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FORM 4 ENTRANCE EXAMS 2023

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DATE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SIGNATURE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

INDEX NUMBER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**BIOLOGY**

**231/1**

**Paper 1**

**TIME: 2HRS**

**Kenya Certificate of Secondary Education**

**231/1**

**BIOLOGY**

**PAPER 1**

**TIME: 2HRS**

**INSTRUCTIONS**:

1. Write your **name, class, admission number** and **index number** on the space provided.
2. Answer all the questions in the spaces provided
3. Candidates should check to ensure that all the pages are printed as indicated and that no questions are missing.
4. This paper consists of **10 pages.**

1. Name the part of a flower that develops into:

[i] Seed [1 mark]

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

[ii] Fruit [1 mark]

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

2. State **two** ways in which floating leaves of aquatic plants are adapted to gaseous exchange.

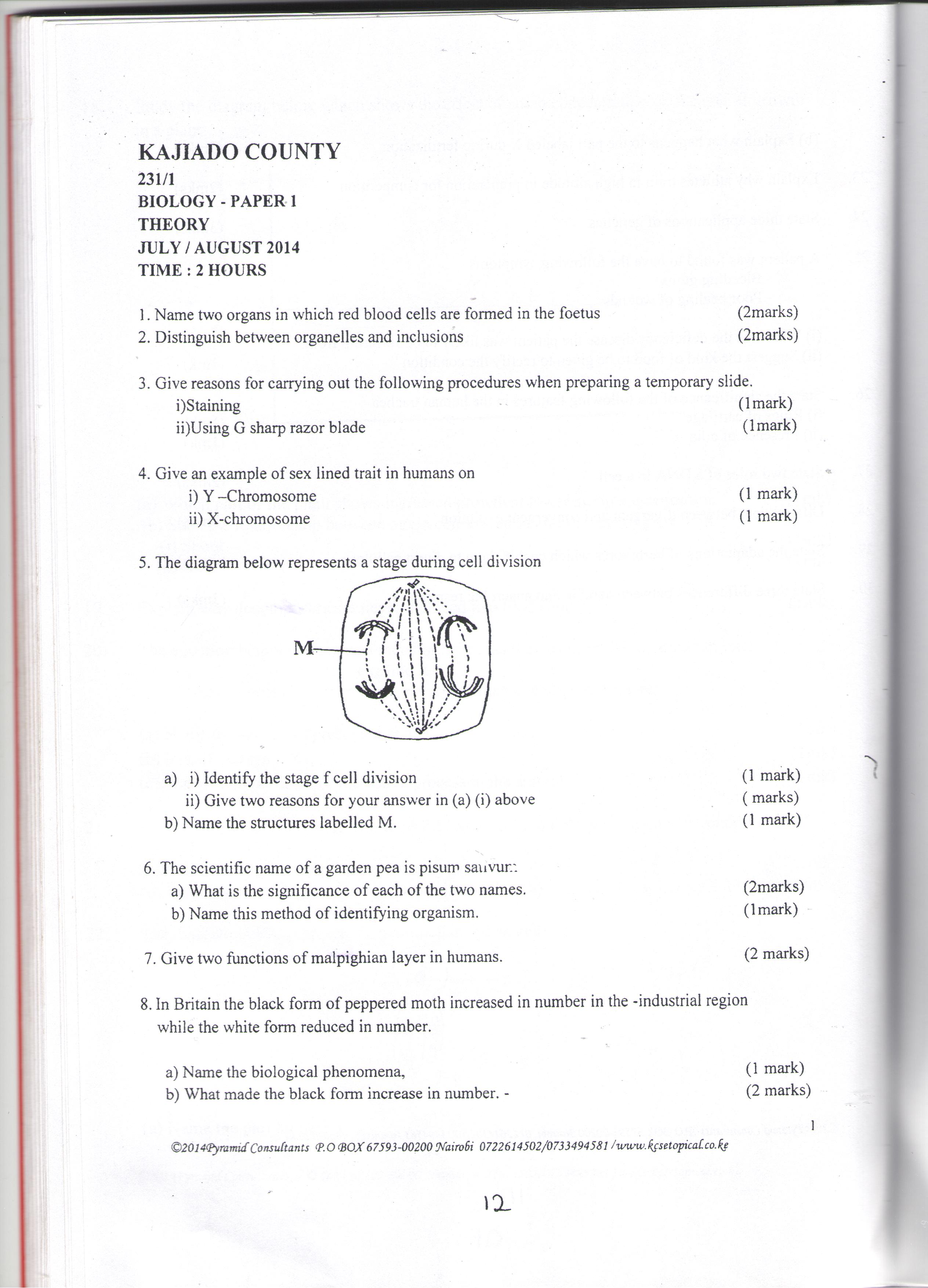
[2 marks]

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

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

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

3. The diagram below represents a stage during cell division



[a] [i] Identify the stage of cell division [1 mark]

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

[ii] Give **two** reasons for your answer in [a] [i] above [2 marks]

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

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

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

[b] Name the structure labeled M [1 mark]

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

4. [a] Distinguish between the terms [2 marks]

Homodont and heterodont

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

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

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

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

[b] What is the function of the carnassial teeth [2 marks]

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

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

5. A patient with blood group A was involved in a road accident and required urgent blood

transfusion. His relatives were invited to donate blood.

[a] Name the compatible blood groups [2 marks]

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

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

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

[b] State why other blood groups were not compatible [2 marks]

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

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

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

6. The flow chart shows a part of a food relationship in an ecosystem

Animal 3

Animal 1

Animal 2

Rabbit

Green plants

[a] [i]Name the food relationship shown [1 mark]

…………………………………………………………………………………………………

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

[ii]How many trophic levels are shown in the diagram [1 mark]

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

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

[b] What is the main source of energy in the ecosystem [1 mark]

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

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

7. Name the only epidermal cell in plants that contain chloroplast [1 mark]

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

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

8. The equation below represents a metabolic process that occurs in the mammalian lives

Amino Acids organic compound

Enzyme x

[a] Name the process that represents the above equation [1 mark]

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

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

[b] Identify the enzyme represented by x [1 mark]

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

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

[c] What is the importance of the process to the mammal [1 mark]

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

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

9. [a] Name the carbohydrate that is stored in mammalian muscle [1 mark]

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

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

[b] What name is used to describe removal of indigestible and undigested food material from the

alimentary canal [1 mark]

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

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

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

10. [a] Carl Linnaeus developed the taxonomic units of classification

[i] What is taxonomy [1mark]

…………………………………………………………………………………………………

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

[ii] Why was the system of classification by Carl Linnaeus described as natural system of

classification [2 marks]

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

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

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

11. Phagocytes also called granulocytes or polymorphs are cells found in the blood that ingest

pathogens and cell debris

[i] Why are they called polymorphs. [1 mark]

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

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

[ii] Name the cell organelle most abundant in phagocytes that enable them function effectively.

[1 mark] …………………………………………………………………………………………………

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

12. Name the:

[a] Material that strengthens xylem tissue [1 mark]

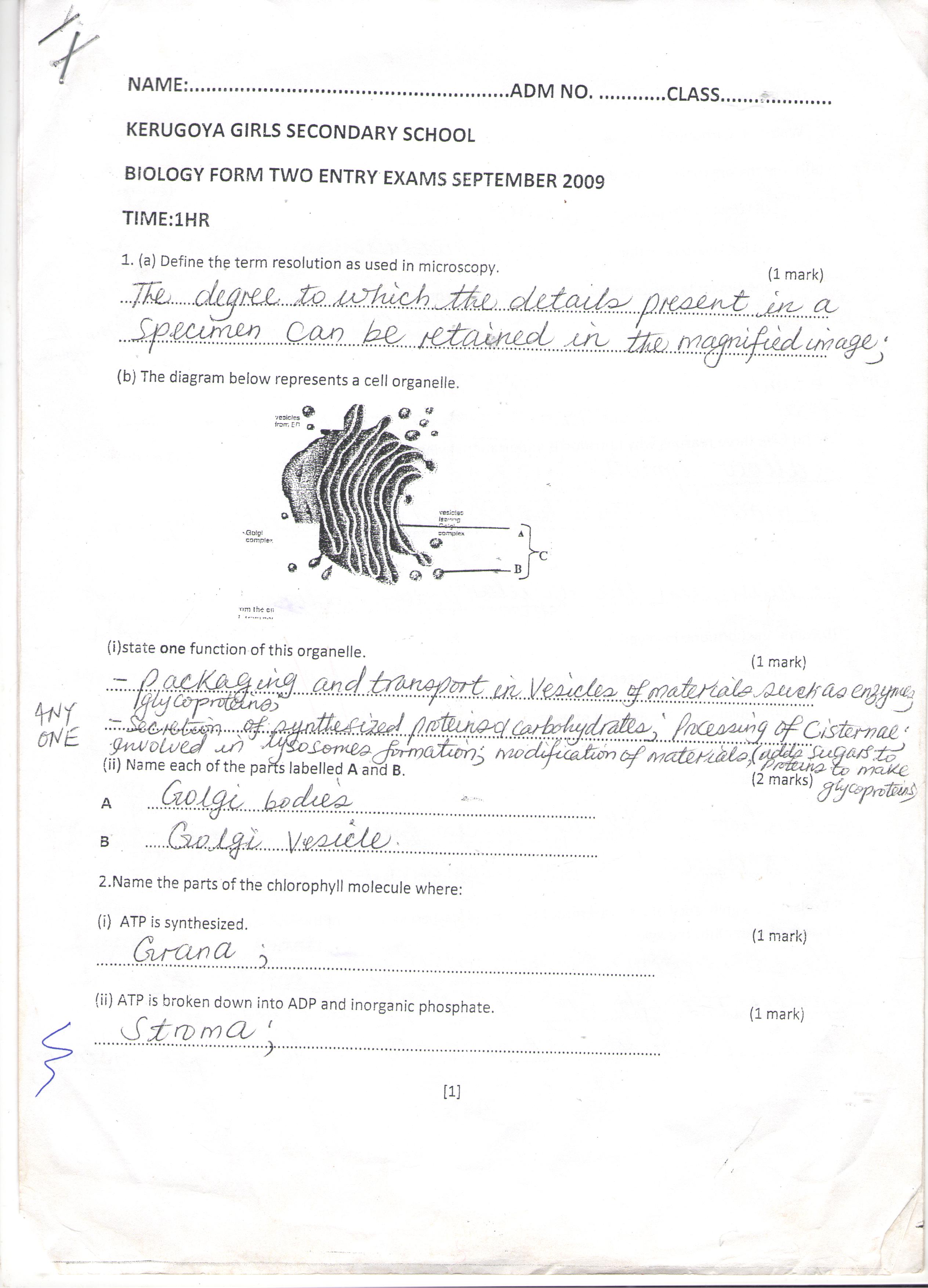
………………………………………………………………………………………………………

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

[b] Tissue that is removed when the part of a plant is ringed [1 mark]

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

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

13. The diagram below represents a cell organelle. 

[i] State the function of this organelle [1 mark]

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

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

[ii] Name each of the parts A and B

A ……………………………………………………………………………………… [1 mark]

B ……………………………………………………………………………………... [1 mark]

14. In which two ways do guard cells differ from other epidermal cells [2 marks]

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

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

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

15. [a] Through cellular respiration, the chemical energy stored in glucose molecule is converted

into which specific molecule [3 marks]

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

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

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

[b] Name the substance that speed up biochemical reaction [1 mark]

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

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

16. During germination and early growth, the dry weight of endosperm decreases while that of

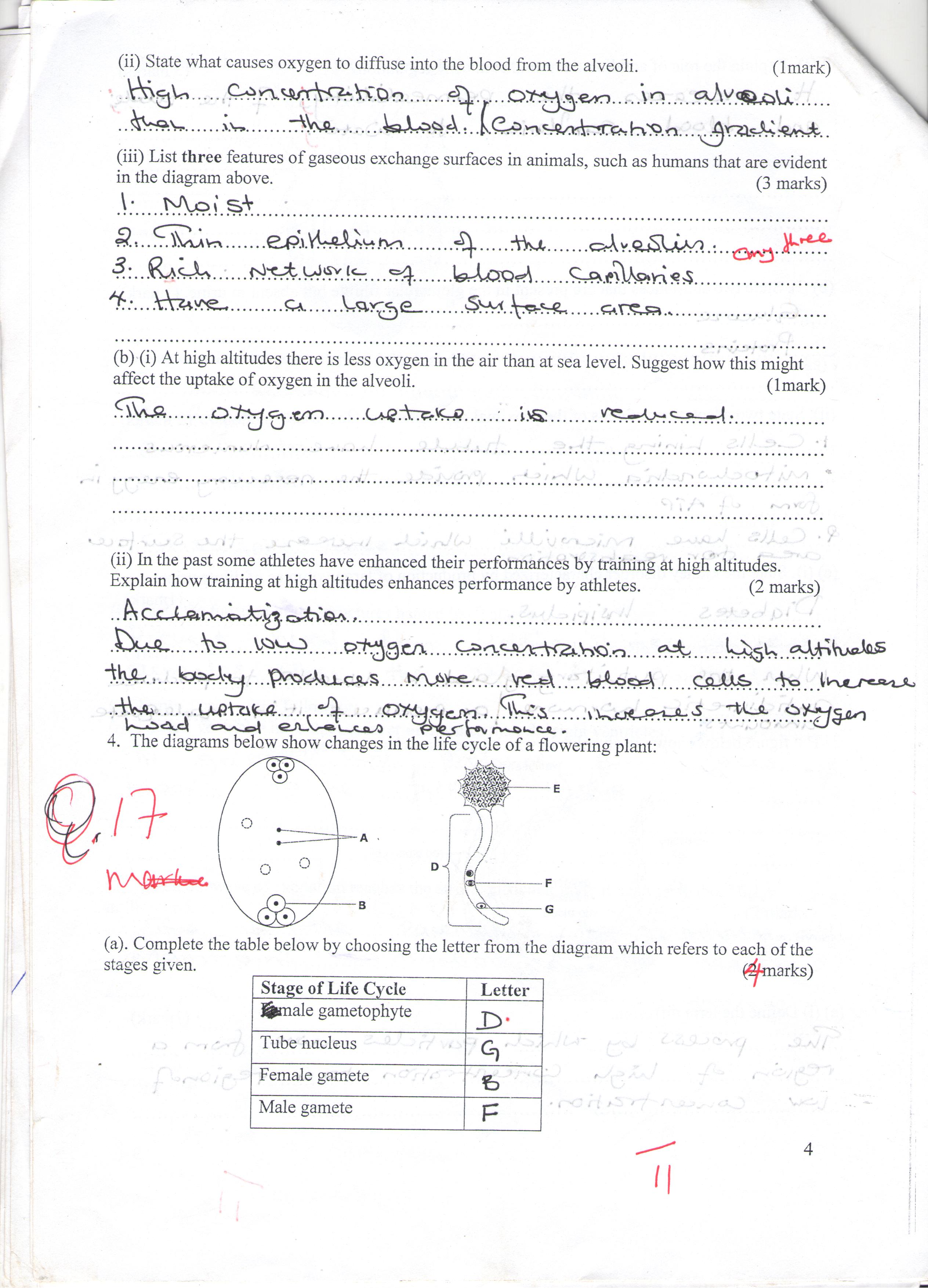
embryo increase explain. [2 marks]

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

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

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

17. The diagrams below show changes in the life cycle of flowering plants.



[i] Complete the table below by choosing the letters from the diagram which refers to each of

the stages given. [4 marks]

|  |  |
| --- | --- |
| **STAGE OF LIFE CYCLE** | **LETTER** |
| Male gametophyte |  |
| Tube nucleus |  |
| Female gamete |  |
| Male gamete |  |

18. State **two** characteristics of kingdom Monera that are not found in other kingdoms. [2 marks]

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

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19.State **three** ways by which plants compensate for lack of the ability to move from one place

to another. [3 marks]

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20. State **three** physiological processes that are involved in movements of substances across the cell

membrane. [3 marks]

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

21. If the human pancrease is not functional:

[a] Name the hormone which will be deficient. [1 mark]

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

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

[b] Name the disease the human is likely to suffer from. [1 mark]

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

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

22. The oxidation state of a certain food is represented below by a chemical equation.

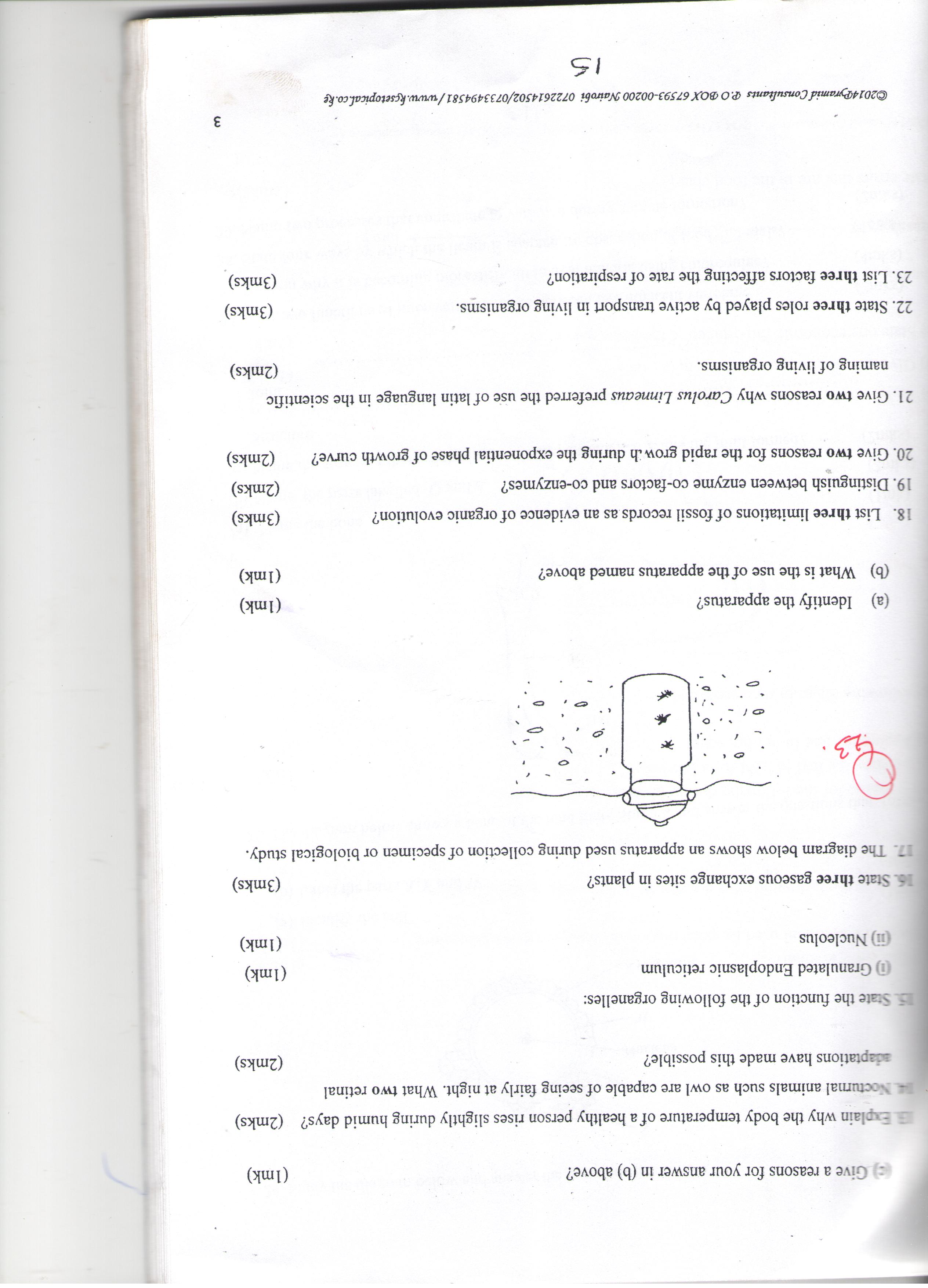
2C3 H 2O 2N + 6O2 (NH4)2 CO2 + 5CO2 + 5H2 O

[a] Calculate the respiratory quotients [RQ] of the food substance. [2 marks]

[b] Identify the food substrate [1 mark]

…………………………………………………………………………………………………

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

23. The diagram below shows an apparatus used during collection of specimen. 

[a] Identify the apparatus [1 mark]

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

[b] What is the use of the apparatus named above [1 mark]

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

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

24. State **two** physical factors in an ecosystem that affect the distribution of organisms. [2 marks]

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25. A DNA strand has the following base sequence G C C T A G A T C A C.

What is the sequence of the

[i] Complementary DNA strand [1 mark]

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

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

[ii] M-RNA strand copied from this DNA strand . [1 mark]

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

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

26. State **three** limitations of fossil records as evidence of organic evolution [3 marks]

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27. Explain the term “Resistance” as used in evolution of living organisms [2 marks]

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28.State the function of the following parts of a light microscope .

[ i] Body tube [1 mark]

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

[ii] Diaphragm [1 mark]

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

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

29. The table below shows analogies of gene mutations. [3 marks]

|  |  |  |
| --- | --- | --- |
|  | **Intended message** | **Actual message** |
| A | Buy me a skirt | Buy me a shirt |
| B | This is my team | This is my mate |
| C | Auntie is staying | Auntie is straying |

Identify the type of gene mutation illustrated

A ……………………………………………………………………………………..

B………………………………………………………………………………………

C …………………………………………………………………………………………

30. State **two** sources of variations. [2 marks]

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

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

31. Name the diseases caused by each of the following [2 marks]

(a) *Plasmodium falciparum*

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

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

(b) *Entamoeba histolytica*

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

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