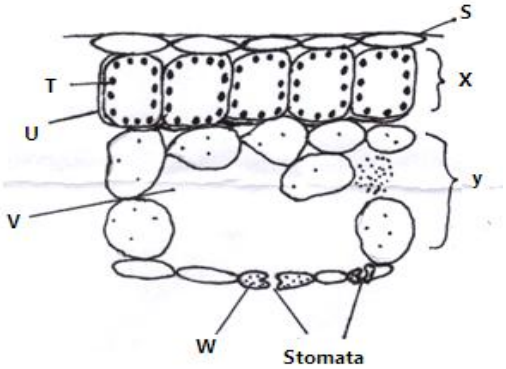
d) Explain the role of bile in the process of digestion. (2marks)

.....

.....

.....

2. The diagram below represents a section through a leaf of a terrestrial plant.



a) Name the structures labeled S, X, Y and V (2marks)

.....

.....

.....

b) State the roles of each of the parts labeled V and W. (2mrks)

V.....

.....

W.....

.....

c) ***State two*** ways in which structures labeled X and Y are adapted to their functions. (4mks)

X.....

.....

.....

.....

Y.....

.....

.....

.....

3. A common species of rats has individuals with white, black or grey coats. During a study a rat with white coat was crossed with a rat with black coat. Both parents were pure lines. All the offspring in F1 generation had grey coats. Using letter B to represent the gene type for black coat and W for white coat, answer the questions that follow.

   a) Suggest a reason to explain why there were no white or black rats in the F1 generation. (1mark)

   .....

   .....

   b) The F1 offspring were selfed to get F2 generation. Work out the phenotypic ratio of F2. Show your working. (5marks)

   .....

   .....

   .....

   .....

   .....

   .....

   .....

   .....

   .....

   .....

   .....

.....

.....

.....

.....

.....

c) ***Name one*** trait in human beings that is determined by multiple allele. (1mrk)

.....

.....

d) ***Name one*** genetic disorder affecting the human eye. (1mrk)

.....

.....

4. During an ecological field work, a group of students caught 240 grasshoppers, marked them and then released them back to the study area. After one day they caught 160 grasshoppers and found that 40 were marked. Using the formula;

$$P = \frac{F.C.M \times S.C}{S.C.M}$$

Where P =Total population
F.C.M = First capture marked
S.C = Second capture
S.C.M = Second capture marked

a) Work out the total population of the grasshoppers in the study area. (2mrk)

.....

.....

.....

.....

b) b) Identify the method used to capture the grasshoppers. (1mrk)

.....

.....

c) Name the instrument and chemical the students used to collect and mark the grasshoppers. (2mrks)

i) Instrument for collection .....

ii)Chemical for marking .....

d) State any ***one*** assumption the students made during the field work. (1mrk)

.....

.....

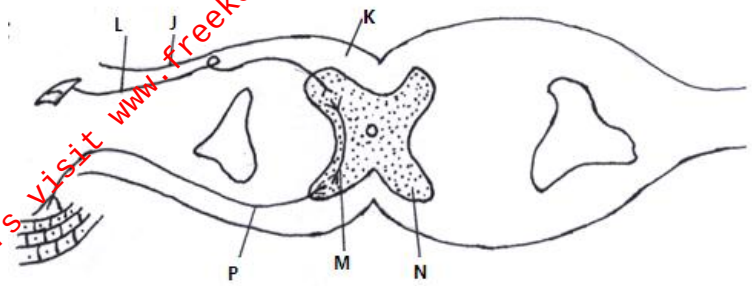
e) The students observed the organisms and placed them into their correct phylum and class.

Name the phylum and class.

i) Phylum.....

ii) Class .....

5. The diagram below shows a transverse section of the spinal cord.



a) Name the parts labeled K and N. (2mrks)

K .....

N .....

b) Describe briefly how the impulse transmission occurs through the structures in the diagram (3mrks)

.....

.....

.....

.....

.....

c) ***State three*** differences between simple and conditioned reflex actions. (3mrks)

Simple reflex	Conditioned reflex
i) ii) iii)	

SECTION B (40MARKS)

Answer questions 6 (COMPULSORY) and Either question 7 or 8 in the spaces provided after the question 8.

6. Rice seeds were soaked overnight. Fresh mass and dry mass of a sample of 20 seeds was obtained and recorded in the table. The rest of the seeds were planted in a tray that had soil and well watered daily. Twenty of the seeds/seedlings were removed from the soil every two days for two weeks. Their fresh and dry mass were taken and recorded in the table as shown below.

Time in days	Fresh mass in (g)	Dry mass in (g)
0	14.0	4.0
2	18.0	3.5
4	24.5	2.5

6	32.0	1.5
8	38.5	2.0
10	41.0	3.0
12	43.0	4.5
14	45.0	6.0

a) Using the same axes, plot two graphs to represent changes in fresh and dry mass over the two –week period (7mrks)

gRID

b) What would be the fresh and dry mass of the seedlings at day 9. (2mrks)

i) Fresh mass .....

ii) Dry mass .....

c) Account for the change in fresh mass and dry mass between day 0 and day 6. (4mrks)

i) Fresh mass

.....

.....

.....

.....

ii) Dry mass

.....

.....

.....

.....

d) Explain the change in dry mass from day 8 (2mrks)

.....

.....

.....

.....

e) Explain why a sample of 20 seeds was used instead of one seed. (2mrks)

.....

.....

.....

.....

f) ***State one*** factor within and one factor outside the seed that cause dormancy. (2mrks)

i) Within the seed .....

ii) Outside the seed .....

g) ***Give one*** characteristic of a meristematic cell (1mrk)

.....

.....

7. Explain the evidences of organic evolution in life forms. (20mrks)

8. Describe how gaseous exchange takes place in terrestrial plants. (20mrks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

