

NAME:.....STREAM.....

SMASS LOWER SECONDARY LEVEL EXAMINATIONS

BIOLOGY

SENIOR TWO

2 Hours

THIS TABLE IS FOR EXAMINER USE ONLY

Do not write in the boxes on this page. The examiner will use them to keep a record of your marks.

SECTION A									
Question	1	2	3	4	5	6	7	8	Total
Max marks	4	5	6	8	4	4	5	4	40
Actual marks									
SECTION B									
Question	11	12	13	14	15	16			Total
Max marks	15	15	15	15	15	15			60
Actual marks									


Instructions



This paper consists of two sections; Section A (40 marks) and Section B (60 marks).

- Section A consists of 08 structured questions. Attempt **all questions** in this section by filling the answers in the spaces provided.
- Section B consists of six extended short essay questions. Attempt **any three** questions from this section. Answers to questions in this section must be written on separate booklets provided. All questions in this section carry equal marks

SECTION A (40 MARKS)

1. Life processes are necessary to all organisms in order to live. Therefore, organisms carry out different life processes which help them to sustain life. Complete the table below with life process together with their importance to the living organisms. (06 marks)

Picture	Life process	Importance of the life process
		

2. Living organisms in nature are made up of either one or more cells which enable them carryout life processes.

a) Define the term a cell. (01 marks)

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Both plants and animals are made up of cells that differ in shape and size according to their functions. However there cells are too tiny to be seen by a naked eye.

b (i) State any one magnifying instrument from the laboratory that can be used to examinecells. (01 marks)

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ii) What term refers to the study of cells in biology? (01 mark)

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c) Suggest any one biological process which occurs within cells. (01 mark)

.....

3. All living organisms were scientifically named according to the Binomial Nomenclature system discovered by cardus Linnaeus. This system gives scientific names to organisms with two parts namely the genus names and species name.

a) Complete the table below by filling in the most correct genus name, species name or scientific name of the organisms in the blank spaces below. (03 marks)

Organism	Genus name	Species name	Scientific name
Dog	Canis	familiaris	----- -----
Housefly	Musca	----- ----	Musca domestica
Man	----- -----	sapien	Homo sapien

b) State any three rules observed/ followed while writing scientific names of organisms. (03 marks)

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4. Senior two students carried out a study around their school garden during on their biology lessons. During the study; the students found out that there were many organisms that were discovered in the garden. Some of the organisms observed included the mushrooms which were growing in the areas with decomposing organic matter, amaranthus leafy plants, a lot of filamentous spirogyra in the pond water, termites in the soil and bacteria in the decomposing organic matter.

THE SCHOOL GARDEN WHERE THE ORGANISMS WERE OBSERVED.



a) You are required to complete the table by filling in the appropriate kingdom to which each organism belongs. (05 marks)

Organism	Its kingdom
The mushrooms	
Amaranthus leafy plant	
The filamentous spirogyra	
Termites	
Bacteria in decomposing organic matter	

b) What could be the likely reason why the mushroom was discovered growing in areas with decomposing organic matter? (01 mark)

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c) Identify the biological role of termites in the soil. (01 mark)

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5. The organism below belongs to phylum Arthropoda. Carefully study them and answer the questions that follow.



Organism A



Organism B

a) Identify the class where organisms. (02 marks)

i) A belongs

ii) B belongs

b) State any three reasons why the organisms above belong to the same phylum. (03 marks)

c) State any two structural differences between organisms A and B.

Organism A	Organism B

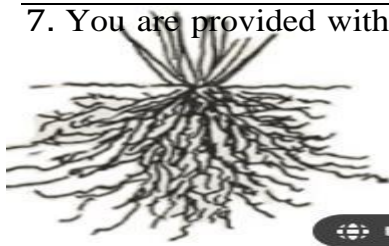
6. A virus is a very tiny particle that can be seen using an electron microscope. However, viruses are infectious agents with both living and non-living characteristics.

a) State any two reasons why viruses are considered.

i) Living

ii) Non-living

7. You are provided with two root systems from two different plants.



Picture A



Picture B

a) Study the roots in pictures A and B to give differences and characteristics in the table below. (03 marks)

Characteristics	Picture A	Picture B
Type of root system		
Presence of the main root		
Size of roots		

8. Insects are of great economic importance to man and play a big role in the environment. The life cycles of insects are also associated with different stages for example useful and harmful stages of the insects provided in the blank spaces. (03 marks)

Insect	Useful stage	Harmful
Butterfly		
Housefly		
Cockroach		

SECTION B (60 marks)

Attempt any three numbers

9. Soil is the covering of the earth's surface in which plants grow and some microorganisms and animals live.

a (i) State any six components of soil.

(06 marks)

A sample of soil was obtained from the school garden. It was found to contain some microorganisms and water.

b) State the role played

i) Microorganisms in the soil.

(02 marks)

ii) Water in the soil.

(02 marks)

c) A group of senior two students obtained the following results while analyzing a soil sample.

Volume of soil = 200cm^3

Volume of water = 300cm^3

Volume of water and sand after stirring = 450cm^3

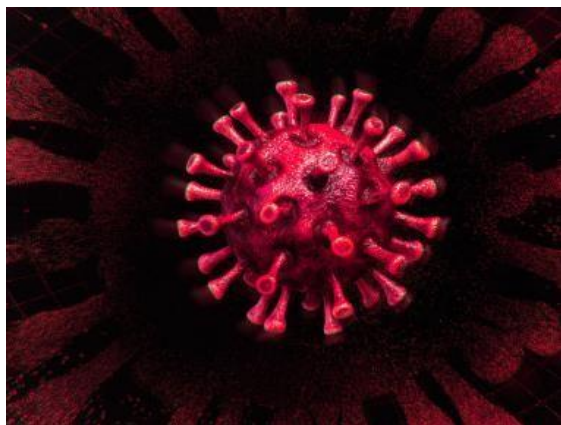
i) Determine the component of soil being investigated.

(01 marks)

ii) Calculate the percentage composition of the above component in the soil.

(04 marks)

10(a) In the year 2020, the whole world suffered a global pandemic that threatened the lives of humans in different parts of the world. Many lost their lives. The research was carried out and it was found that there was a new viral disease which was spreading at a faster rate.



i) Identify the viral disease that threatened lives of humans in this year.

(01 marks)

ii) List any four signs and symptoms that were observed amongst people who contracted the disease.

(04 marks)

iii) Describe any six interventions that were carried out by the government of Uganda to eradicate the disease.

(06 marks)

b) Research indicates that viruses have living and non-living characteristics.

State why viruses are considered

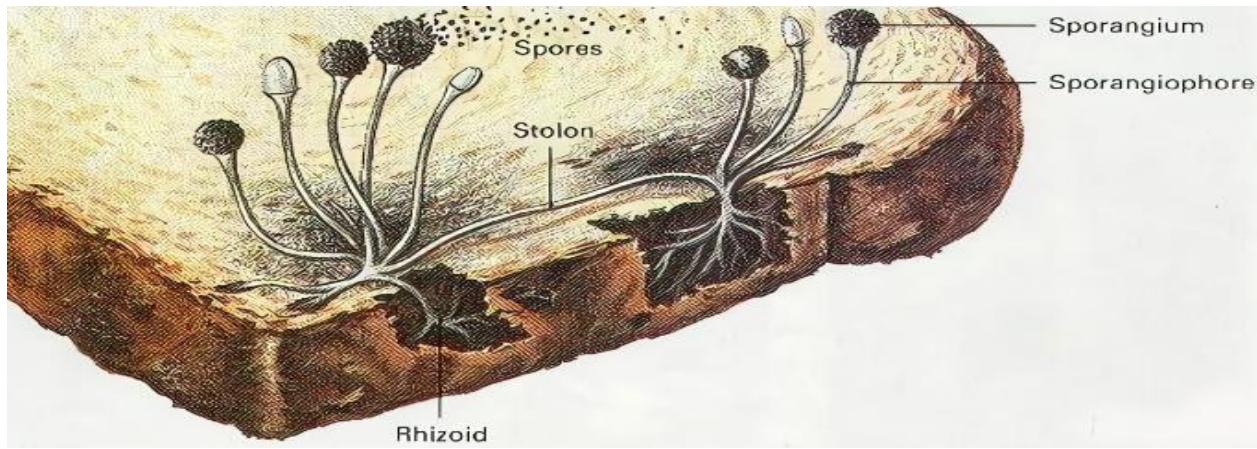
i) Living

(02 marks)

ii) Non-living

(02 marks)

11(a) When bread is kept for a long period of time; some structures known as moulds begin developing in the surfaces of bread. Using a hand lens, these structures can clearly be seen.



- i) Identify the kingdom to which they belong. (01 marks)
- ii) State any other three organisms belonging to the same kingdom. (03 marks)
- iii) State any four characteristics of organisms in the kingdom. (04 marks)
- iv) Giving examples in each case, suggest any four economic importance of organisms in the above kingdom. (07 marks)

12. In the case of the practical biology lessons, senior two students examined four specimens and noted the following features about them.

Specimen A

- Has sucking mouth parts
- Has one pair of wings

Specimen B

- Has biting mouth parts
- Has spines on legs

Specimen C

- Has biting mouth parts.
- Has no spines on legs

Specimen D

- Has sucking mouthparts
- Has two pairs of legs

a) Using constructing characteristics in each head.

- i) Construct a flow chart. (07 marks)
 - ii) Construct a dichotomous key. (06 marks)
- b) State the reason why the above dichotomous key is important. (02 marks)

13. Living organisms are made up of organism cells which carryout life processes. Both plants and insects possess cells. In one of the biology lessons about cells, students examined animal and plant cells marked in the microscope.

- a) State any five structural difference between animal and plant cells that were observed.
- b) In a blood smear on a glass slide mounted on the microscope, specialized cells were observed

- i) Identify any three specialized cells in the blood smear. (03 marks)
- ii) State the roles played by each specialized cell carried in (i) above. (03 marks)
- c) State any two examples of plant specialized cells and their roles. (04 marks)

14. While cleaning the bedroom, you later discover the following organisms. Ticks under the mattress, cockroaches in the bed, spiders in the corners of the wall, and mosquitoes on the clothes hanged near the window.

a) You are tasked by mother to identify

i) The phylum they belong (01 marks)

ii) 3 reasons why they belong to the above phylum. (03 marks)

b) Identify the class to which each organism belongs. (04 marks)

i) Tick iii) Spider

ii) Cockroach iv) Mosquito

c) Suggest seven various ways that can be employed to reduce the spread of malaria by the mosquitoes in your home. (07 marks)

15. This term a group of senior two students visited the Uganda Wild Life Education Center (UWEC) in Entebbe. During the tour their tour guide showed them a number of wild animals that were conserved in the center.

These animals included reptiles, monkeys, ostriches, some amphibians and tilapia fish that was captured from Lake Victoria.

The pictures of the animals are given in the table below



a) After the trip, your biology teacher tasked you to identify the class to which each of the organisms listed below belong.

i) Reptiles iv) Amphibians

ii) Monkeys v) Tilapia fish

iii) Ostriches

b) State the phylum to which the above organisms belong. (01 marks)

i) Suggest any four characteristics of organisms belonging to the same class with reptiles. (04 marks)

ii) State any five interventions by the government to ensure more wildlife is conserved. (05 marks)

16. You were provided with a chart consisting of the following category. Study the chart carefully and answer the questions that follow.

Items on the chart

- Liver, nerve cells, circulatory system, blood, muscle
- Red blood cells, excretory, parenchyma, heart
- Root, platelets, shoot, guard cells.

a) Organize those items that make up. (08 marks)

- | | |
|------------|------------|
| i) Cells | iii) Organ |
| ii) Tissue | iv) System |

b) Identify those items which are found in plants. (03 marks)

c) Define the following terms as used in study of levels of cell organs. (04 marks)

- | | |
|------------|------------|
| i) Cell | iii) Organ |
| ii) Tissue | iv) System |