NAME……..…….. **DATE** ……

INDEX NO. ……..……..……..…..…. **SIGNATURE** ……..……..

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

MAKINDU DISTRICT INTER – SECONDARY SCHOOLS EXAMINATION

Kenya Certificate of Secondary Education

231/1
BIOLOGY
PAPER 1
(THEORY)
JULY /AUGUST 2014
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES.

- Write your name and index number in spaces provided above.
- Sign and write the date.
- Answer **ALL** the questions in the spaces provided.
- Answers must be written in the spaces provided in the question paper. Additional pages must not be inserted.
- This paper consists of 10 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

FOR EXAMINER'S USE ONLY.

Questions	Maximum score	Candidate's score
1 - 27	80	

1. List any three uses of energy obtained from the process of respiration. (3marks)

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2. State the functions of the following organelles (3marks)

a) lysosomes

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b) Golgi apparatus

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c) Chloroplast

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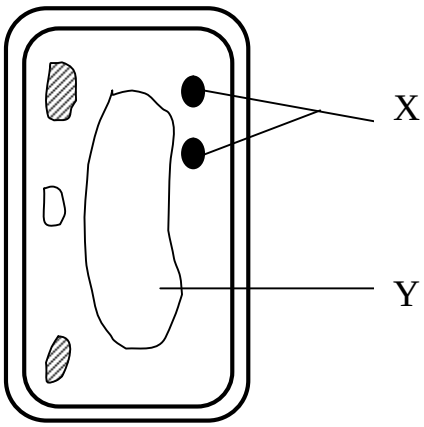
3. The diagram below represents a cell



a) Name the parts labeled X and Y

X .....

Y ..... (2marks)

b) State why the structures labeled X would be more on one side than the other side. (1mark)

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4. Write the role of the following parts of a microscope. (3marks)

   i) Mirror

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   ii) Diaphragm

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   iii) Coarse adjustment knob

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5. Explain why plant cells do not burst when immersed in distilled water.

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6. An experiment was carried out to investigate the rate of reaction shown below

   Sucrose ⟶ Fructose +Glucose

   For the products; Fructose and Glucose to be formed, it was found that substance K was to be added and the temperature maintained at 37^{o}C.When another substance L was added, the reaction slowed down and eventually stopped.

   (a) Suggest the identity of the substances K and L

   K .....

   L ..... (2marks)

   (b) Explain how substance L slowed down the reaction. (1mark)

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7. (a)State the role of light in the process of photosynthesis. (2marks)

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(b) Name one product of dark reaction of in photosynthesis. (1mark)

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8. A solution of sugarcane was boiled with hydrochloric acid; sodium carbonate was added; cooled and benedict's solution was added then boiled.An orange precipitate was formed.

(a) Why was the solution boiled with hydrochrolic acid? (1mark)

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(b) Why was sodium carbonate added? (1mark)

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(c) Name the type of reaction that takes place when simple sugars combine to form complex sugar. (1mark)

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9. (a)State two functions of bile juice in the digestion of food? (2marks)

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(b) How does substances concentration affect the rate of enzyme reaction? (1mark)

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10. A certain animal has no incisors, no canines, six premolars and six molars in its upper jaw, in the lower jaw there are six incisors, two canines, six premolars and six molars. Write its dental formular? (2marks)

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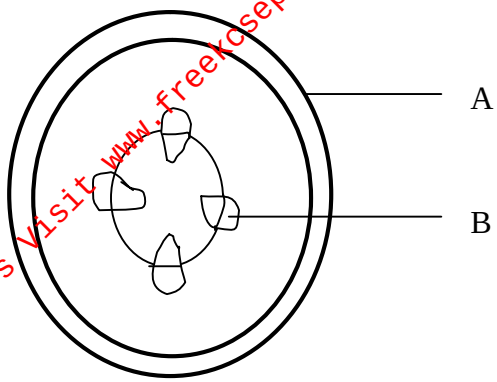
11. The diagram below represents a transverse section of a young stem.



Name parts labeled A and B

A .....

B.....

12. People can die when they inhale gases from burning charcoal in poorly ventilated rooms. What compound is formed in the human body that leads to such death? (1mark)

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13. Name two structures used for gaseous exchange in plants. (2marks)

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14. Name the physiological process by which gas exchange takes place at the respiratory surface of animal and plants. (1mark)

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15. a) Name the substance which accumulates in muscles when respiration occurs with insufficient oxygen. (1mark)

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b) In what form is energy stored in muscles? (1mark)

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16. Explain why the body temperatures of a healthy human being must rise up to 39^0c on a humid day. (2marks)

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17. Name the part of the brain that trigger sweating (1mark)

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18. State two ways in which some fungi are beneficial to humans. (2marks)

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19. A millipede, grasshopper and crayfish all belong to Phylum Athropoda. Mention three major characteristics that they have in common. (3marks)

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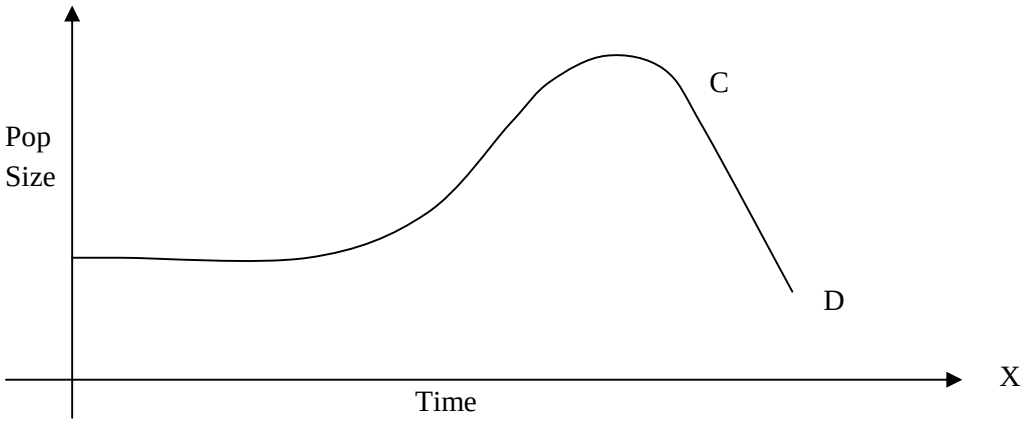
20. The graph below represents a population growth of a certain herbivores in a grassland ecosystem over a period of time.



Suggest two factors that could have caused the population change between C and D.

(i)

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(ii)

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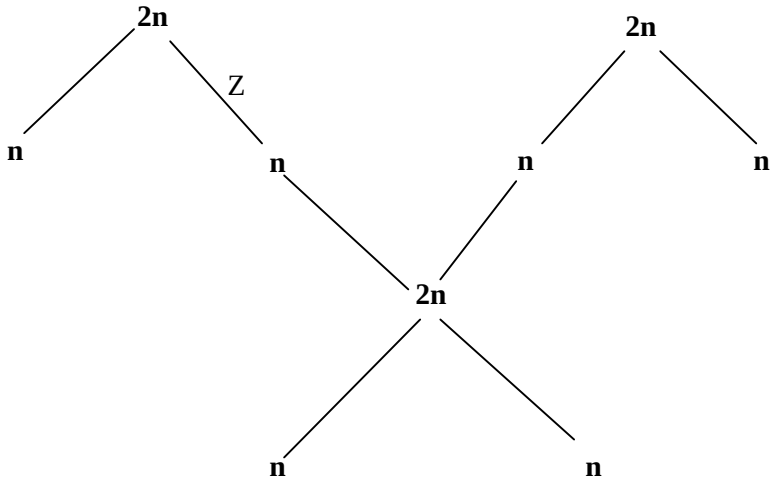
21. The chart below shows the number of chromosomes before and after cell division and fertilization in a mammal.



a) What type of cell division takes place at Z? (1 mark)

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b) Where in the body of a female does process Z occur? (1marks)

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22. State two physiological processes that are brought about by the application of gibberellic acid on plants. (2marks)

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23. The figure below is a structural diagram of apportion from nucleic acid strand

C ——— G ——— U ——— C

a) Giving a reason, name the nucleic acid to which the strand belongs

Name

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Reason

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b) Write down the sequence of bases of a complimentary strand to that shown above, (1mark)

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24. Explain why Lamarck's theory of evolution is not accepted by Biologists today. (2marks)

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b) Distinguish between homologous and analogous structures. (4marks)

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25. Name the hormone responsible for apical

a) Dominance (1mark)

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b) Euglena is positively phototactic, of what biological significance is this characteristic. (1mark)

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26. a) How are xylem vessels adapted for support? (1mark)

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b) Give the name of special muscles that make the heart. (1mark)

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27. State four ways in which respiratory surfaces are suited to their function. (4marks)

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28. State the role of insulin hormone in the body. (3marks)

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29. How would one find out from a sample of urine whether a person is suffering from diabetes mellitus (2marks)

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30. a) The action of ptyalin stops at the stomach. Explain (1marks)

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b) State a factor that denatures enzymes (1mark)

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c) Name the features that increase the surface area of small intestines. (2marks)

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31. a) State two characteristics that researchers select in breeding programmes. (2marks)

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b) In a maize the gene for purple colour is dominant to the gene for white colour. A pure breeding maize plant with purple grains was crossed with heterozygous plant. Using letter G to represent the gene for purple colour work out the genotypic ratio of the offspring.

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