

Name..... TRS GUIDE 0703783220 / 0777968584
Stream..... S.2

UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION

S.2 END OF TERM TWO - 2023

BIOLOGY

PAPER ONE(THEORY)

TIME: 2 HOURS

INSTRUCTIONS

Attempt all questions in section A and any two in section B.

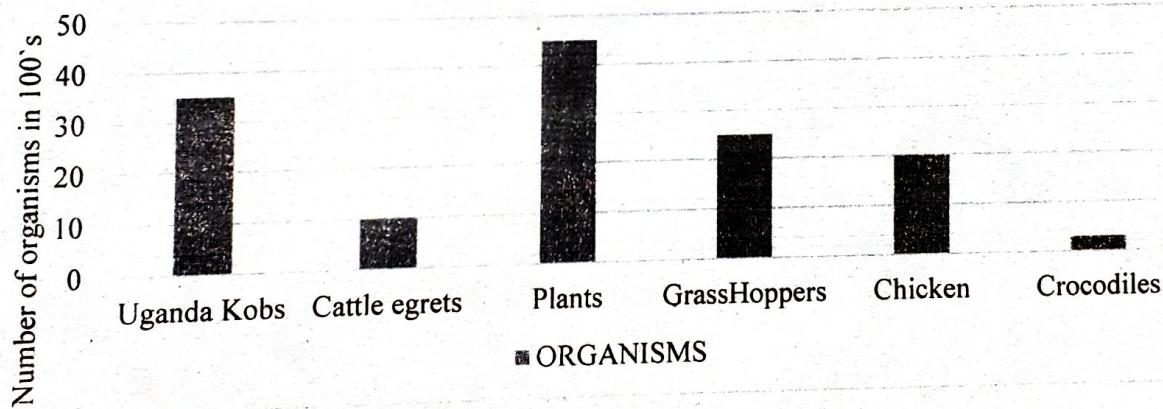
Answers to section A must be written in the spaces provided.

Answers to section B must be written in the answer sheets provided and fastened together with this question paper.

SECTION A

1. The data below shows common organisms found in Hilton village collected by a team of researchers from different branches of biology.

ORGANISMS IN HILTON VILLAGE



- (a) Which organisms are:
(i) Commonest organisms in Hilton. (1mk)

Plants.....

- (ii) Least common in Hilton (1mk)

Crocodiles.....

- (b) Suggest reasons for the small numbers of some organisms in Hilton (2mks)

- No food resources in the area.
- Presence of predators / enemies that kill them
- Habitat loss
- Few reproductive mates / individuals.

(c) Identify the five branches of biology whose knowledge was required to obtain the data above. (5mks)

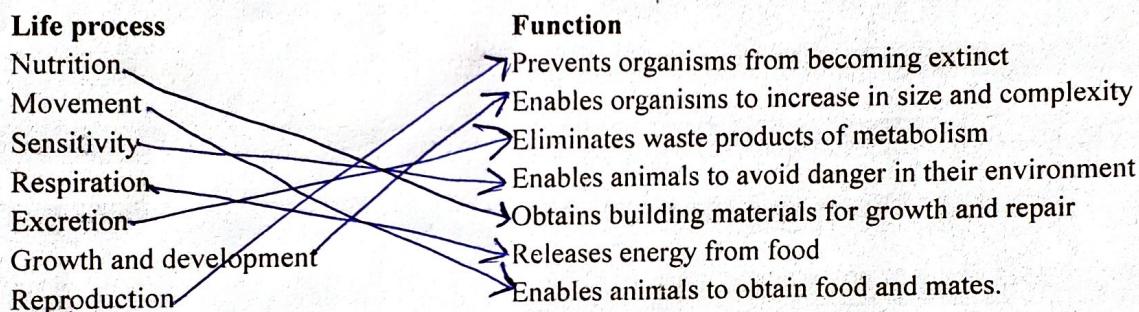
- Botany
 - Zoology
 - Paleontology
 - Ecology
 - Genetics

- Taxonomy etc.

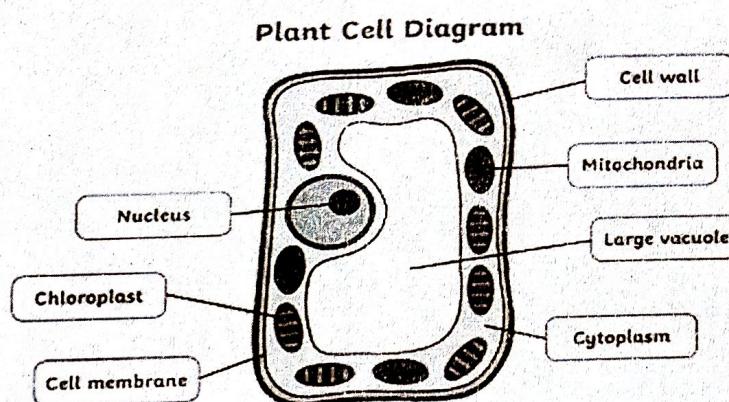
(d) How does the population of other organisms affect that of grasses? (2mks)

They feed on plants hence reducing their population.

2. Using arrows, match the life process to their functions in living organisms. (7mks)



3. The figure below shows a plant cell. Study the figure carefully and use it to answer the questions that follow.



- a) Give three reasons that support the fact that the above cell is of plants. (03marks)
- It has cell wall
 - It has Chloroplast
 - It has a large vacuole
 - It has a regular shape

b) Name the substance that makes up the cell wall of plant cells. (01mark)
.....Cellulose.....

c) State the role played by the following structures in the plant cell. (02marks)

Chloroplast

.....It has a green pigment for trapping of sunlight energy for photosynthesis......

Large vacuole

.....It stores food materials for the cell......

d) Why do we say that plants are (02marks)

Eukaryotes

.....They have a true nucleus / They are multicellular.....

Autotrophic

.....They make their own food......

e) When plants need to store excess food for future uses, they store it in special structures calledStarch granules.....and the type of food they store is calledStarch.....(02marks)

4. Complete the table below, by stating two examples and special characteristics of each of the following animal phyla. (12mks)

Phylum	Examples	Special characteristics
Chordata	Man, Cow, frog	- Possession of a thick bone Endoskeleton
Platyhelminthes	Tape worms, Planarians	- incomplete digestive system - have no blood vessels - don't have a respiratory system
Arthropoda	Scorpion, housefly, millipede, Cray fish	- Segmented bodies - Jointed limbs - Exo skeleton
Annelida	Earthworms, Sandworms, ragworms, Leeches	- Hydrostatic skeleton - Segmented body
Nematoda ascaris Lumbicoides	Hook worms, Liver flukes, Heart worms	- cylindrical in shape - Their body has a cavity.
Mollusca	Snails, slugs	Have a soft body usually covered with one or two shells.

5. One evening, Edrine and his classmates were walking across the school field. As they reached the school backyard, they had identified several organisms which were thought to be insects. They attempted to classify them according to the features in the table below.

Specimen A	Specimen B	Specimen C	Specimen D	Specimen E
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A	B	C	D	E
Has 2 wings, has proboscis, has an ovipositor on its broad abdomen, has 2 short antennae, has hairy body	Has 4 membranous wings, has a sting on its broad abdomen, has a hairy body, has both proboscis and mandibles, has 2 short antennae, has hairy limbs.	Has 2 long antennae, has 4 wings, has mandibles, has a pair of cerci on its dorso-ventrally flattened abdomen, has spiny limbs.	Wingless, has 2 short antenna, has mandibles.	Has 4 scaly wings, has long coiled proboscis, has 2 long, clubbed antennae, has narrow abdomen

- a) Use the above characteristics to construct a dichotomous key that Kasule's classmates would use to classify specimens A, B, C, D and E.

A dichotomous Key showing specimens A, B, C, D and E

- 1 (a) Specimen with long antennae --- Go to 2
- 1 (b) Specimen with short antennae --- Go to 3
- 1 (c) Specimen with a Proboscis --- E
- 2 (a) Specimen with mandible --- C
- 2 (b) Specimen without wings --- D
- 2 (c) Specimen with wings --- Go to 4
- 2 (d) Specimen with 2 pairs of wings --- B
- 2 (e) Specimen with 1 pair of wings --- A

6. One S.2 student; Arafat lost a key for his suit case one day after school visitation. His parents visited him and among packages was a loaf of tip top sweet bread. After a week; he broke the suit case only to find his bread had grown something black and grey on it.

- (i) What name is given to the organism that developed on Arafat's?

Bread. (01 mark)

Bread mould

- (ii) State the kingdom to which the organism named in (i) belongs.

(01 mark)

Kingdom Fungi

- (iii) State any two general features of all organisms belonging to the kingdom stated in (ii) above. (02 marks)

- They are multicellular except yeast
- They have a true nucleus / Nuclear membrane
- They are auto heterotrophic (feed on already made food).

- (v) Name other two organisms that belong to the same kingdom as the organism named

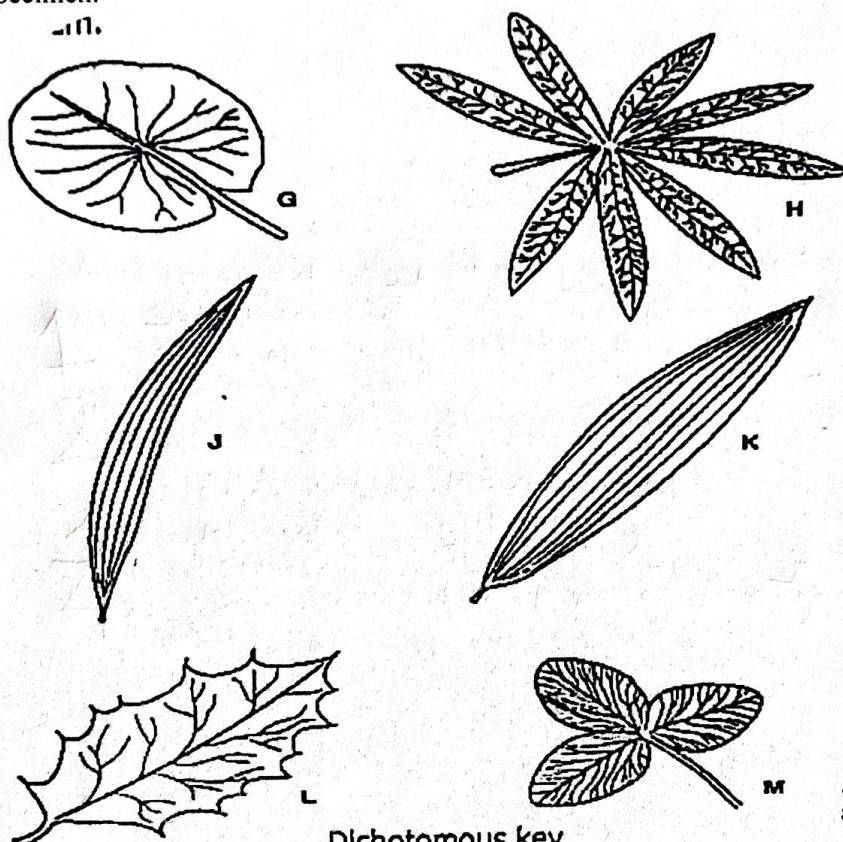
in (i) *Mushrooms - Puffballs - Candida* (02 marks)
Toadstools - Ringworms - Yeast etc

- (vi) State other ways how some organisms belonging to the kingdom

stated in (ii) are harmful to man. (02 mark)

- They cause diseases such as Ringworms, Athlete's foot and Candida to organisms man.
- They cause food spoilage.

7. The figure below shows six leaves. Construct a dichotomous key that can be used to identify the specimen.



Dichotomous key

A dichotomous showing specimens G H K, L M J.

1 (a) Specimen with entire margin --- go to 2
 1 (b) Specimen with Serrated margin --- L

2 (a) Specimen with parallel venation --- go to 3
 2 (b) Specimen with network venation --- go to 4

3 (a) Specimen with narrow Lamina --- J
 3 (b) Specimen with broad Lamina --- K

4 (a) Specimen with lamina divided --- go to 5
 4 (b) Specimen with undivided lamina --- G

5 (a) Specimen with Compound trifoliate --- M
 5 (b) Specimen with compound digitate --- H

8. A man in Ngandu left his potted plants which used to be outside the house on the veranda in his bedroom which was purely dark. after a month, he found all of them dry.

- (i) name the factors that could have affected the drying of the plants. (03 marks)
- Absence of sunlight energy.
 - Lack of enough water.
 - Absence of carbon dioxide.

- (ii) explain how factor mentioned above caused the drying of the plants in the bedroom (3 marks)
- Sunlight / Light intensity - light is involved in the breaking down water molecules to produce hydrogen ions and oxygen gas. The hydrogen ions combine with carbon dioxide to make starch.
 - Water, This is a raw material for photosynthesis since it is combined with carbon dioxide to make starch.
 - Carbon dioxide - Also carbon dioxide is a raw material for photosynthesis
- (iii) what is the importance of plants to a man
- Source of foods to man e.g. cassava
 - Source of medicines such as aloe vera & cactus
 - They are climatic
 - Reducing air pollution by reducing the volume of carbon dioxide in atmosphere during photosynthesis
 - Some parts of plant can be used in construction industries
 - Manufacture of papers and wood pulp
 - Source of fuel e.g. charcoal & firewood etc.

SECTION B

Attempt any two questions from this section.

9. Termites are social insects that live in well organised colonies called castes.

(a) Mention one other insect that is social and explain the role of each caste in the colony. (4 mks)

(b) Explain what would happen if all insects were killed (eliminated from the community) (6mks)

(c) In case locusts and army worms invaded your crops, describe the methods you would put in place to control the harmful effects of the insects. (5 mks)

END