

NAME.....INDEX

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231/1

BIOLOGY

PAPER 1

JULY/AUGUST 2012

2HRS

## KISUMU NORTH AND EAST DISTRICTS JOINT TEST

### Kenya Certificate of Secondary Education 2012

231/1

BIOLOGY

PAPER 1

JULY/AUGUST 2012

**Instructions to candidates;**

- ❖ Write your name and index in the spaces provided above.
- ❖ Sign and write the date of examination in the spaces provided above.
- ❖ Answer all questions in the spaces provided .

**For examiners only**

Question	Maximum score	Candidate scores
1 - 29	80	

1. Name the field of science that specializes in the study of chemical changes in an organism. (1mrk)

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2. Explain how light intensity would affect the distribution of fish in a pond. (3mrks)

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3. a) **State** the significance of the following in evolution

i) Accumulation of variations in organisms (1mrk)

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.....

ii) Survival of the fittest (1mrk)

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.....

b) Explain what leads to struggle for existence in organisms exploiting the same ecological niche (1mrk)

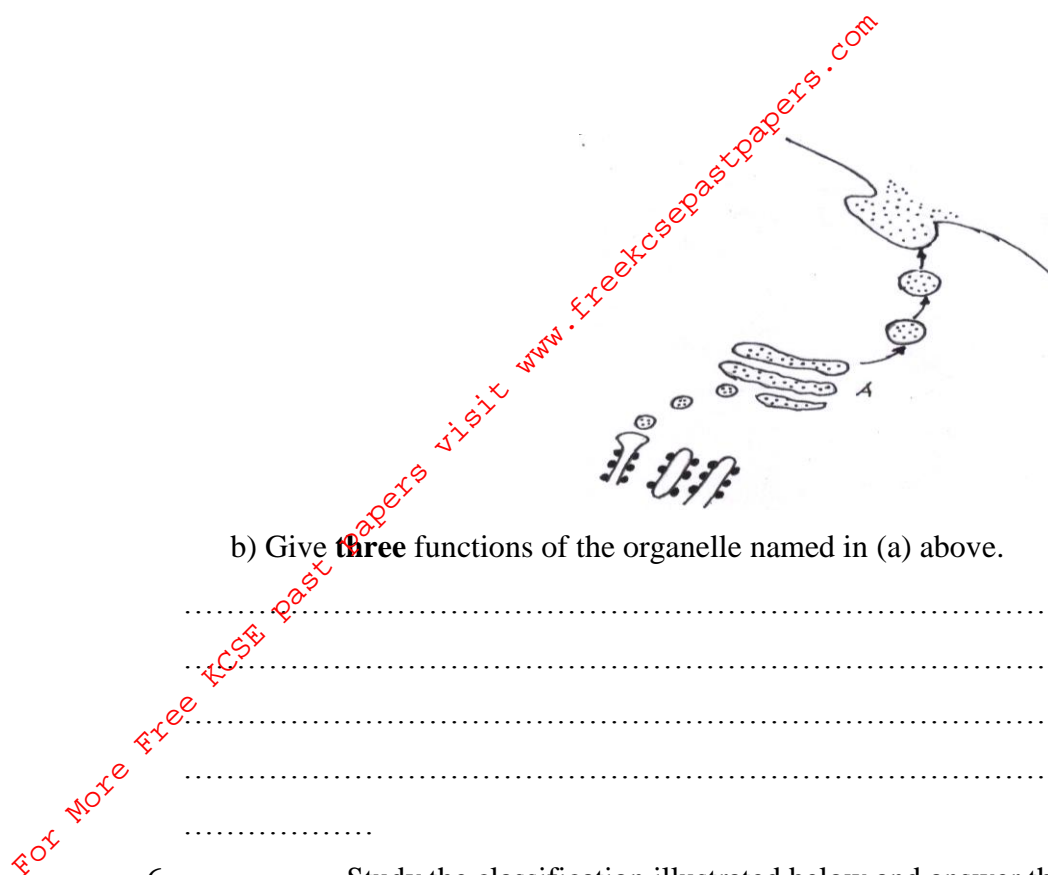
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4. What is the effect of antidiuretic hormone in the human body. (2mrks)

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5. **Identify** the organelle marked A. (1mrk)

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b) Give **three** functions of the organelle named in (a) above. (3mrks)

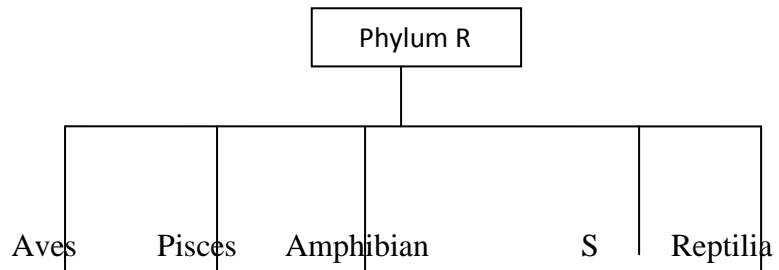
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6. Study the classification illustrated below and answer the question that follows;



a) Name the phylum R (1mrk)

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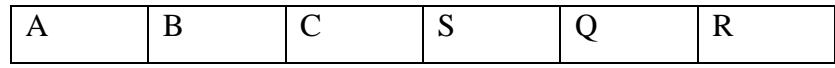
b) State **two** distinguishing characteristics of member of class S. (2mrks)

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7. The figure below illustrates a portion of a chromosome with genes named A, B, C, S, Q and R.



Use the diagrams similar to the one above to illustrate the changes if the above chromosome undergoes the following mutations affecting only gene C and S.

i) Deletion (1mrk)

ii) Inversion (1mrk)

iii) Duplication

(1mrk)

8. State the functions of the following in plants.

i) Piliferous layer

(1mrks)

.....  
.....Pericycle

(1mrk)

.....  
.....

ii) Root cap

(1mrk)

.....  
.....

9. Complete the table below for mineral nutrients in plants.

(3mrks)

<i>Mineral nutrients</i>	<i>Function</i>	<i>Deficiency symptom</i>
	Synthesis of proteins and protoplasm	Stunted growth
Calcium		Structural growth and weak
	Formation of part of chlorophyll	Yellowing of leaves

10. a) At what stage of mitosis do chromosomes replicate to form daughter chromatids?

(1mrk)

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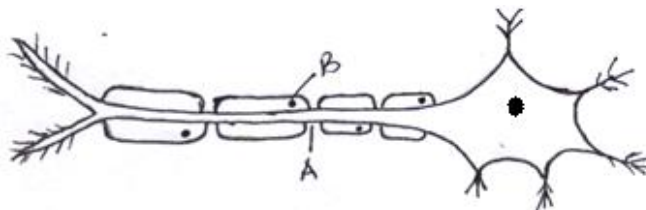
b) A diploid cell was observed to have 46 chromosomes.

i) How many chromatids would the cell produce at the end of meiotic cell division?

(1mrk)

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11. The diagram below shows a specialized cell.



a) Name the type of cell shown above.

(1mrk)

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.....

b) Name the part labeled B.

(1mrk)

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.....

c) State the function of the part labeled A.

(1mrk)

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12. A new born baby has generally a heartbeat of 120 to 140 per minute while that of adult is 70 minutes on average. Account for the difference.

(3mrks)

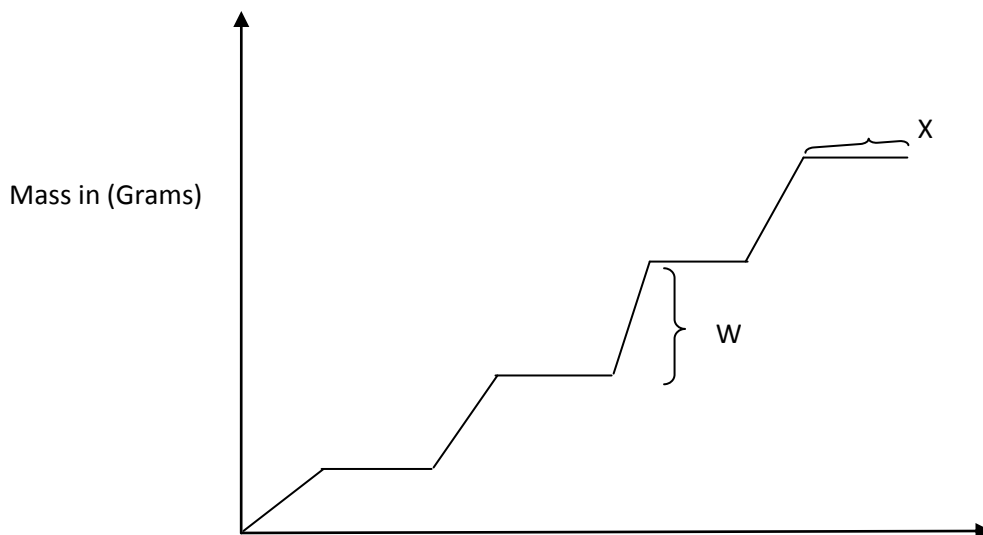
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13. What makes young herbaceous plants remain upright?

(2mrks)

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14. The graph below represents the growth of an animal in a certain phylum.



a) Name the type of growth pattern shown in the graph.

(1mrk)

.....  
.....  
b) Identify the process represented by X. (1mrk)

.....  
.....  
c) Name the hormone responsible for the process in (b) above. (1mrk)

15. Give **two** structural differences between smooth muscles and skeletal muscles. (2mrks)

16. Why are people with blood group O called universal donors. (2mrks)

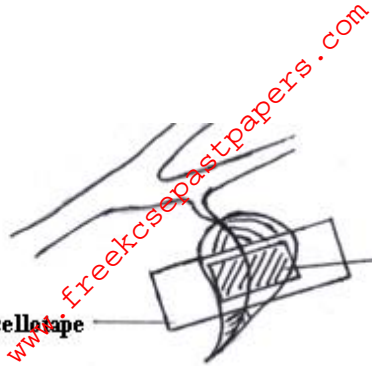
17. Name the site in mammalian lungs where gaseous exchange occurs. (1mrk)

18. Active yeast cells were added to dilute sugar solution in a container. The mixture was left in a warm room. After a few hours bubbles of gases were observed escaping from the mixture.

a) Write an equation to represent the chemical. (1mrk)

b) What is the importance of this type of reaction in industries? (2mrks)

19. The diagram below shows an experiment done on a leaf of terrestrial plants to investigate a certain biological process in a mesophyte.



Transparent cellulose tape

Anhydrous cobalt chloride (blue in colour)

a) Explain the expected results (2mrks)

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b) What was the use of the cellulose tape? (1mrk)

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20. State **two** ways in which the ileum is structurally adapted to the absorption of digested food. (2mrks)

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21. a) State the organism that causes the following diseases; (2mrks)

i) Trichonomiasis

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.....

ii) Bilharzia

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(b) Name a disease in humans that is caused by **plasmodium falciparum**. (1mrk)

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22. Explain how the iris alters the size of the pupil. (2mrks)

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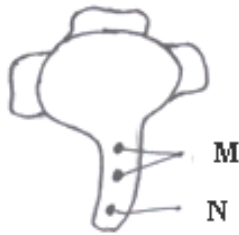
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23. Identify the mode of feeding of the

a) Animal whose dental formula is given below

$$I^{0/3} C^{0/1} Pm^{3/3} M^{1/3} = 30 \quad (1\text{mrk})$$

b) Give reasons for your answer in a) (i) above. (2mrk)

.....  
.....  
24. The diagram below shows a pollen tube as it develops down the style.



a) Name the parts labeled M and N.

(2mrks)

M.....  
.....

N.....  
.....

b) State the functions of the part labeled M.

(2mrks)

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25. A rainbow lizard was seen basking on a rock.

a) **Name two** ways by which it gained heat by these behavioural process.

(2mrks)

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b) **State** the role of scales in reptiles.

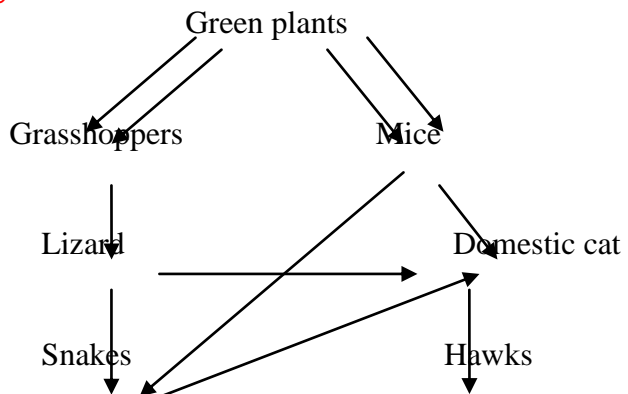
(1mrk)



26. Explain why few organisms are found inhabiting higher altitude than lower altitude.(4mrks)

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27. The chart below shows a feeding in a certain ecosystem.



a) Construct **two** food chains ending with a tertiary consumer. (2mrks)

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b) Which organisms have the highest variety of predators in the food web. (2mrks)

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c) Suggest **one** way in which the ecosystem would be affected if there was a prolonged drought. (1mrk)

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28. A traffic police stretched his arm to the right. To cause this motion of the arm, explain the behavior of his biceps and triceps. (2mrks)

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.....

29. Table below shows two mammalian hormones for each hormone. **State** the site of production and its function in the body. (4mrks)

<b>Hormone</b>	<b>Site of production</b>	<b>Function</b>
Oestrogen		
Aldosterone		

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