

456/1
MATHEMATICS
Paper 1
5 August 2024
2¼ hours



ENTEBBE JOINT EXAMINATION BUREAU
Uganda Lower Secondary Certificate of Education

MATHEMATICS

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper consists of **two** Sections: **A** and **B**. It has **six** examination items.*

*Section **A** has **two** compulsory items.*

*Section **B** has **two** Parts: **I** and **II**. Answer **one** item from each **Part**.*

*Answer **four** examination items in all.*

Any additional items answered will not be scored.

All answers must be written in the answer booklets provided.

Graph paper will be provided.

Silent non-programmable scientific calculators and mathematical tables with a list of formulae may be used.

SECTION A: COMPULSORY

Attempt all items in this Section

Item 1

Birabwa is a market vendor who sells vegetables in Jinja Central market. She buys her produce from farmers in nearby farming villages. This week she bought 8 packs of tomatoes containing 10 tomatoes from a farmer's garden. She sold 25% of the total number of packs before her long time friend Afua came to visit her and decided to take her out for a drink at a hotel.

At the hotel, the friend ordered for 2 cups of hot coffee worth Shs 5,100 and 2 plates of food each at Shs 20,000. While enjoying their evening meal, Afua informs Birabwa that she goes to the hotel gym after every four days. Birabwa is impressed and she also resolves to come to the same gym every after a week to do exercise.

After the meal and the chat, her friend gave Birabwa Shs 20,000 for transport back to the market. Unfortunately, she found that one sixth of the remaining packs of tomatoes had been damaged and she could not sell them. She decided to re-pack the undamaged tomatoes in new packs of five tomatoes.

Task:

- (a) What percentage of the total number of tomatoes is damaged?
- (b) How many packs of fives and five fives did she get after packing again?
- (c) After how many days will she meet her friend again at the hotel gym?
- (d) How much money (in words) did her friend spend on the outing?

Item 2

Your uncle owns a small bakery and plans to bake two types of loaves of bread: **whole wheat bread** and **white bread**. Due to the bakery's oven capacity, your uncle can bake at most 15 loaves of bread in a day. He wants to bake at least 3 loaves of whole wheat bread. Additionally, he wants to bake more whole wheat bread than white bread because it is more popular among his customers.

The selling prices are as follows: whole wheat bread is sold at Shs 6500 per loaf while white bread is sold at Shs 5000 per loaf. To cover his costs and make a profit, your uncle needs to earn more than Shs 30,000 from the sales each day.

Tasks

- (a) Write mathematical statements that show the relation between the whole wheat bread and white bread.
- (b) Show the feasible region of the relation on a Cartesian plane.
- (c) How many loaves of each type should your uncle bake in order to make maximum profit?

SECTION B

Attempt only **two** items in this Section, choosing **one** item from each **Part**

Part I

Choose only **one** item

Item 3

In preparing for the upcoming national voter registration campaign in Uganda, the electoral commission needs to determine the optimal opening time for registration centres across various districts. This decision aims to support maximum voter registration and ensure efficient processing of the data of the citizens who are eager to participate in the upcoming elections. Here are the arrival times of citizens in minutes past the scheduled opening time; 8.00 am.

11	66	21	88	33	67	41	45	47	41
27	62	32	43	31	34	66	20	21	36
26	75	80	45	12	44	58	48	42	38
56	63	68	24	21	65	68	63	72	38

Task

- (a) Based on calculations using the collected data, suggest an opening time for voter registration centres.
- (b) Following advice to open registration centres when at least 50% of the expected citizens have arrived, determine the opening time.
- (c) As the electoral commission of Uganda, which of the two suggested opening times from (a) and (b) above would you choose and why?

Item 4

In a school survey, 250 students were asked about their internet usage habits. They were asked to choose between **three** activities; **Social media** (like sports and TikTok), **academic work** (such as research and homework) and **playing games**.

The findings showed that 165 used the internet for social media, 130 used it for academic work and 100 used it for playing games. Among them, 20 students used it for both social media and academic work only, 60 used it for both social media and playing games and 50 used it for both playing games and academic work.

Additionally, no students exclusively used the internet for playing games. Some students did not use internet. Now the school would like to establish percentage of students who used social media so that they decide and set rules for its use.

Task

- (a) Calculate how many students use the internet for at least one of these activities.
- (b) Determine how many students do not use internet at all.
- (c) Based on the findings, advise the school with a reason on whether to set rules or not for social media use.

Part II

Attempt one item from this Part

Item 5

Sir Thomas plans to build a small house next to his main house where he can always rest in his free time. The house is to have sides in form of a cuboid with dimensions of $12m$ by $8m$ by $4m$ and a pyramidal roof. The house will have three windows of dimensions $0.9m$ by $0.6m$ and a door of dimensions $2.1m$ by $0.8m$. He plans to paint the outer walls of the house using 1 litre of tin paint. Each tin of paint costs Shs 15,000. A tin can paint $5m^2$.

Tasks:

- (a) Help Sir Thomas to calculate the surface area of the wall to be painted.
- (b) How many tins of paint will be required to paint the house?
- (c) How much money will he spend on paint for the whole house?

Item 6

Two friends, Ouma and Nafula have been working in Dubai. They recently returned to Uganda and at Entebbe International airport they exchanged their United Arab Emirates currency the Dirham (AED) worth 5,000 for the Uganda shillings (UShs) at an exchange rate of 1 AED for UShs 1011.

They later visited Beach *A* – Imperial Botanical beach and wanted to also visit *B* – Tongolo Resort beach which is 50km north of Beach *A*. Since there is no direct road connecting Beach *A* to Beach *B*, they decided to hire a motor boat such that they would use water transport to reach Beach *B*.

The boat moved 20km from *A* on a bearing 085^0 , then another 20km on a bearing of 320^0 and then stopped for a moment. The boat hiring company charges UShs 10,000 for every one kilometer of distance covered.

Task:

- (a) How much did the two friends receive in UShs in exchange for their Dubai currency?
- (b) On what bearing should the captain of the motor boat move to reach beach *B* from where he had stopped for a moment.
- (c) What was the total expenditure on transport from *A* to *B*?