

NAME ..... INDEX NO.....  
 SCHOOL..... DATES.....  
 CANDIDATES' SIGN.....

231/2  
 BIOLOGY  
 PAPER 2  
 (THEORY)  
 July / August -2014  
 Time: 2 Hours  
 Time: 2 Hours

**KISII SOUTH DISTRICT JOINT EVALUATION TEST**  
*Kenya Certificate of Secondary Education (K.C.S.E)*

**INSTRUCTIONS TO CANDIDATES**

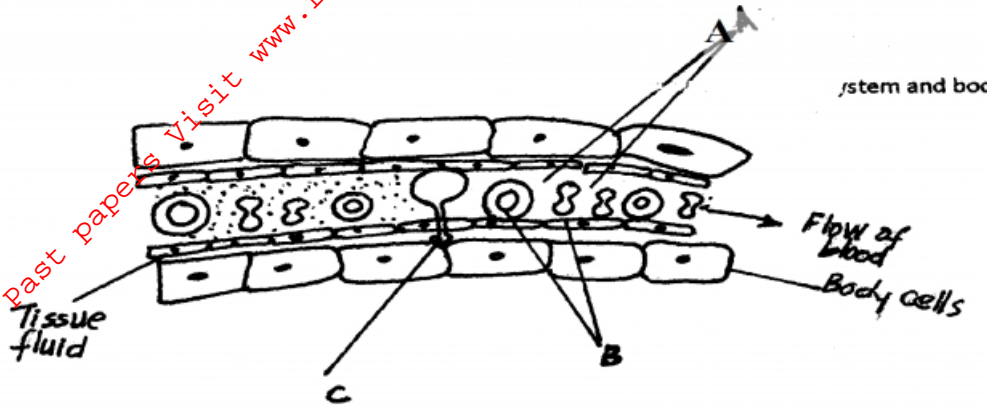
- a) Write your name and index number in spaces provided above
- b) This paper consists of two sections **A** and **B**.
- c) Answer **ALL** the questions In section A in the space provided.
- d) In section B answer question **6 (compulsory)** and either question 7 or 8 in the spaces provided after question 8.

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 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. The diagram below shows the exchange site between circulatory system and body cells.



a) State **two** adaptations of the capillaries. (2mks)

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b) (i) Name the blood cells labeled B. (1mk)

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(ii) State the gas that diffuses from B to the tissue cells. (1mk)

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c) State **two** functions of the part labeled A. (2mks)

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d) Name the blood vessel with the highest concentration of;  
Oxygen. (1mk)

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Urea. (1mk)

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2. The table below gives information about an aquarium community which is ecologically balanced.

Type of organism	
insect	500grms
Fishes	1200grms
Water plants	5000grms
bacteria	10grms

a) What do you understand by the term ecological balance? (1mk)

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a) What do you understand by the term ecological balance? (1mk)

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b) Calculate the total biomass of the aquarium. (2mks)

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c) Which organism in the table is? (2mks)

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i) Primary producer (2mks)

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ii) Secondary consumer

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d) Construct a food web of the aquarium.

(3mks)

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3. In human beings, a downward pointed frontal hairline (“windows peak”) is a heritable trait. A person with windows peak always has at least one parent who has his trait; whereas persons with frontal hairline may occur in families in which one or even both parents have windows peak. Using B and b to symbolize genes for this trait.

a) Determination the f1 generation if a homozygous windows peak male parent is married to a Homozygous frontal hairline female parent. (4mks)

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b) State two causes of variations.

2mk)

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c) Name two examples of discontinuous variation.

(2mks)

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3. The drawing below represents a mature bread mould (rhizopus). Study it and answer the questions which follow.



a) Name the structures labeled A, B and B. (3mks)

(3mks)

A.....

C.....

b) Identify the type of asexual reproduction represented in the diagram

(1mk)

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c) Give one function of structure C. (1mk)

(1mk)

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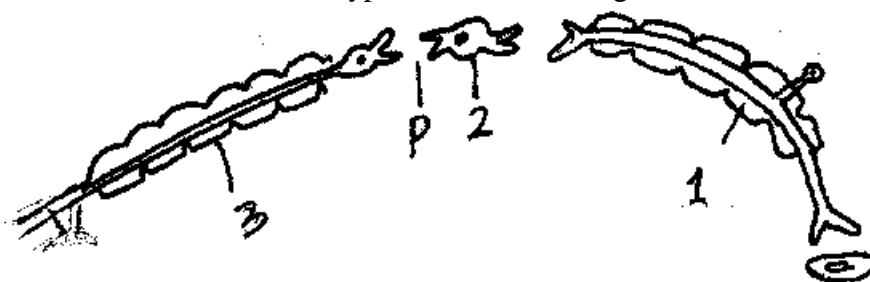
d) Define the term fertilization.

(1mk)

i) Compare an ovum cell and a zygote.

(2mks)

5 The diagram below shows three different types of neurons along a reflex.



a) Identify the neuron labeled 1, 2 and 3

(3mks)

- 1.....  
2.....  
3.....

b) Using arrow show the direction of impulse transmission on the diagram. (1mks)

c) Name the part of the spinal cord where the cell bodies of neuron 2 and 3 are located.

(1mk)

d) Describe the transmission impulses across the part labeled P. (3mks)

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6. Answer QUESTION 6 (COMPULSARY) AND EITHER 7 OR 8 IN THE SPACES PROVIDED.

A man carried out an experiment to find out the effect of water and 0.9% salt solution on urine production. On the first day he drank one liter of water (X). On the second day he repeated the experiment but instead of water, he drank one litre of 0.9% salt solution (Y).

The experimental results are shown in the table below.

Time (hours)		0.0	1.0	1.5	2.5	4.5	5.5	6.5	7.5
Amount of urine produced in cm <sup>3</sup> per hour	X	80	60	360	520	60	100	40	60
	Y	40	40	40	45	100	60	80	100

- a) Using a suitable scale draw graphs of urine produced in cm<sup>3</sup> per hour against time. (8mks)  
Draw graph.
- b) From the graph determine the:
- (i) Amount of urine produced in the second hour when the man had drunk. (1mk)
- (ii) The rate of urine production between the first and second hour after the man had drunk one liter of water. Show your working.
- c) What does the shape of the curve representing column X tell us about the rate of urine production?
- d) Explain the differences between the rate of production in graph X and Y. (2mks)

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e) Why do you think drinking one liter of (0.9%) sodium chloride solution made little difference to the output? (2mks)

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f. What does the comparisons of the results of the experiment indicate about the effect of the Kidneys on the osmotic pressure of the blood plasma? (2mks)

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g. What does the results of the experiment indicate about the effect of the kidneys on the volume of blood plasma? (2mks)

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7. a) Describe how you will estimate the growth rate of a seedling? (6mk)

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b) Explain the process of secondary thickening in flowering plants?

(14mks)

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8. Describe the following stages of photosynthesis.

(14mks)

a. Light stage

(10mks)

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Dotted lines for writing answers.



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