

**LOWER SECONDARY CURRICULUM 2023**  
**END OF TERM TWO EXAMINATIONS**

BIOLOGY  
 (THEORY)  
 PAPER 1  
 SENIOR 3  
 TIME: 2 HOURS

**INSTRUCTIONS:**

- *This paper consists of two sections , section A and B.*
- *Attempt all the questions in both sections*
- *Ensure good handwriting*

**Section A**

Attempt all questions in this section.

1. walakira a student at Hilton high school feel sick. he was rushed to a near by hospital. a laboratory report produced at the hospital was shown in the table below.

walakira laboratory report

Type of cell	Normal cell count	Lubega's current cell count
Red blood cells	5,000,000	2,000,000
Nerves cells	7,000	7,000
White blood cells	6,000	15,000
Bone cells	10,000	10,000

- (a) which cells increased in the number?

*white blood cells* ..... *6* ✓

reason

*To produce antibodies to fight pathogens or germs that are causing disease*

- (b) which cells decreased in the number?

*Red blood Cells* ..... *1* ✓

reason *They were attacked and destroyed by The Pathogens / germs / bacteria*

- (c) which cells did not change?

*Nerve cells and Bone cells* ..... *8* ✓

reason *They are not affected by foreign pathogen / germs / pathogen and do not participate in fighting against infection*

- (d) what is likely to happen to Walakira if the sickness remains for a longer period?

Death cause the red blood cells would reduce hence his body cannot transport oxygen to different parts and also the number of white blood cells will increase.

- (e) suggest the disease Walakira may be suffering from and why.  
disease..... Malaria.

reason.... The parasite for malaria affect mostly the red blood cells causing them to rupture and reduce in size number.

2. (a) A group of S.2 students collected different kinds of leaves, which they examined; and

recorded their observable features as in table below.

Leaf	Lamina	Venation	Margin	Stalk
R.	Undivided.	Network	Serrated	Petiole
S	Divided	Network	Serrated	Petiole
T	Undivided	Parallel	Entire	Sheath
W	Undivided	Network	Entire	Petiole

Construct a dichotomous key to classify all the leaf specimens

In the table.

(03 marks)

1(a) Specimen with parallel leaf venation --- T

1(b) Specimen with network leaf venation --- go to 2

2(a) Specimen with divided lamina --- S ✓

2(b) Specimen with undivided lamina --- go to 2

3(a) Specimen with Serrated margin --- R 03

3(b) Specimen with Entire margin --- hi.

3. Study the pictures of common organisms in our environment.



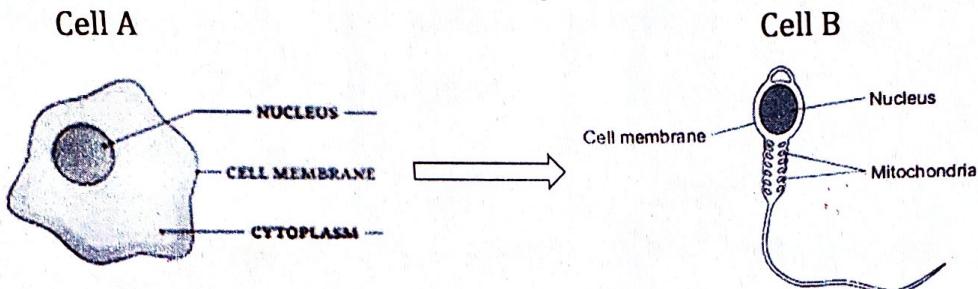
- a) Using the knowledge of classification, put these organisms into two appropriate biological groups (2 marks)

Reptiles / Reptilia eq Snake, Lizard,  
& Insects / Insecta eq Termite & Bee 02

- b) (i) Choose one of the groups above and explain why you put those organisms in the same group

~~Insects~~ Because they have three main body parts. (2 marks)  
 - They also have three pairs of jointed legs.  
~~Reptiles~~ - Their body is covered with scales.

4. Cell A is an animal cell which changed into cell B as shown below:



- a) What change took place? (2marks)

~~Cell A underwent structural modification by developing into a tail and a head.~~ (2 marks)

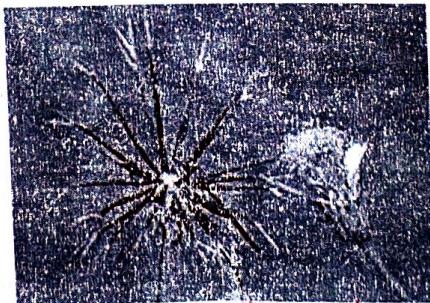
- b) Explain the change mentioned in a) above (2 mark)

~~The modification was to enable the cell swim and reach the ovum.~~ (2 marks)

- c) What biological description is given to cell B? (1 mark)

~~It is a specialised cell / modified cell.~~ (1 mark)

5. A laboratory technician went to the bush to collect specimens. On returning, he noticed many fruits of black jack on his trouser. He picked and threw them away in the compound.



- a) What biological advantage did the black jack achieve? (2 marks)

~~The Black jack is dispersed to a new area where it can germinate into new plants.~~ (2 marks)

- b) Briefly explain how the black jack fruits were able to achieve the advantage mentioned in (a) above. (2 marks)

~~Their mature fruit is light in weight and has hooks which enable it to attach to the skin/clothes of the animal/person.~~ (2 marks)

- (c) How does the achievement mentioned in (a) above contribute to the success of black jack plant species? (2marks)

~~Moving away from unfavourable conditions / diseases~~ (2 marks)

- Colonisation of new habitat to avoid competition for space & nutrients

i. Ivanovsky, a Russian botanist in 1852 discovered viruses. Under his further investigation, he discovered that viruses were very small, very infectious and possessed features for both living and non-living things. In 1985, acquired immunodeficiency syndrome (AIDS) first appeared in America and 2019, covid 19 appeared in China and these two diseases were proved by medics to be pandemic diseases and they are recorded to have caused greater deaths in the whole world. From this information, attempt the following;

(a) State two reasons why viruses are considered to be;

- (i) Living things  
- Are affected by sterilisation and radiations (02marks)
- They can multiply or reproduce to increase in number.
- They have proteins and glycoproteins
- Can change shape of genetic material or are infectious/cause disease

(ii) Non-living things.

(02marks)

- Are not made of cells.
- Don't reproduce independently of the host.
- Don't carry out metabolism outside the body of the host.

(b) Name the virus that is responsible for causing;

(01mark)

(i) Acquired immunodeficiency syndrome (AIDS)

Human Immunodeficiency Virus (HIV)

(ii) Covid 19.

Corona Virus.

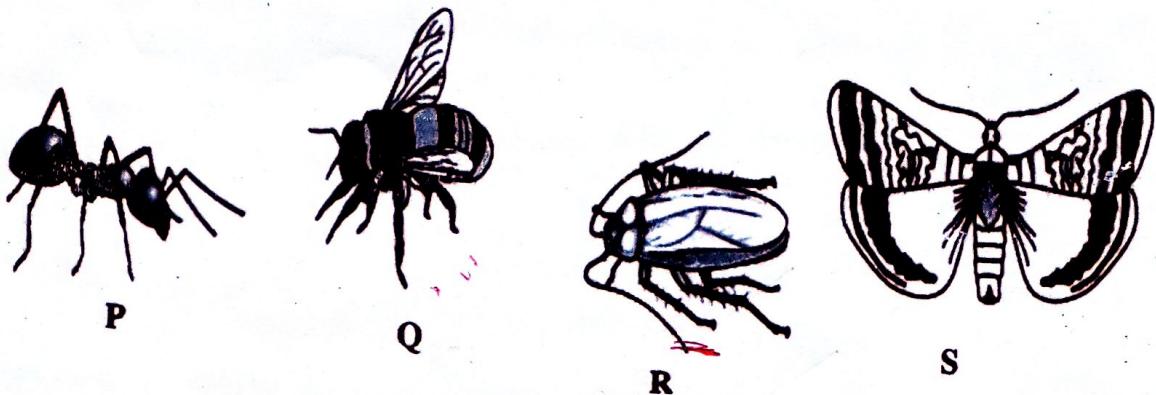
(c) Describe two ways how Acquired immunodeficiency syndrome can be transferred/spread between members of the same family. (02marks)

- Having unprotected sexual intercourse with an infected person.
- Sharing of sharp instruments like razor blades with an infected person.
- Through blood transfusion.
- Maternal birth / through giving birth by women

(d) World health organization together with the government of Uganda emphasized people to get vaccinated in order to overcome covid 19. Explain how vaccination is important in overcoming covid 19. (03marks)

Vaccines introduce weak/diseased germs which stimulate the body to produce more antibodies/white blood cells which would boost immunity and fight against the next pathogens/viruses.

7. During a study tour at zika forest, Nekesa identified the following organisms shown in the pictures. Study them carefully.



(a) Giving two reasons, state the phylum and class to which the above organisms belongs.

(04marks)

Phylum

..... Arthropoda ✓ 01

Reasons for the phylum stated

- Segmented body ✓ 01
- Jointed legs/limbs ✓ 01
- Exo-skeleton

class

..... Insecta ✓ 01

Reasons for the class

- Three main body parts ✓ 01
- Three pairs of jointed legs ✓ 01
- Three thoracic segments ✓ 01

(b) During the study, the tour guide stated that the population of organism Q has reduced, yet they are important to neighboring farmers.

(i) Explain how reduced population of organism Q affects harvest expectation of neighboring tomato farmers.

(02marks)

~~The harvest would be low than expected since 02  
low numbers of Q cause few chances of pollination  
of tomato flowers hence low yields.~~

(ii) Describe two ways that could have resulted into reduction/decline of population of organism

Q.

- Presence of predators/enemies that eat Q. 02
- Natural calamities such as floods heavy rains
- Air pollution and destruction of their habitats through

- (iii) State any three other ways organism R is able to survive in the habitat. (03 marks)
- R has spines on the legs for protection against enemies.
- Has long antennae for sensitivity
  - Has long hind legs for movement and away from enemies
  - lays many (numerous) eggs which increases its chances of survival 03
  - Has a pair of large compound eyes to increase sight

8. A family bought a piece of cultivated land on a hilly place.

a) Describe the problem that the soil would experience during a rainy season.  
(1 mark)

b) What advice would you give to this family to reduce the problem on their land?  
(14 marks)

9. The Ministry of Health in Uganda has a programme on vectors and disease control in communities around Lake Regions. The most recent was on treated nets distribution.

a) i) What is a vector? (1 mark)

ii) Suggest the aim of the above programme by the ministry of health. (1 mark)

b) Suggest to the communities any other ways that can be carried out to achieve the aim of the programme named in (a)(ii) above.  
(13 marks)

.....END.....