

NAME: \_\_\_\_\_ ADM NO. \_\_\_\_\_

SCHOOL \_\_\_\_\_ DATE \_\_\_\_\_

231 /1  
BIOLOGY  
PAPER ONE(THEORY)  
FORM FOUR  
MARCH/APRIL 2013  
TIME: 2 HOURS

**ELDORET EAST INTER-SCHOOLS TEST- 2013**  
**Kenya Certificate of Secondary Education (K.C.S.E.)**

***FORM FOUR.***

**CANDIDATE INSTRUCTIONS.**

- Answer **all** the questions in the spaces provided after each question
- Answers must be written in the spaces provided in the question paper

**FOR EXAMINERS USE ONLY**

QUESTION	Maximum score	Candidates scores
1-29	80	
<b>CANDIDATES TOTAL</b>		

*This paper consists of 8 printed pages.  
Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no question is missing.*

1. State **two** main branches of biology. (2 marks)

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2. Name the cell organelle which perform the following function:-

i) Formation of spindle fibres during cell division (1 mark)

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ii) Other than the function given in (i) above, state other function of the organelle. (1 mark)

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3 a) An electron microscope has a much greater resolving power than a light microscope. Explain the meaning of the term resolving power. (1 mark)

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b) Give a reason why an electron microscope cannot be used to study life specimen. (1 mark)

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4 The following is the dental formula of a mammal.

$$i \frac{2}{1} \quad c \frac{0}{0} \quad pm \frac{3}{2} \quad m \frac{3}{3}$$

a) State the mode of nutrition of the animal. (1 mark)

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b) Calculate the number of teeth in the animal. (1 mark)

5 The diagram below illustrates a process in a given species of organism



Parent cell

a) Name the organism (1 mark)

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b) Suggest the kingdom to which the organism belong giving one reason (2 marks)

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Reason \_\_\_\_\_

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c) Identify the process that is taking place. (1 mark)

6 a) Explain **two** characteristics of arthropoda makes them most successful of invertebrates. (2 marks)

b) State any **two** economic importance of fungi. (2 marks)

7 State the importance of the following features in gaseous exchange.

a) Presence of cartilage in trachea. (1 mark)

b) Large surface area of the lungs. (1 mark)

8 State **two** roles played by active transport in animals. (2 marks)

9. Distinguish between test cross and back cross as used in genetics. (2 marks)

Test cross

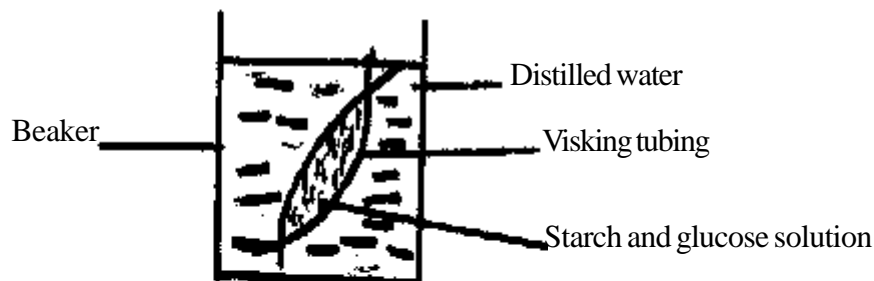
Back cross

10. Explain how the rate of transpiration is affected by the following factors.

a) Size of leaf (1 mark)

b) The relative humidity (1 mark)

11 An experiment set-up shown below were to investigate a certain process



After 20 minutes; a student tested the sample from the beaker for starch and glucose. The results were recorded in the table below.

Time	Start	after 20 minutes
Starch	Absent	Absent
Glucose	Absent	Present

a) Explain the presence of glucose in the water sample. (1 mark)

\_\_\_\_\_

b) What change occurred in volume of liquid in:-

i) Beaker (1 mark)

\_\_\_\_\_

ii) Visking tubing (1 mark)

\_\_\_\_\_

12. Write the sequence of messenger RNA (M-RNA) that would be coded from the DNA strand shown below. (1 mark)

\_\_\_C\_\_\_A\_\_\_T\_\_\_G\_\_\_A\_\_\_A\_\_\_G\_\_\_T

Sequence of RNA.

13 Give the role of the following parts of the male reproductive system. (3 marks)

a) Epididymis

\_\_\_\_\_  
\_\_\_\_\_

b) Prostrate gland

\_\_\_\_\_  
\_\_\_\_\_

c) Urethra

\_\_\_\_\_  
\_\_\_\_\_

14. Fill the blanks in the table below.

ORGAN	HORMONE	FUNCTION
PITUITARY		i) Causes ovulation ii) Stimulate production of progesterone
OVARIAN TISSUE	OESTROGEN	
PITUITARY	FOLLICLE STIMULATING HORMONE	

15. The diagram below shows stages in mitotic cell division.



ii) Name stages A and B. (2 marks)

A \_\_\_\_\_

B \_\_\_\_\_

iii) What is the significance of mitosis in living organisms. (2 marks)

\_\_\_\_\_  
\_\_\_\_\_

16. State the importance of each of the following features in animals

a) Solid food being broken into small pieces. (1 mark)

\_\_\_\_\_

b) Presence of caecum in herbivorous mammals. (1 mark)

\_\_\_\_\_

c) Long ileum in man. (1 mark)

\_\_\_\_\_

17. Name **two** structures for gaseous exchange in aquatic plants. (2 marks)

\_\_\_\_\_  
\_\_\_\_\_

18. State **one** of each of the following plant excretory products. (2 marks)

a) Tannin \_\_\_\_\_

b) Papain \_\_\_\_\_

19. Name the method by which excess water is excreted from plants leaf surface in liquid form. (1 mark)

\_\_\_\_\_

20. Name the fluid that is produced by sebaceous glands. (1 mark)

\_\_\_\_\_

i) State **two** roles of the fluid stated above. (2 marks)

\_\_\_\_\_

\_\_\_\_\_

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

M

N

a) Name the part labelled M and N. (2 marks)

M \_\_\_\_\_

N \_\_\_\_\_

b) State the functions of the part labelled M (1 mark)

\_\_\_\_\_

\_\_\_\_\_

22. Distinguish between (2 marks)

a) Protandry and protogyny

**Protandry**

**Protogyny**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

b) What is the importance of metamorphosis (2marks)

\_\_\_\_\_

\_\_\_\_\_

23 a) Name one end products of anaerobic respiration in plants. (1 mark)

b)  $C_6H_{12}O_6 \longrightarrow \text{Substrate R} + 2CO_2 + 210KJ$

i) Give the identity of substance R. (1mark)

ii) Give an equivalent of substrate R in animals produced in a similar process. (1 mark)

c) Explain the term obligate anaerobes. (1 mark)

24. Briefly describe how the belt transect can be used in estimating the population of a shrub in a grassland. (3 marks)

25. Explain the following terms in reference to its members

a) Order (1 mark)

b) Genus (1 mark)

26. Name **two** end products from light reaction that are used in dark reaction. (2 marks)

i) \_\_\_\_\_

ii) \_\_\_\_\_

b) Name the structural units of lipids. (1 mark)

c) State **two** important functions of lipids in living organisms. (2 marks)

27. a) State the function of tricuspid valves of a mammalian heart. (1 mark)

b) Explain why the heart muscles are said to be myogenic. (1 mark)

c) Name the blood vessel that supply blood to

i) Head (1 mark)

ii) Legs (1 mark)

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28 a) What is seed dormancy (1 mark)

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b) Define the term apical Dominance. (1 mark)

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29. Explain the following concepts as used in evolution

a) Adaptive radiation. (1 mark)

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b) State **two** advantages of natural selection to organisms. (2 marks)

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c) Explain how biology is an evidence to organic evolution. (1 mark)

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