GATITU SECONDARY SCHOOL P.O. BOX 327 GATUNDU.

231/1/2

BIOLOGY FORM 2 END OF YEAR EXAMINATION- 2015.

TIME 2HRS

NAME…………………………………………….ADM……………...CLASS……

**SECTION A(ANSWER ALL QUESTIONS 45MKS)**

1. What characteristics of life are exhibited by the following

a) An orange tree producing juicy oranges? (1mk)

……………………………………………………………………………………………….

b) An athlete breathing heavily after running a marathon? (1mk)

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2. What are the functions of the following apparatus used in collection of specimen? (2mks)

i) Pooter ………………………………………………………………………………………………

ii) Bait trap ………………………………………………………………………………………………

3. What is meant by taxonomy? (1mk)

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4. Give **two** main characteristics of members of the same species. (2mks)

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5a) What is meant by Binomial nomenclature? (1mk)

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b) The scientific name for a sweet potato is **ipomea Batata.**  Identify two mistakes made when writing the scientific name and offer a solution. (2mks)

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6. What are the functions of the following parts of a microscope. (2mks)

i) Condenser …………………………………………………………………………………

ii) Diaphragm ………………………………………………………………………………..

7. Outline the functions of the following cell organelles. (2mks)

i) Ribosomes ………………………………………………………………………

ii) Lysosomes …………………………………………………………………….

8. Using a microscope, a student counted 55 cells across a field of view whose diameter was 6000 um. Calculate the average length of the cells. Show your working. (2mks)

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9. The diagram below shows results of what happens to plant cell when placed in a certain solution.

X

1. What was the nature of the solution in which the cell was placed? (1mk)

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1. Identify the force represented by the arrow X and explain how it develops. (2mks)

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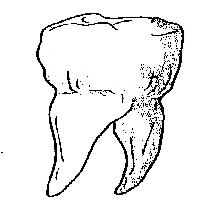
10. Name **three** cells in a leaf that contain chloroplasts. (3mks)

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11. What are the products of the light stage of photosynthesis. (2mks)

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12. Study the diagram of the mammalian tooth **below** and answer the questions that follow.



(a) Identify the tooth. (1mk)

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(b) Give a reason for your answer in (a) above. (1mk)

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(c) State **one** adaptation of the tooth to its function. (1mk)

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13. The diagram below shows chemical reactions I and II which are controlled by enzymes.

Glucose + Glucose

Reaction II Reaction I

Enzyme B Enzyme A

Maltose + Water

1. Into which class of carbohydrates is maltose (1mk)

……………………………………………………………………………………………..

1. Name reaction I and enzyme A (2mks)

Reaction I …………………………………………………………………………….

Enzyme A …………………………………………………………………………….

14. (i) Identify the mode of feeding of the animal whose dental formula is shown below.(1mk)

I O C O PM 3 M 3

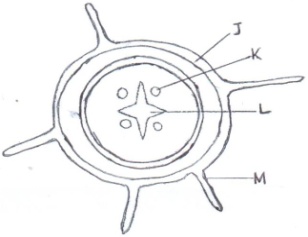
3 O 3 3

…………………………………………………………………………………………….

(ii) Give reasons for your answer in 14(i) above (2mks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….

15. The diagram below represents a transverse section of a plant organ.



(a)From which plant organ was the section obtained? (1mk)

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(b) Give **one** reason for your answer in (a) above. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

16. The epidermis of a leaf is adapted to have the specialized cells known as the guard cell such as shown below.

Guard cell

X

Epidermal cell

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●

●

●

(a) (i) Name the structure labelled **X** on the diagram. (1 mk)

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(ii) State **three** adaptations of the guard cell to its function of opening and closing of stomata in plants. (6 mks)

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(b) The mammalian lung is known to have adapted the mammal to terrestrial habitat by having a pleural membrane.

1. State **two** functions of a pleural membrane that gives the mammal advantage over other organisms. (2 mks)

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(ii) Name **two** diseases of the respiratory system. (1 mk)

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**SECTION B (ANSWER ALL QUESTIONS 15MKS)**

17a). What is meant by the following terms. (3mks)

i) Respiration Quotient (RQ).

…………………………………………………………………………………………………

ii) Oxygen debt.

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iii) Basal metabolic rate.

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1. What is the role of mitochondrion in respiration? (1mk)

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1. Outline **three** differences between Aerobic and Anaerobic respiration.(3mks)

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18. In an experiment on respiration, the rate of carbon (IV) oxide production in pea seedlings was recorded under different temperature, as shown below.

Temperature Volume of CO2 produced (cm3)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Time | 0hr | 1st hr | 2nd hr | 3rd hr | 4th hr | 5th hr | 6th hr |
| 300 C | 0.0 | 9.0 | 13.0 | 20.0 | 21.5 | 23.0 | 24.5 |
| 35o C | 0.0 | 8.0 | 16.5 | 25.0 | 25.5 | 26.5 | 27.0 |
| 40oC | 0.0 | 12.0 | 23.5 | 30.0 | 26.0 | 18.5 | 10.0 |

1. Using the same axes, plot graphs to show volume of carbon(IV) oxide production at each temperature against time. Let time be on the horizontal axis. Use the graph paper provided. (5mks)
2. What is the optimum respiration temperature for this experiment? Explain how the answer is arrived at. (1mk)

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1. Suggest reasons for the shape of the graph when temperature was maintained at 40oC.

(2mks)

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**SECTION C (ANSWER ONLY ONE QUESTION 20MKS)**

19. Describe the mechanism of **opening** and **closing** of stomata using.

a) Photosynthetic theory. (10mks)

b) Starch- sugar inter-conversion theory. (10mks)

20. Describe the **structure**, **composition** and **functions** of components of mammalian blood. (20mks)

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