

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

School..... Date.....

Candidate's signature.....

231/2
BIOLOGY
Paper 2
July / August 2012
Time 2Hours

BURETI DISTRICT JOINT EVALUATION TEST – 2012
Kenya Certificate of Secondary School (K.C.S.E)

231/2
BIOLOGY
Paper2
July / August 2012
Time 2Hours

INSTRUCTIONS T O CANDIDATES

1. Write your name and index number in the spaces provided above.
- 2.. Sign and write the date of the examination in the spaces provided .
3. Answer all the question in the spaces provided above.
4. T his paper consist of two sections A and B.
5. In section B,answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.
6. This paper consist of 12 printed pages.
7. Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

FOR EXAMINER USE ONLY.

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1	08	
	2	08	
	3	08	
	4	08	
	5	08	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

This paper consists of

*12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing*

1. In a garden with plants of the same species, 705 plants had red flowers while 224 had white flowers.

a) Work out the ratio of red to white flowered plants (1 mark)

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b) i) Using letter R to represent the dominant gene, work out a cross between F1 offspring and a white flowered plant. (4 marks)

ii) What is the genotypic ratio from the cross in b)(i) above?

Genotypic ratio (1 mark)

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Phenotypic ratio (1 mark)

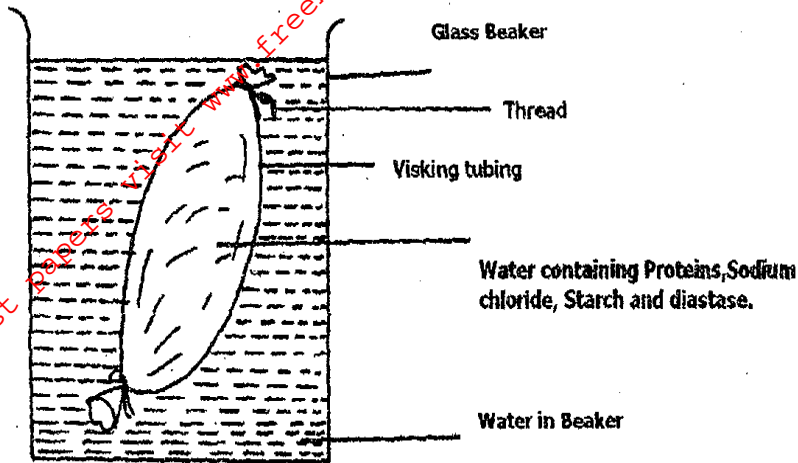
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c) What is meant by the term allele? (1 mark)

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2. In a physiological experiment, starch, protein, diastase and sodium chloride were added to water and put inside a visking tubing. The visking tubing was then placed in a water bath maintained at a temperature between 35-40°C. The set up was as shown in the diagram below.



The following observations were made after the procedures indicated.

Contents in	At the start of experiment	After 1 hour
Visking tubing	i) Solution tastes salty	Solution tastes salty
	ii) Visking tubing is not firm	Visking tubing is firm
	iii) After boiling with Benedicts solution, solution remains blue	After boiling with Benedicts solution the solution turns brown
	iv) On addition of sodium hydroxide followed by copper sulphate solution to the solution, the colour changes to purple	On addition of sodium hydroxide followed by copper sulphate to the solution, the colour changes to purple
Beaker	i) Water is tasteless	Solution tastes sweet/salty
	ii) After boiling solution with Benedicts solution, Blue colour remains	After boiling solution with Benedicts solution, colour turns to brown
	iii) On addition to sodium hydroxide followed by copper sulphate solution, colour remains blue	On addition of sodium hydroxide followed by copper sulphate solution, colour remains blue

- a) Name the process by which salt moved into the water in the beaker from the visking tubing. (1 mark)

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- b) i) Name the food substance responsible for the brown colour observed after 1 hour both in the beaker and visking tubing when solutions are boiled with benedicts solution. (1 mark)

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- ii) Account for the observation in (b i) above. (3 marks)

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c) i) Name the food substance tested with sodium hydroxide followed by copper sulphate solution(s) (1 mark)

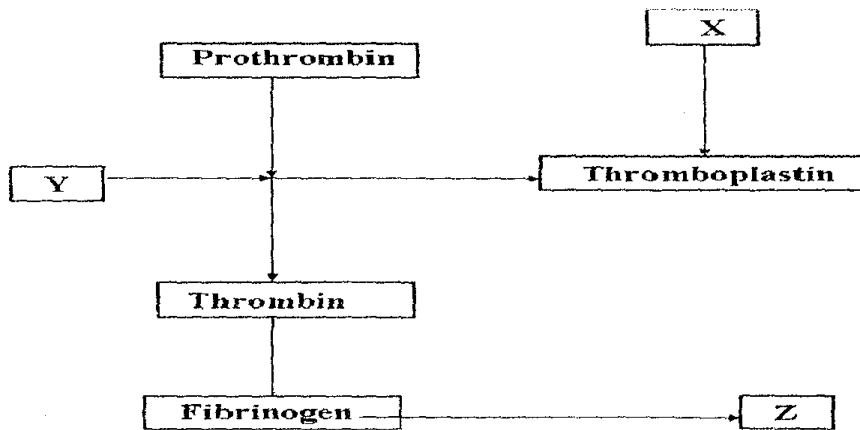
ii) Account for the absence of the food substance named in (c i) above in the beaker after 1 hour (1 mark)

d) After one hour the visking tubing was firm. State the term used to describe this state. (1 mark)

3 a) Distinguish between natural and acquired immunity (1 mark)

b) Define the term allergy (1 mark)

c) The chart below shows the blood clotting mechanism



i) Name the blood cells represented by X (1 mark)

ii) The end product of the mechanism represented by Z (1 mark)

d) Explain how the following environmental factors increase the rate of transpiration.

i) Temperature (2 marks)

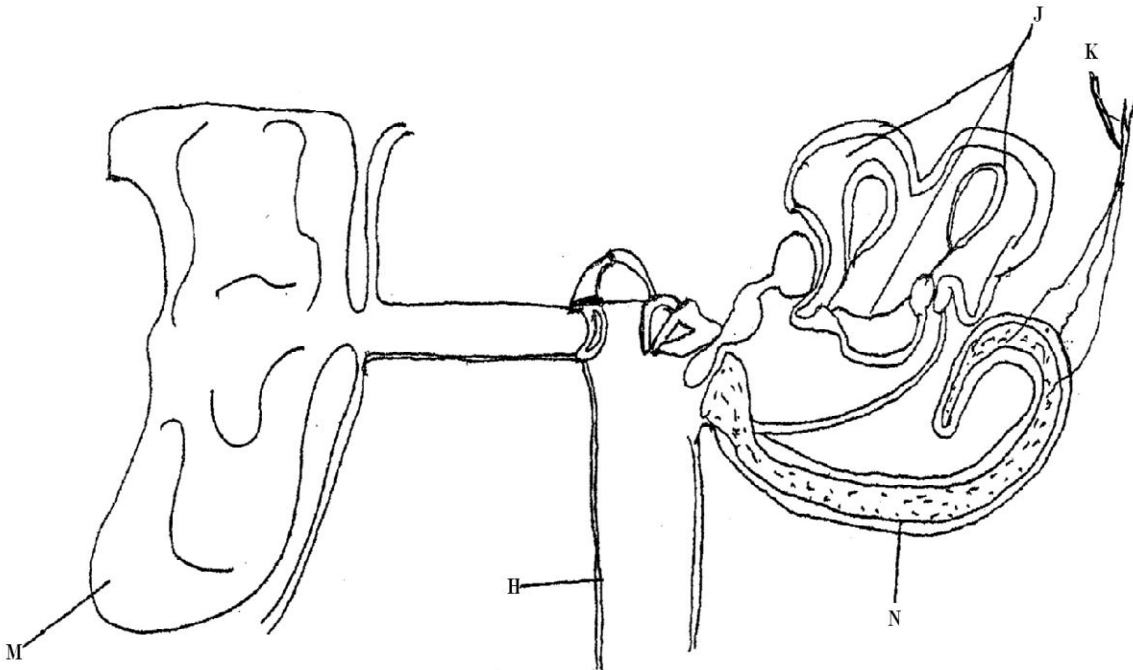
ii) Humidity

(1 mark)

iii) Atmospheric pressure

(1 mark)

4. The diagram below represents a section through the mammalian ear. Study it and answer the questions that follow.



a) Name the structures labeled H and J

(2 marks)

H

J

b) State how the structures labeled H, M and N are adapted to their functions. (3 marks)

H

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M

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.....

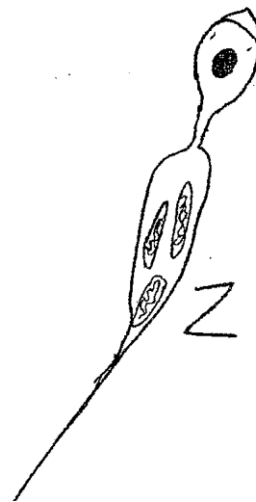
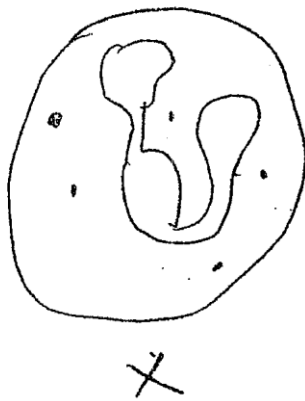
N

c) State *what* would happen if the structure labeled K was completely damaged. (1 mark)

d) Name the fluid contained in structure N. (1 mark)

e) Apart from hearing, state the other role performed by the human ear. (1 mark)

5. The structures below represent specialized cells in man.



a) Identify structure X, Y and Z.

X (1 mark)

Y (1 mark)

Z (1 mark)

b) Give a reason for your answer for X in (a) above. (1 mark)

c) Give two adaptation of Z to its function. (2 marks)

d) What is tissue fluid?

(2 marks)

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SECTION B(40 MARKS)

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

6. The table below shows the population of a housefly *musca domestica* which is parasitized by wasps of species *Nasonia* spp. The investigation of their population growth pattern was carried out for 70 weeks. In these experimental space and physical factors were assumed to be limiting.

Time in weeks	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
<i>Musca domestica</i>	40	70	110	260	350	480	400	395	350	40	60	140	250	240	230
<i>Nasonia</i> Spp.	10	20	30	45	100	200	300	380	410	250	60	20	40	200	280

- a) Using the readings in the table, plot graphs on the same axis of population growth of organisms against time. (8 marks)



b) Account for the growth of

i) *Musca domestica* between 10th week — 25th week. (1 mark)

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ii) *Nasonia* species between 40th week – 50th week. (1 mark)

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c) What is the population of?

i) *Nasonia* spp. on the 62nd week? (1 mark)

.....

.....

ii) *Musca doniestica* on the 4th week? (1 mark)

d) Bemex, another parasite of housefly was introduced into the ecosystem. Giving a reason; what will be the effect on the population of

i) Housefly *Musca domestica*. (2 marks)

ii) *Nasonia* Spp. (2 marks)

e) In estimating the population of *Musca domestica* in the experiment above. Capture-mark release recapture method was used. Describe the procedure which was followed.

(4 marks)

7. a) What is natural selection? (2 marks)

b) Describe how natural selection brings about adaptations of a species of a living organism to its environment (18 marks)

8. a) Describe how urea is formed (5 marks)

b) Describe the path followed until it is eliminated from the body (15 marks)

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