

NAME:.....

CENTRE/ INDEX No.....

SCHOOL.....

SIGNATURE:.....

553/1
BIOLOGY
PAPER 1
July/August 2024
 2½ hours



WAKISSHA JOINT MOCK EXAMINATIONS

Uganda Certificate of Education

BIOLOGY

Paper 1

Theory

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of seven examination items. It has two sections; A and B.

Section A has three compulsory items. Responses to this section should be written in the spaces provided.

Section B has two Parts; I and II. Answer one item from each part. Responses to this section should be written in the answer booklet(s)/sheets provided.

Answer five items in all.

Any additional item(s) answered will not be scored.

FOR EXAMINERS' USE ONLY				
SECTION		ITEM	SCORE(S)	EXAMINER'S SIGNATURE
A		1		
		2		
		3		
B	PART I	4		
		5		
	PART II	6		
		7		
TOTAL				

SECTION A

Answer all the items in this section in the spaces provided.

Item 1.

Jane, a passionate farmer has been attending to her potato garden with care. On one fateful day, a sudden hailstorm struck her garden, leaving behind a trail of destruction. She worried about her family's food security and wonders how she can save the situation. Their delicate leaves are torn, and the stems bear scars from the impact. The once-promising flowers lie scattered on the ground. Jane fears that this damage will affect the tuber formation. She knows that potatoes are a staple food in her family's diet, and a poor harvest could lead to hunger and hardship.



Fig. 1: A section of Jane's potato garden



Fig. 2: Another section of Jane's potato garden. (image source: alamy.com)

Task

- (a) Identify the plant organs that were affected by the hail stones. (3 scores)

- (b) Explain how the functioning of the plant processes were affected by the hail stones. (6 scores)

- (c) Explain what Jane can do to overcome this and ensure a reasonable harvest despite the setback and/or also avoid similar occurrences in future. (3 scores)

Item 2

Peter, a secondary school student, finds himself in a risky situation. He is part of a group of peers who engage in smoking—an activity that poses serious health risks. One day, while they are smoking, Peter spots his teacher on patrol duty nearby. Panic sets in, and he runs from the scene. His heart races, adrenaline surges, and he runs as if his life depends on it. When he was stopped, he could not talk because he was breathing heavily and coughing terribly.

Task

- (a) Explain the roles played by the body parts involved in coordinating his actions. (6 scores)

- (b) What are the likely effects of Peter's life style?

(3 scores)

(c) How can peter change his life style for the better?

(3 scores)

Item 3

Kato, a heterozygous normal husband and Karungi, heterozygous normal wife produced a Sickler child named Muhumuza three months back. Their first born Kakyoo was however, normal. During pregnancy, Karungi never visited hospital for checkup. At birth, baby Muhumuza had a low birth weight than expected of a normal new born. Currently, Karungi is still experiencing recurrent pain and the baby also frequently falls sick.

Task

(a) Explain to the parents how the genetic conditions in their children came about? (6 scores)

(b) Mention the possible causes of the current health states of the mother and Muhumuza?

(3 scores)

- (c) Suggest suitable advice to the couple and explain how they may ensure normal delivery at birth and normal health state of born children. (6 scores)

SECTION B

Part 1

Answer only one item from this part.

Item 4

The government of Uganda has encouraged foreigners to invest in the mining industry in order to create jobs for citizens. While this initiative may lead to short-term economic growth and employment opportunities, it is also likely to pose significant challenges in the long run.

Task

Explain to the community the environmental challenges they are likely to face and how the natural resources are likely to be affected. Advise on how to minimize the effects of the challenges and the benefits thereafter.

(15 scores)

Item 5

With increase in population, Agricultural land is becoming limited and consequently causing food shortage. In an attempt to increase on productivity farmers are applying Agro-chemicals. Scientists have argued that the use of Agro-chemicals will negatively impact on the environment in the long run. The ministry of Agriculture and animal husbandry is now in dilemma and yet want to promote food security.

Task

Justify the concern raised by the scientists to the ministry and advise farmers on how they can still increase food security. (15 scores)

Part II

Answer only one item from this part.

Item 6

Sarah, a senior one girl was experiencing general body weakness a week towards school interhouse athletic competitions and thus was scared that she may not participate in these competitions. The school nurse didn't find her with any disease and advised her to first eat before engaging in any sports activities especially on the competitions day, which she did by taking a meal of posho and beans. After resting for about an hour, she felt stronger and managed to even win her race. However, after the competition Sarah experienced deep breathing and muscle pain causing her to walk with a lot of difficulty.

Task:

Describe the process that led to the success of Sarah and why she experienced deep breathing and difficulties in walking thereafter. How did she eventually recover? (15 scores)

Item 7

Jack, a high school student, is a passionate athlete who excels in basketball. He recently started a rigorous training program to improve his performance on the court. Despite eating a diet rich in carbohydrates, proteins, and vitamins recommended by his coach, Jack often experiences fatigue and shortness of breath during intense basketball practices. He notices that his recovery time after workouts is longer than usual, hindering his progress and overall performance on the court and that he doesn't urinate much after playing even after drinking water.

Task:

Identify the roles of the processes / body parts involved in Jack's metabolic reactions. Explain the biological causes of the events experienced by Jack and explain how they are overcome. (15 scores)

END