

Name Index Number

Students' Signature.....

231/1

BIOLOGY

JUNE 2017

FORM 4

2 HOURS

GATA JOINT EVALUATION EXAMINATION

Kenya Certificate of Secondary Education

BIOLOGY

Paper 1

Instructions to candidates

- Answer **ALL** the questions in the spaces provided.

For Examiner's Use Only

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE

1. State the meaning of the following terms as used in biology. (2mks)

(a) Embryology

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(b) Ornithology

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2. (a) Name two systems of classification of living things common to Biologists. (2mks)

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(c) A banana plant was classified as *Musa parasidiaca* by a taxonomist. Identify the taxonomic units represented by the following words. (2mks)

Musa

parasidiaca

3. (a) The cell is the basic structural and functional unit of a cell. State three properties of cell membrane in a living cell. (3mks)

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(b) State two major functions of centriole in animal cells. (2mks)

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(d) Name two types of vacuoles in amoeba cell. (2mks)

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4. A strip of an herbaceous Tradescantia was cut longitudinally as shown below and placed in solution X. After one hour, the strips appeared as shown below.

(a) What was the nature of solution X? (1mk)

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(b) What physiological process was being investigated? (1mk)

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(c) Account for the results at the end of the experiment after one hour. (3mks)

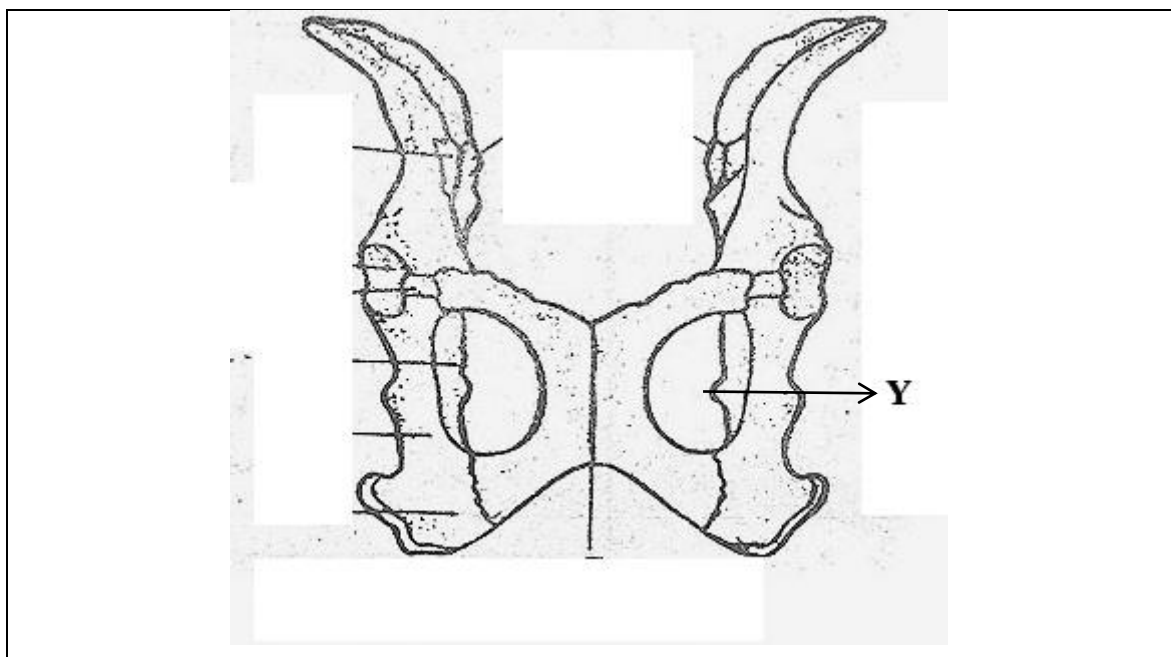
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5. State two raw materials required to produce energy in cells for the process of active transport.

(2mks)

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6. The pelvic girdle of a mammal is shown below. Study it and answer the questions that follow.



(a) (i) Name the part labelled Y.

Name: (1mk)

(ii) State three functions of part Y named in (a) (i) above. (1mk)

Functions :

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7. (a) Name two elements required by plants for the synthesis of chlorophyll pigment. (2mks)

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(b) What name is given to plants whose leaves turn yellow due to lack of sunlight and the two elements above? (1mk)

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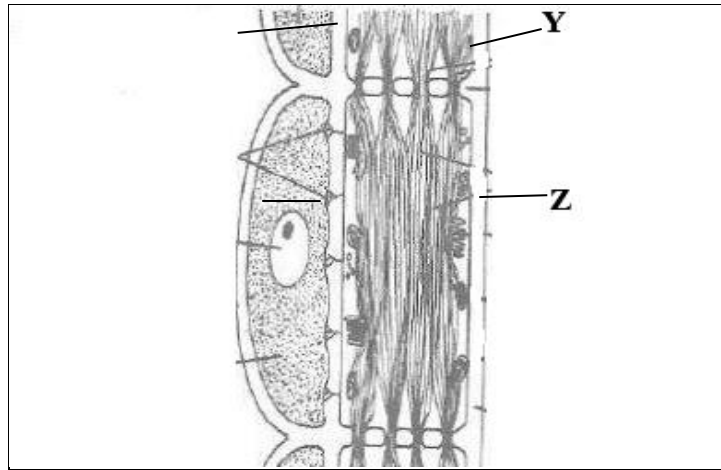
8. Name two types of curves obtained during measurement of growth in living things. (2mks)

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9. State three adaptations of xylem vessels to transportation of water. (3mks)

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10. The structure below is the phloem tissue.



(a) Name the two main components of the tissue. (2mks)

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(b) Name the part labelled Y and state its function. (2mks)

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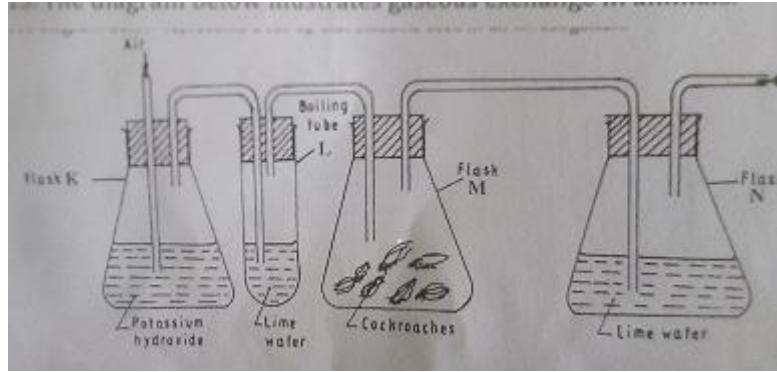
11. State and explain the role of heparin in the blood. (2mks)

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12. State the adaptations of respiratory surface in terrestrial animals. (3mks)

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13. The diagram below illustrates gaseous exchange in animals.



(i) Why was the air passed through potassium hydroxide in flask K?
(1mk)

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(ii) Explain the observations made in Flask N.
(2mks)

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14. (a) Name three gaseous exchange surfaces in plants. (3mks)

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(b) Name the gas released by plants to the atmosphere at night? (1mk)

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(c) What is the effect of dust on gaseous exchange surfaces on terrestrial plants?(1mk)

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15. Name the major physiological process of respiration that takes place:

(a) At the cytoplasm of the mitochondrion. (1mk)

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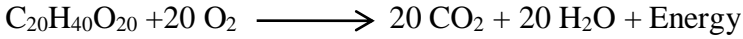
(b) At the matrix of the mitochondrion. (1mk)

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16. (a) State two significance of R.Q values to a biologist. (2mks)

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(c) The equation below is a respiratory reaction of a certain substrate. Study it and use it to determine its R.Q value.



17. (a) State two types of variations in the study of genetics. (2mks)

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(b) Which of the two types of variations mentioned above is influenced by the genotype of an individual only? (1mk)

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(c) What is gene locus in genetics? (1mk)

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18. (a) Explain the biological reasons behind large volume of urine produced by fresh water Tilapia in Lake Victoria. (2mks)

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(b) Why do insects and birds produce uric acid and not urea as in man? (2mks)

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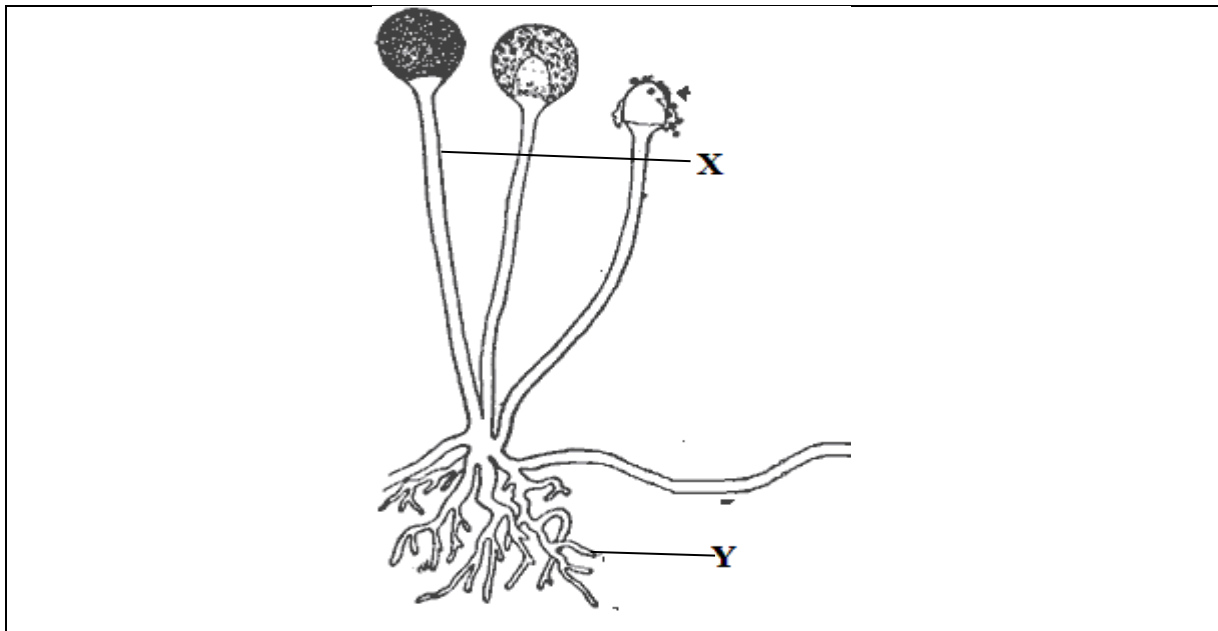
19. Name two types of diabetes that afflict man. (2mks)

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20. State using root structures only how you can identify and group a plant as either a dicotyledonae or monocotyledonae using both morphological and anatomical structures.

(2mks)
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21. The organism below is found in kingdom Fungi.



(a) Using structures X and Y only, why does the organism not qualify as a plant?

(2mks)

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(b) What division does the moss and liverwort belong to in kingdom plantae? (1mk)

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22. Name two branches of Ecology.

(2mks)

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23. What is a receptor?

(1mk)

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24. State two adaptations of each of the following structures to reproduction in animals.

(a) Oviduct.

(2mks)

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(b) Epididymis. (2mks)

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25. State the functions of each of the following cells in the testes. (2mks)

(a) Sertoli cells

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(b) Interstitial cells

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26. Name two bacterial diseases that are sexually transmitted as infections. (2mks)

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27. Name the chemical substances in plants that: (3mks)

- (a) Promote ripening of fruits
- (b) Flowering of plants
- (c) Leaf fall in plants