NAME…….…….ADMNO…….

STREAM…….....NAME OF SCHOOL.....

DATE……..…..SIGN…….……

GIDEONS ELITE BOYS CENTRE OF EXCELLENCE

DECEMBER SELF-ASSESSMENT EXAMINATIONS

FORM ONE

BIOLOGY

FORM ONE (1)

Time: 2½ Hours

INSTRUCTIONS

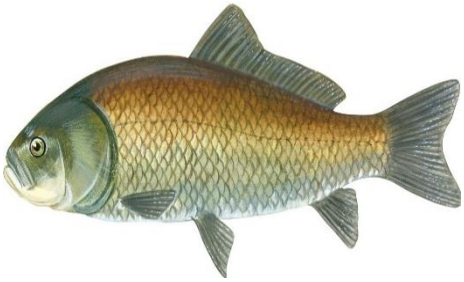
- All Questions are Compulsory
- Write your Answers in the Spaces Provided
- Wrong Spelling of Technical Terms shall be Penalized

Max Score	Student's Score
80	

1. Study the photographs below of three living organisms: **A, B** and **C**. Answer the following questions.

A

B



C

(i) Fill out the following table to identify organism A and B, and the external features on each one of them.

(2 Marks)

ORGANISM	EXTERNAL FEATURE	IDENTITY
A		
B		

(ii) Name the apparatus a scientist would use to collect organism **C** as a specimen for study in the lab from its natural habitat. (1 Mark)

……..

(iii) Name the branch of Biology that deals with the study of the following organisms:

Organisms **B** and **C**. (1 Mark)

……

Organism **A**. (1 Mark)

……

2. Catalase is an enzyme found in plant and animal cells. It catalyses the breakdown of hydrogen peroxide to form water and oxygen.

$2H_2O_2 \longrightarrow 2H_2O + O_2$

hydrogen peroxide water oxygen

(a) A student investigated catalase activity in cooked and uncooked potato tissue. Suggest the expected result with the:

(i) Cooked potato (1 Mark)

……

……

(ii) Uncooked potato (1 Mark)

……

……

(iii) Give a reason for your answer in 2(a)(i) (1 Mark)

.....

.....

.....

(b) Describe how the presence of Oxygen would be tested and confirmed in this experiment. (2 Marks)

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……

3. Potatoes contain starch. Starch can be broken down into reducing sugars. Describe the tests to identify reducing sugars and give the results of the positive tests.

Reducing sugars (2 Marks)

……
……
……...

4. The photograph below shows a woodlouse

(i) The magnification of the woodlouse is X10. Measure the length of the line PQ in millimeters.

Length of PQ ..... mm. (1 Mark)

(ii) Calculate the actual Length of the woodlouse in millimeters. (Show your working)

(2 Marks)

(iii) Name the apparatus a student would use to study very small structures on the surface woodlouse out in the field. (1 Mark)

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5. A student viewed a plant cell under a light microscope. He used the eyepiece lens magnification of X5 and objective lens of magnification of X40.
Calculate the total magnification (show your working). (2 Marks)

6. State two ways in which a microscope should be taken care of before storage. (2 Marks)
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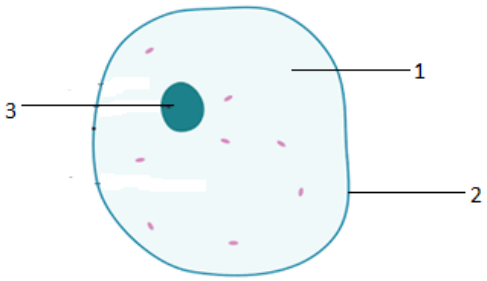
……
……

7. The Table below shows some large insoluble molecules, some digestive enzymes and some smaller soluble molecules that are produced during digestion.
(i) Complete by writing the names of the missing enzyme and molecules (3 Marks)

insoluble molecule	enzyme	soluble molecules
Starch	amylase	Reducing sugars
Fat		
	protease	Amino acids

(ii) List the chemical elements present in fats. (1 Mark)
……..

8. The diagram below shows an animal cell.



(i) Identify the parts labelled 1, 2 and 3. (3 Marks)

1……

2……

3……....

(ii) Name two structures in plant cells that are absent in animal cells. (2 Marks)

……..

…….....

(iii) Name the form of carbohydrate stored in the above cell. (1 Mark)

…….

9. Some cells are specialised to perform a particular function. The names of some specialised cells are given below. Give the functions of the specialized cells. (2 Marks)

(i) Redbloodcells

…….....

(i) Root hair cell

……

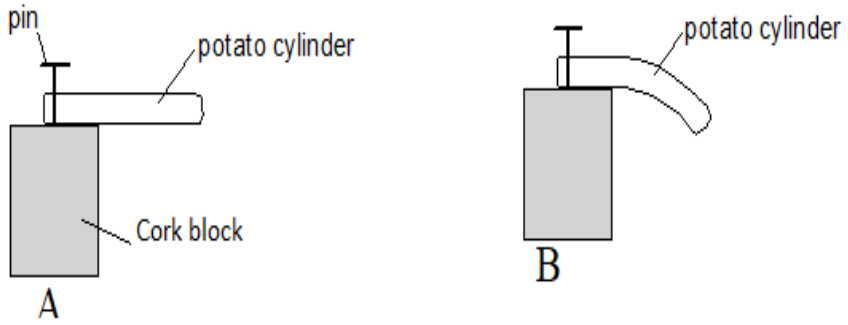
……

…..……

10. Name the process by which Carbon (IV) oxide and Oxygen move in and out of a mesophyll cell. (1 Mark)

……

11. Four freshly cut potato cylinders were soaked for one hour in different salt solutions. The potato cylinders were then pinned to cork blocks. Two of the potato cylinders are shown.



(i) Identify the concentration of solutions the potato cylinders **A** and **B** were soaked in. (2 Marks)

A ……

B ……

(ii) Explain the appearance of cylinder **B.** (3 Marks)

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12. The Mulanje cedar, *Widdringtonia whytei*, is the national tree of Malawi.

(i) State the genus name of the Mulanje cedar tree. (1 Mark)

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(ii) Write the scientific name of Mulanje cedar tree. (1 Mark)

……

13. All living organisms release energy from nutrient molecules within their cells. What is the name of this characteristic. (1 Mark)

……

14. The horse, *Equus ferus*, and the donkey, *Equus asinus*, are able to interbreed. The offspring they produce is called a mule.

(i) Will the mule be able to give birth to a young one when it grows and matures for reproduction? (1 Mark)

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(ii) Give a reason for your answer in 14(i) above. (1 Mark)

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15. Give a reason for the following in preparation of temporary slides in microscopy.

(i) Placing a drop of water on the specimen. (1 Mark)

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……

(ii) Dropping the coverslip gently on the specimen by the use of a mounted pin. (1 Mark)

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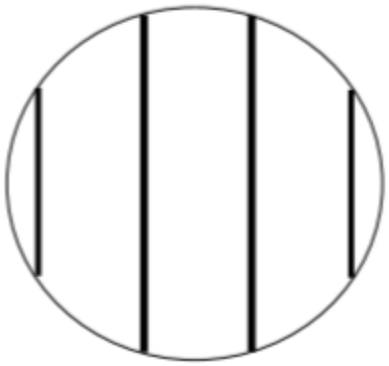
……..

(iii) Covering the specimen with a cover slip. (1 Mark)

……

16. During a Biology practical lesson in the laboratory, to estimate the size of onion epidermal cells, a form one observed the following on the microscope field of view.



(a) Define the term resolving power. (1 mark)

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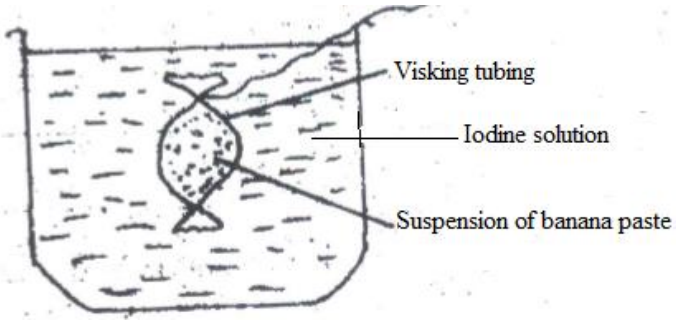
(b) If the student counted 8 cells across the diameter of the field of view, calculate the size of one cell in micrometers. (2 Marks)

17. In an investigation, raw banana was peeled, mashed into a paste and was treated as shown in the set- up below. (Note; raw banana has starch)



(a) Name the physiological process being investigated. (1 Mark)

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…….

(b)State the expected colour of the solutions **inside** and **outside** the visking tubing after 30
minutes.

(i) Inside (1 Mark)

……..

(ii) Outside (1 Mark)

……..

(iii) Explain the observation made in17 (b) (i) above. (2 Marks)

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18. The diagram below shows an apparatus used in biological study.

(i) Name the apparatus shown above. (1 Mark)

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…..….

(ii) State its function. (1 Mark)

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……

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19. The diagram below represents a cell organelle.

(i) Identify the organelle. (1 Mark)

……

……

(ii) Name the parts labeled X and Y. (2 Marks)

X

……..……

….

Y

……

……

20. Name the organelle that performs each of the following functions in a cell.

(i) Transport of cell secretions. (1 Mark)

……

…….

(ii) Protein synthesis. (1 Mark)

……

…….

21. Explain what would happen to red blood cells if they are placed in a concentrated salt solution.

(2 Marks)

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22. (i) State the role of light in photosynthesis. (2 Marks)

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(ii) Name one end product of dark reaction in photosynthesis. (1 Mark)

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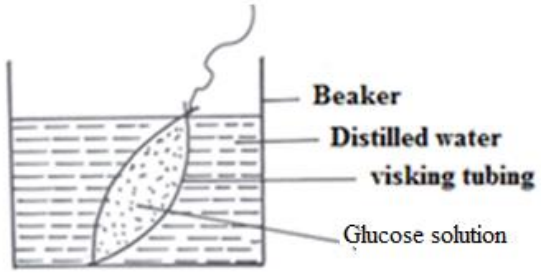
23. An experiment was set up as shown below to investigate a certain process.



(i) Record the expected changes in the volume of the liquid in the beaker and the appearance of the visking tubing after 20 minutes in the table below. (2 Marks)

Expected changes	
Volume of the liquid in the beaker	Appearance of the visking tubing

(ii)Explain your observations in 23(i) above. (2 Marks)

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……

……

……

(iii) Name the structure represented by the visking tube in a living cell. (1 Mark)

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24. State the functions of the following parts of a light microscope.

(i) Condenser (1 Mark)

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(ii) Diaphragm. (1 Mark)

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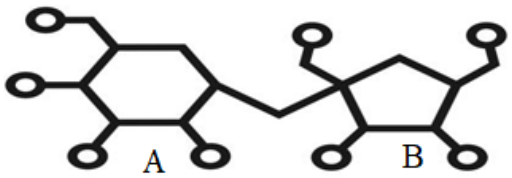
25. The diagram below shows a simple structure of a disaccharide, study it and Answer the questions that follow.



(i) State the chemical reaction that forms the disaccharide. (1 Mark)

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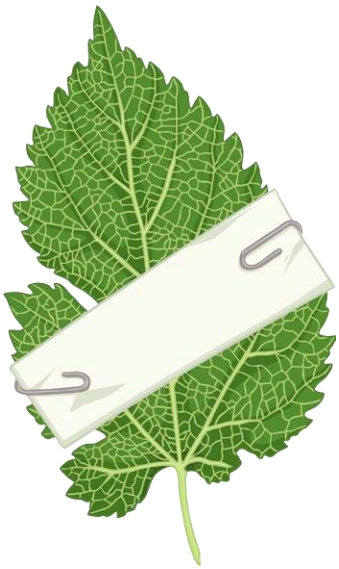
(ii) If the disaccharide is sucrose name the monosaccharides A and B. (2 Marks)

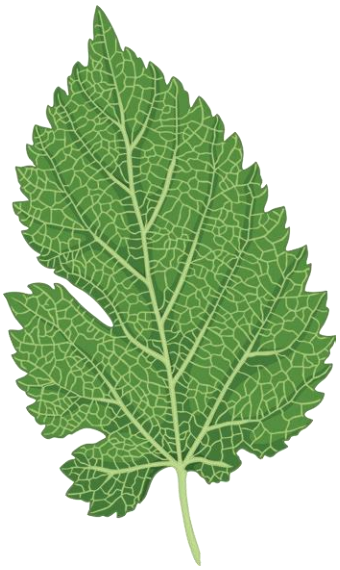
A……

B……

26. A student placed a plant into a dark cupboard and then partially covered one leaf (leaf A) with a piece of card. After two days, she carried out a test for starch on leaf A and one other leaf, as shown below.



Leaf A

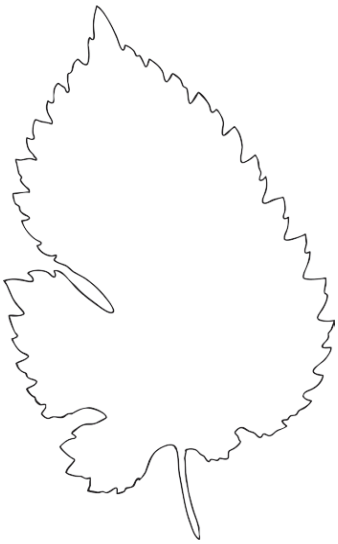


Leaf B

When iodine was added to leaf B it turned completely blue black. Which parts of leaf A would turn black. (1 Mark)

……..

(i) Shade these areas on the leaf below**.** (1 Mark)



(ii) Explain your answer in 26 (i) above. (2 Marks)

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