NAME:…… STREAM:……

END OF TERM 1 EXAMINATIONS 2023

S.3 BIOLOGY (THEORY)

DURATION: 2 HOURS

INSTRUCTIONS

This paper consists of two sections A and B.

- *Answer all questions in section A.*

  Write your responses in the spaces provided

- *Choose any **TWO** questions in section B.*

  Use sheets/scripts provided to write answers for section B.

FOR EXAMINERS USE ONLY		
SECTION	**QUESTION**	**Marks**
A	**1**	
	2	
	3	
	4	
B		
TOTAL		

SECTION A

1. (a) Complete the table to show the characteristic features of the three groups of organisms.

Use a tick (✓) if the group has the characteristic and a cross (×) if the group does not have the characteristic. The first box has been done for you.

(4)

Group	Can carry out photosynthesis	Have a cell wall	Can be pathogenic
Animal cells			
Plant cells	✓		
Fungi			
Viruses	✗		

(b) The table below shows some characteristics shared by most animals.

Complete the table by giving the missing characteristics and examples.

(4)

Characteristic	Example
they require nutrition	eating food
they respire	releasing energy from carbohydrate
	some animals can fly
they control their internal conditions	
	increase of the population of foxes
they grow	

2. The figure below shows a label from a package of soya beans.

Soya Beans

Nutrition

Typical composition	50 g serving provides
Energy	230 kJ
Protein	8.5 g
Carbohydrate	4.5 g
Fat	4.0 g

(a) From the figure above, what is the major food nutrient in soya beans?

……

(b) What food nutrient from the label is the primary source of energy?

……

(c) State three ways in which the energy is utilized by the body.

……

……

……

(d) Other than soya beans, In each case state any **two** other sources of:

(i) Carbohydrates

……

……

(ii) Proteins

……

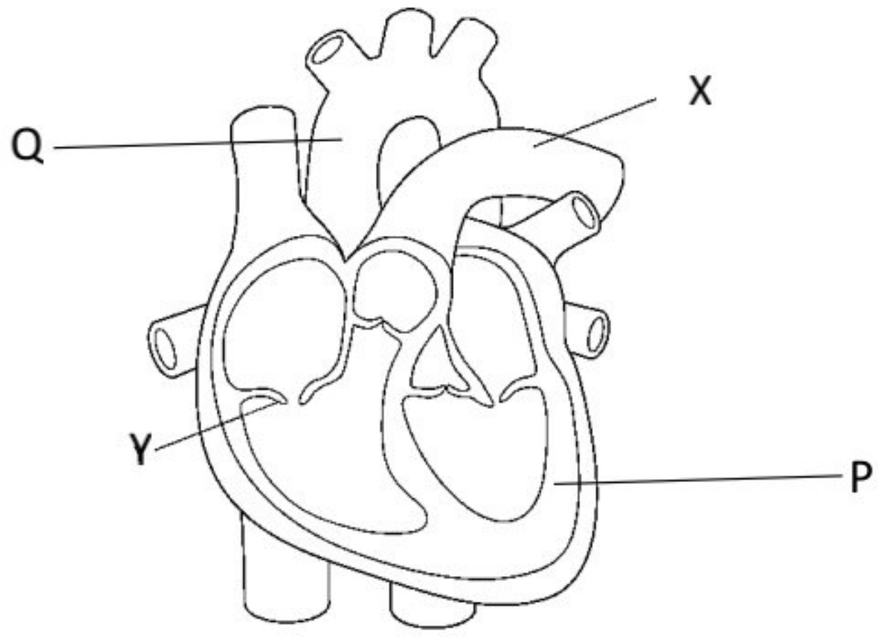
……

(iii) Fats

……

……

3. The diagram shows a section through a human heart.



(a) The blood in vessel X is transported to an organ.

(i) Name the organ.

……

(ii) State two changes to the blood in this organ.

……

……

(iii) What is the function of the part labelled **P** and **Q**?

P ……

Q ……

(b) The table gives statements about blood cells. Some apply to red blood cells and some to white blood cells.

Complete the table by using a tick (✓) or a cross (✗) to show if each statement applies to red blood cells or to white blood cells. The first statement has been done for you.

Statement	Red blood cells	White blood cells
transport oxygen	✓	✗
contain a nucleus		
produce antibodies		
biconcave shape		
ingest pathogens		
numbers may increase following infection		

4. The passage describes how viruses can affect humans.

Complete the passage by writing a suitable word or words in each of the spaces.

Humans are affected by many viruses. For example .....

and .....

One virus, which causes the disease AIDS, is the ..... us. People with AIDS are vulnerable to infection because their ..... system does not work so effectively. This means they are unable to produce ..... blood cells that normally fight off infections by producing specific proteins called ..... that help to destroy pathogens.

Diseases ..... prevented by injecting the body with an inactive form of the virus. The method of injecting is known as ..... and stimulates the body's defence system to produce .....

SECTION B

(Attempt <u>TWO</u> questions from this section)

5. An S.3 student comes to the laboratory to investigate various types of carbohydrates. She is given two solutions by the lab technician. She tests to see if one is a reducing sugar (glucose) and the other one is starch.

Describe two chemical tests she should carry out to identify each carbohydrate. (15 marks)

6. A group of S.3 students are required to carry out an experiment following procedures below as indicated in their learner's textbook.

1. Remove the leaf you want to test from the plant.
2. Half fill a 250 cm^3 beaker with water and boil the water using a Bunsen burner.
3. Using a pair of forceps, hold the leaf in the boiling water for 20 seconds.
4. Turn the Bunsen burner off.
5. Using the forceps, push the leaf to the bottom of a boiling tube and cover it with ethanol.
6. Place the boiling tube in the beaker of very hot water. The ethanol will boil.
7. When the leaf is colourless, remove it from the boiling tube and wash it in cold water for a few seconds.
8. Place the leaf flat on a white tile.
9. Add dilute iodine solution with a pipette, making sure the whole leaf is covered.
10. Any starch present will react with the iodine solution.

Task:

(a)`State what the experiment is about. (2 marks)

(b) Explain the precautios that should be taken when carrying out this experiment. (3 marks)

(c) State the purpose of **step3**. (2 marks)

(d) State the purpose of **step 6**. (2 marks)

(c) What conclusions can be drawn from this experiment. (6 marks)

7. Read the article below, use the information in the article and your knowledge to answer the questions that follow.

Health experts warn of rising heart disease cases.

Dr John Omagino, the executive director of the Uganda Heart Institute, said one in four adults in Uganda have some form of heart disease and one in every 100 babies born has a heart defect. He added: "heart diseases contribute to more than nine percent of all total deaths in the country".

Heart diseases refers to a variety of conditions that affect the heart, from infections to genetic defects and blood-vessel diseases. They are the leading cause of death globally, killing an estimated 17.9 million people per year. Dr Charles Oyo, the commissioner of non-communicable diseases at the Ministry of Health, said heart diseases or the cardiovascular diseases (CVDs) are the biggest causes of death in Uganda and in low and middle-income countries.

Some of the most prevalent CVDs in Uganda are hypertension, stroke and heart diseases, among others. "They contribute a lot to heart failure," he said. Dr Oyo said CVDs are mainly caused by physical inactivity and an unhealthy diet such as food with high sugar content or too much salt. "All of these contribute significantly in terms of increasing cholesterol levels in the blood. These cholesterols are deposited inside the blood vessels including the blood pressure supplying the heart," he said.

He added: "This means each time the heart is trying to pump blood, it has to work excessively hard to pump blood through a very narrow tube to deliver oxygen and that causes the problem to the heart." Dr Oyo added that excessive consumption of alcohol in addition to other risk factors including stress when put together contributes to a number of heart diseases.

***Source*: Daily Monitor: Thursday, 29th/September/2022 By MIKE SEBALU**

Questions:

(a) What do you understand by the term cardiovascular diseases? (2 marks)
(b) What are the **three** major causes of cardiovascular diseases in Uganda? (3 marks)
(c) Why are heart diseases the leading cause of death globally? (3 marks)
(d) Describe how stroke comes about. (4 marks)
(e) Other than alcohol, salt and cholesterol intake, state **three** other ways of preventing heart diseases at home. (3 marks)

END