

# IKUTHA SUB-COUNTY KCSE REVISION MOCK EXAMS 2015

231/1  
BIOLOGY  
(THEORY)  
PAPER 1  
TIME: 2 HOURS

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NAME \_\_\_\_\_

INDEX NO. \_\_\_\_\_

SCHOOL \_\_\_\_\_

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

231/1

BIOLOGY

(THEORY)

PAPER 1

TIME: 2 HOURS

## IKUTHA SUB-COUNTY FORM FOUR JOINT EXAMINATION, 2015

### Kenya Certificate of Secondary Education (K.C.S.E)

231/1

BIOLOGY

(THEORY)

PAPER 1

TIME: 2 HOURS

#### INSTRUCTIONS TO CANDIDATES

- Write your name, school and admission number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **all** the questions in the spaces provided.
- Additional pages **must not** be inserted.
- Candidates may be penalized for false information and even wrong spellings of technical terms.
- This paper consists of **8** printed pages.
- Candidates should check to ensure that all pages are printed as indicated and no questions are missing.

#### FOR OFFICIAL USE ONLY

Question	Maximum score	Candidate's score
1 – 32	80	

1. a) Explain the meaning of the term binomial nomenclature. (1 mark)

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b) Scientific name *Lantana camara* refers to a green herbaceous plant. Other related plants include, *Lantana trifoliata* and *Vitex trifoliata*. From the list identify the plants belonging to the same genus. (2 marks)

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2. Name cell structures that perform the following functions. (2 marks)

a) Controlling materials, entering and leaving the cell.

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b) Transporting cell secretions.

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3. A student estimated the diameter of a field of view to be 2.8mm. The diameter was occupied by four onion cells. Estimate in micrometers the diameter of onion cell. Show your working. (2 marks)

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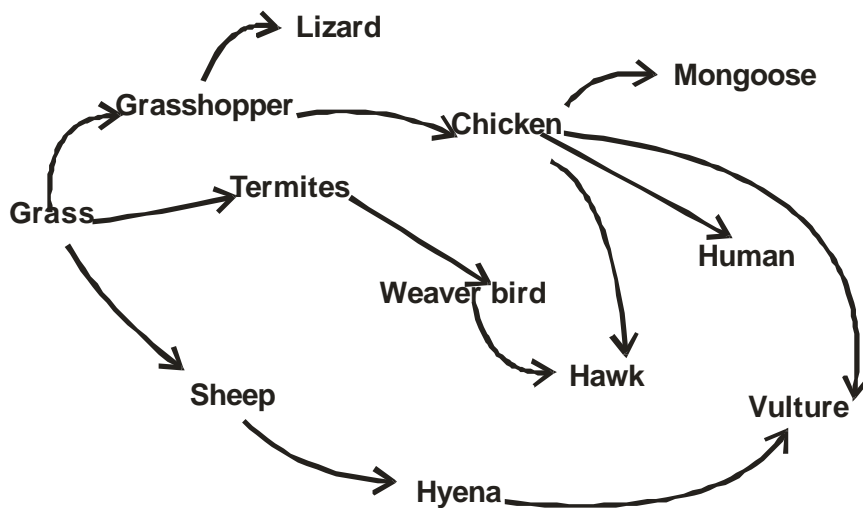


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4. The figure below illustrates a food web in a certain ecosystem.



From the food web:-

a) Draw the shortest food chain. (1 mark)

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b) Identify the organisms with the highest.

i) Number of predators (1 mark)

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ii) Biomass (1 mark)

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5. Name the type of competition exhibited by the following relationship. (2 marks)

a) Second generation of tobacco plant and the parent plant.

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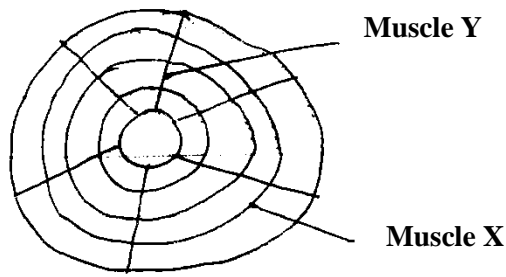
b) Different types of herbivores in an enclosed grass paddock.

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6. Name the gamete cells that are produced by the ovaries in mammals. (1 mark)

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7. The diagram below shows the iris of a mammalian eye



a) What happens to muscle Y and X when the eye focus at an object in bright light?

i) Muscle X (1 mark)

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ii) Muscle Y (1 mark)

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b) State how the following parts of a mammalian eye are adapted to their function.

i) Fovea (1 mark)

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ii) Choroid (1 mark)

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8. State **three** ways in which *Ascaris lumbricoides* is adapted to living in its habitat. (3 marks)

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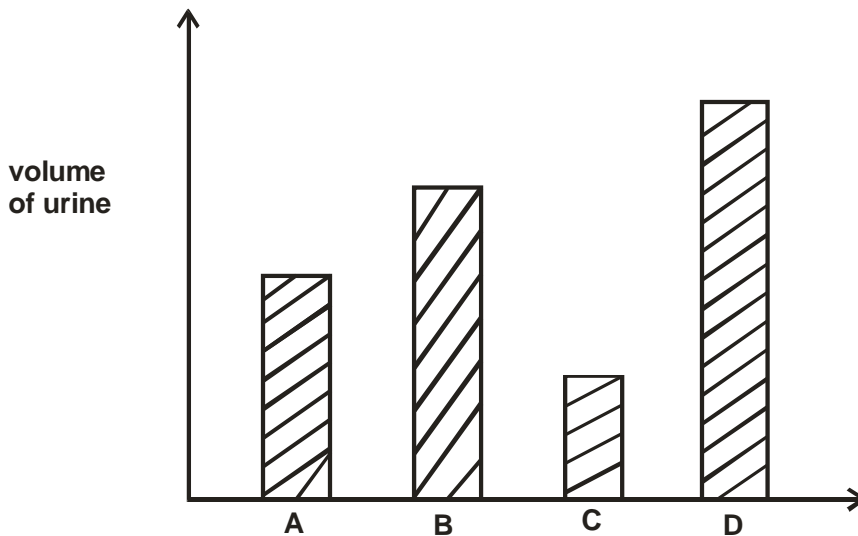
9. Name process through which nitrites are converted into nitrates. (1 mark)

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10. The quantity of urine passed per day was measured in four mammals; A, B, C and D of the same species in their natural habitats. The results were as shown below.



i) In what form is nitrogenous waste likely to be in organism D? Explain. (3 marks)

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ii) Name **one** kidney disease in humans. (1 mark)

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11. a) Define the following terms. (2 marks)

i) Divergent evolution

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ii) Vestigial structures.

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b) State the role of continental drift in evolution. (2 marks)

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12. Explain the role of ecdysone hormone.

(1 mark)

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13. a) What is reflex action?

(1 mark)

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b) Give **three** components of a simple reflex arc.

(3 marks)

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14. Where does gaseous exchange take place in terrestrial plants?

(2 marks)

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15. a) Complete the following table.

(3 marks)

	Gland	Hormone secreted	Effect of the hormone
i)	Thyroid		
ii)		Androgen	
iii)	Placenta		

b) Give **two** differences between endocrine and nervous systems.

(2 marks)

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16. Define the following terms as used in genetics.

i) Heterozygote

(1 mark)

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ii) Transgenics

(1 mark)

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17. Explain why:

(2 marks)

i) Wind pollinated flowers produce very high number of pollen grains.

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ii) After 4 months of pregnancy, the ovaries of a woman may be removed without ending pregnancy.

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18. A DNA strand was found to have the base sequence as shown below.

**A – T – T – C**

a) What is the base sequence of the mRNA synthesized by the strand?

(1 mark)

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b) State **two** causes of chromosomal mutations.

(2 marks)

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19. What is dental formula?

(1 mark)

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20. In reference to leaves only, state **two** adaptations in each that adapt the following types of plants to their habitats.

i) Xerophytes

(2 marks)

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ii) Hydrophytes

(2 marks)

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21. Give **two** advantages of homoiotherms over poikilotherms.

(2 marks)

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22. Explain why it is advisable to breathe through the nose rather than the mouth in man.

(2 marks)

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23. Name the valve which opens during:

i) Systole (1 mark)

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ii) Diastole (1 mark)

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24. The table below shows the concentration of some mineral ions in the cell sap of root hairs and in soil water.

Mineral ion	Concentration in cell sap	Concentration in soil water
Magnesium	75	115
Nitrates	126	47

a) Give physiological process through which magnesium ions uptake by the plant occurs. (1 mark)

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b) The plant was sprayed with a respiratory poison, State with a reason, the ions uptake which was affected. (3 marks)

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25. Name the type of vitamins that you would recommend for patients with the following symptoms.

i) Poor night vision (1 mark)

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ii) Excessive bleeding after injury. (1 mark)

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26. Study the process below.



a) Name product B (1 mark)

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b) Which process is represented above? (1 mark)

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27. Give **two** products of light reaction of photosynthesis which are used in dark stage. (2 marks)

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28. Explain how the following factors affect the rate of transpiration.

(4 marks)

i) Wind

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ii) Sunken stomata

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29. Name the disease caused by the following microorganisms in man.

(2 marks)

i) *Entamoeba histolytica*

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ii) *Bordetella pertussis*

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30. Students observed an animal with the following features.

- Dorsa-ventrally flattened body
- One pair of legs per segment
- Poison claws on the head

i) Name the class to which the animal belongs.

(1 mark)

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ii) State the mode of feeding of the animal.

(1 mark)

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31. Distinguish between active and passive immunity.

(2 marks)

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32. Explain the importance of the following during preparation of temporary slides.

(2 marks)

i) Cutting thin sections

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ii) Staining

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