Name.....**personal no**...../...../…….

Signature.....

553/1

BIOLOGY.

S.3

Aug-2023

2 hours.

LAROO SECONDARY SCHOOL

BIOLOGY EXAMINATIONS

BIOLOGY DEPARTMENT.

Competency based curriculum end of term examination 2023

Uganda Lower secondary certificate of education. (U.L.S.C.E)

Instructions.

•Attempt ***all*** the questions in section **A** and section **B**

•Diagrams where necessary must be drawn using a sharpened pencil.

For Examiners use only

Question	Marks.	Comment
1		
2		
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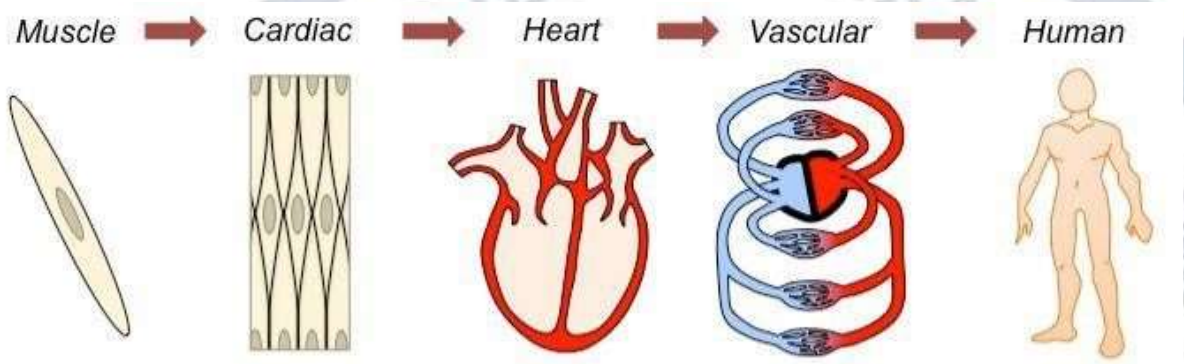
SECTION A.

Attempt all the questions in this section

1. The life processes of the human body are maintained at several levels of structural organisation. Below are diagrams showing different levels of organisation in man. Use them and answer the questions that follow.



Cell----------> level T ----------> level S------> **level** V----------**level O** (a)Name the labelled levels of structural organisation in man, ***(04 marks)***

(i) Level **T**.

.....

(ii) Level **S**.

.....

(iii) Level **V**.

.....

(iv) Level **O**.

.....

(b)State the function of the following in the human body. ***(02 marks)***

(i) Muscle cell.

.....

.....

(ii)heart.

.....

.....

(c)Of what importance is the ***vascular*** structure belonging to **level Y** in man.

(01mark)

.....

.....

2. The table below shows the food energy value of a lunch meal in Jinja Modern Secondary School. Read it carefully and use it to answer questions that follow.

Food consumed	Protein (g)	Carbohydrates (g)	Fat (g)
Sausages	9	5	24
Chips	8	70	20
Baked beans	10	20	1
Apple pie	5	60	25
Ice cream	2	20	12
Soft drink	0	30	0

a. Explain whether at this school, students obtain a balanced diet from their meal
(*02marks*)

……
……

……

……

b. In this meal, which food is the best source of protein? (***01½marks***)

……

c. Suggest one other food, not consumed here, that is rich in protein. (***01½marks***)

……

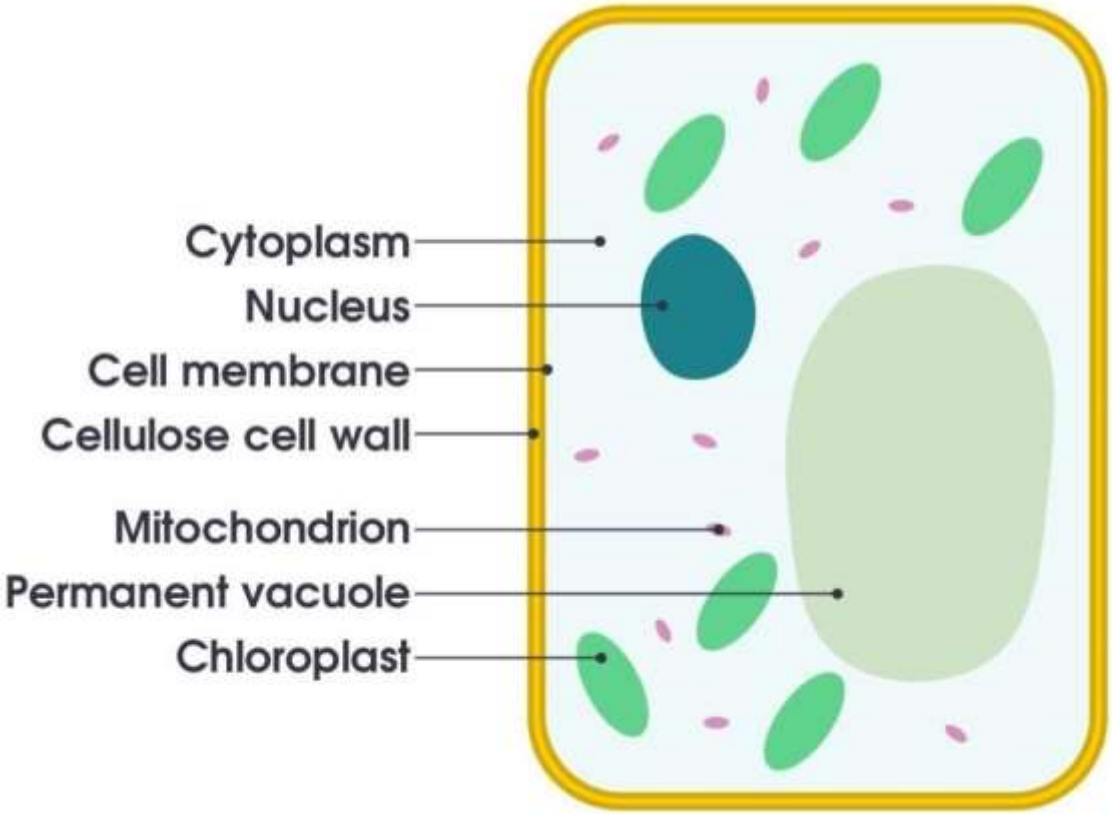
d. Why is protein essential in any diet? (***02marks***)

……

……

……

3. (a)Usually microscopic in size; a cell is a smallest basic structural and functional unit of living matter. Below is a structure of a plant cell. Use it and answer the cell analogy that follows.



(a)Use the parts of a plant cell above and fill in the spaces in the cell analogy below. A ***cell analogy*** compares a cell and its parts to something else that is similar to a plant cell. ***(07marks)***

Tittle of the cell analogy: *IF A SCHOOL SETTING IS LIKE A PLANT CELL.*

The hard-exterior walls of a school building shield the school from strong weather conditions and external damage like a cell ***wall*** of a plant cell.

If you are late to school; you may find the doors locked. Doors are like selective openings as..... of a plant cell which only open at certain times to allow in some materials.

In a plant cell; .....operate as school store where some materials may be kept.

The main administration offices function as .....of the plant cell which directs and controls all the activities.

The .....of the plant cell serve as the main school garden where food is manufactured from and the .....of the plant cell serve as the school kitchen (power house) where students get food energy from. ..... is like the pathways and compound of the school where everyone travels through and most activities take from.

(b)From the cell analogy in (a); state the function of the following parts of plant Cell.

(i) Cell wall. ***(01 mark)***

.....

.....

(ii) Mitochondrion. ***(01 mark)***

.....

.....

(iii) Chloroplasts. ***(01 mark)***

.....

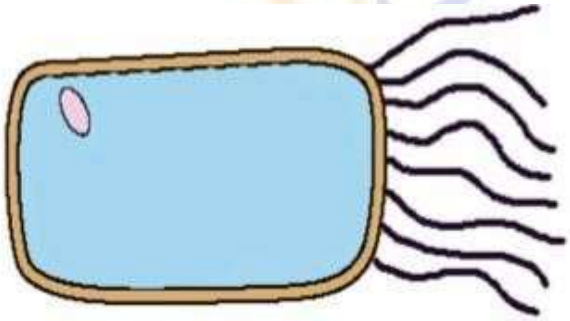
.....

(c) From the cell analogy in (a); state the adaptation of the cell membrane to its function. ***(01 mark)***

.....

.....

(d) "*The modifications in structure of specialised human cells are related to their functions"* Below is a structure of one of the specialised human cell.



(i) Name the specialised human cell above. ***(01 mark)***

.....

(ii) State how the specialised human cell above is well adapted to its carry out its function. ***(02 marks)***

....

.....

.....

4.While studying features of some insects; a group of S.2 students downloaded the diagram of a cockroach and printed it out; which they used to identify the features of external parts of a cockroach. Study the diagram and answer the questions that follow.

(a) From the diagram; briefly describe the,

i. Antenna of the cockroach. ***(02 marks)***

.....

.....

(ii)Fore limbs of the cockroach. ***(02 marks)***

.....

.....

(b) Using observable features; suggest why cockroaches live a successful life. ***(03 marks)***

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.....

(c) State one way in each case how cockroaches are useful and harmful in life.

(i) How they are useful. ***(01 mark)***

.....

.....

(ii)How they are harmful. ***(01 mark)***

.....

.....

(d) Suggest one way how the dangers of cockroaches can be controlled in our homes. ***(01 mark)***

.....

.....

SECTION B.

Attempt questions in this section.

All questions carry equal marks.

5. Through transpiration, plants are able to get rid of excessive water from their leaves, because water vapour escapes to the atmosphere through certain routes from the plant. However, transpiration affected by some environmental factors that either increase or decrease the rate of transpiration. You are required to identify some factors affecting rate of transpiration.

a) (i) Outline two routes through which water vapour can escape from the plant. (***01mark***)
(ii) State the process through which water vapour escapes from the leaves (***01mark***)

b) (i) Recall and state two conditions that easily dry clothes when we wash and hung our clothes to dry. (***02marks***)
(ii) How do you think one of the conditions help to dry clothes? (***02marks***)

c) (i) Using that knowledge from b) above, state two factors that can increase the rate of transpiration. (***02marks***).

Explain the importance of transpiration to man. (***02marks***)

6. a) Plants and other organisms are vital in nature by making food from which other organisms that cannot make their own food depend. Read the following passage and complete it by filling in the spaces provided with an appropriate word. This shall help you understand the concepts of plant nutrition: (***08marks***)

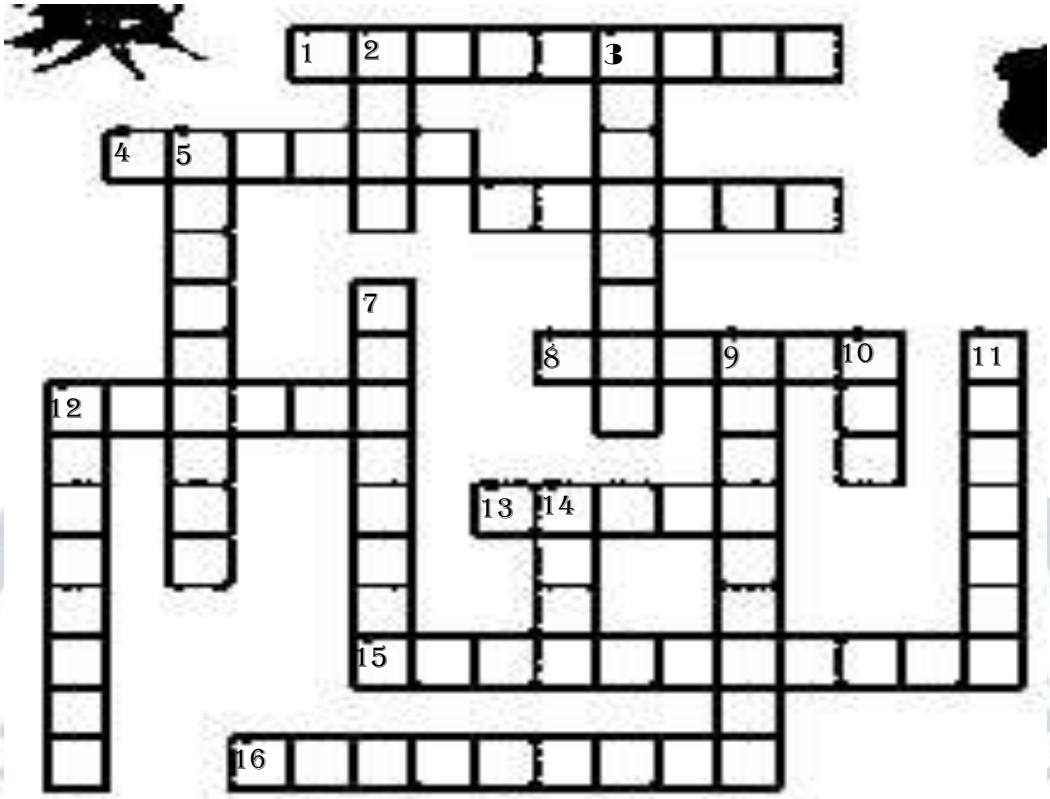
Do you think plants cultivate food? No, they don't. Therefore, they only survive by making their own food in a process called……. In the process, plants make a sugar called ……. from simple chemical substances from the atmosphere and ……..……..and as well liberate a gas known as…….. Plants obtain ……..…..from the atmosphere and water from the……, which are directly used in the process of making food. After making the sugars, these sugars can be used to make other substances like ……..……, ……..……and starch which is stored in special cell structures called……..……for future use by the plant. The gas

produced from photosynthesis can be used either during…….…….. in the mitochondria of plant cells to produce energy or can be excreted to the environment via the ……..on leaves.

However, not only plants can make their own food, other organisms like ……..……. and bacteria can do the same. Thus these organisms can use the simple materials and energy from their environment to build up food nutrients, a form of nutrition described as…….…….. nutrition. Hence, these organisms are called……..…… It is this food from these organisms that all other organisms that cannot make their own food such as……..……and fungi feed on and also get the nutrients required by their body. So plants are very important sources of food to other organisms on land. For this reason also, plants are referred to as…….…….because they make their own food and avail it to other organisms.

b) Use the knowledge about the raw materials involved in photosynthesis to explain why you are encouraged to plant trees. (***02marks***)

7. Insects are all related, they share a common ancestor at the base of their family tree. From this ancestor all insects inherited a basic anatomy and body plan. The diversity in form and ultimately function found in insects is a result of changes made in some anatomical structures such as the legs and mouthparts. Complete the puzzle below and use it to learn more about external features and/or the life cycles of insects. (***10marks***)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Across

1. Butterfly pupa
4. The middle body segment of an insect.
6. Simple light-sensing organs.
8. The end segment on an insect's leg
12. the exoskeleton of an insect is made of this substance.
13. the largest segment on an insect's leg.
15. a hard covering that protects the body of insects.
16. a feeding structure that butterflies and other insects have.

Down

2. The body segment of an insect that contains the sensory organs.
3. Structures that allow an insect to smell.
5. flying insects have forewings and……
7. Used by chewing insects to grab food.
9. Openings in the exoskeleton where air can flow in to the insect.
10. the number of legs on an insect.
11. the end segment on body of an insect
12. the type of eyes an insect has.
14. females lay these to start the life cycle of an insect

END