PRE-REGISTRATION EXAMINATIONS-2025

SET 3

Uganda Certificate of Education

MATHEMATICS

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper 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 item(s) answered will **not** be scored.*

***All** answers **must** be written in the answer sheets provided.*

Graph paper is provided.

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

Answer **all** items in this section.

Item 1

Your school librarian has bought a bunch of books in two boxes to be put in the carbines of the new library las term. One box contains 48 books of Maths and the other contains 54 books of English. She wants to know how many books to put the carbines so that each carbine has the same number of books and with no book remaining in the boxes.

This term, she went back with One million two hundred thousand shillings to restock the library. She used two thirds of the money to buy Physics books, sixty percent of the remainder to buy literature novels and the rest of the money is to be spent on refreshments and transport in the ratio 3:5 respectively. She had budgeted $UGX150,000$ for transport. She doesn't know whether the remaining amount is enough for transport.

Task

(a)(i)Help the librarian know how carbines will be filled by the books.

(ii)How many books of each subject will each carbine have?

(b)How much did she spend on refreshments?

(c)Is the remaining amount enough for transport, Justify your answer?

Item 2

Resty wants to register for the Anglican confirmation classes this year. The Reverend suggests that any child who is making 12 years this year is eligible to attend the confirmation classes, unfortunately she doesn't know her age since she is a total orphan. All she remembers is that she is five years older than her brother Aaron and that the product of their ages is 84.

Additionally the Reverend wants both boys and girls to attend the classes from each of the zone that make the parish. He informed the zone leaders that he wants *less than* 6 boys and *less than* 4 girls from each zone. He also informed the zone leaders that the total number of children from each zone should *not be less than* 7. The Reverend wants to know the maximum number of participants to consider from each zone.

Task

(a)   Help Resty understand whether she is eligible to attend the confirmation classes this year.

(b)   (i)   Write down mathematical inequalities to represent the above information.

         (ii)   Show clearly the feasible region using the inequalities in b(i) above.

         (iii)   Help the Reverend find the maximum number of participants to consider from each zone.

SECTION B

This section has two parts; **I** and **II**

Part I

Answer **one** item from this part

Item 3

Last year during the SESEMAT workshop, the teachers suggested that this year a cocktail wine be introduced especially in the evening hours of supper time. The organizers referred the issue to the Executive Committee for consideration. The committed advised that the cocktail wine be introduce of less than 40% of the teachers took only one drink last year.

Information available notes that out of the 150 teachers who participated last year, it was found out that 58 drank Juice, 66 drank Water and 57 drank Soda. 10 teachers drank Water and Juice, 11 drank Juice and Soda while 13 drank Water and Soda. Some teachers drank all the three types of drinks and all the teachers drank at least one of the drinks.

Task

Advise the organizers whether to introduce the cocktail wine or not. Justify your answer.

Item 4

The pre-registration exams help the academic office to assign personal numbers and find students to be put in Biology P.3. The school puts half of the students in Biology P.3. below are the scores of the students in this year's pre-registration examination.

22	30	27	66	74	59	41	45	62	70
41	37	65	62	41	54	37	43	80	21
55	25	14	27	30	32	55	59	40	55
66	92	83	54	33	45	62	20	51	49
32	33	57	50	55	51	59	60	40	70

Task

(a)   By clearly organizing the scores of the students, help the academic office find the average score of the class.

(b)   What score will the academics office use to allocate students to Biology P.3.

Item 5

Elijah and Mangara both went to the same electronic shop along Kampala road to buy a new Fridge valued at UGX1,500,000. The shop offers a hire purchase term by a customer paying 12% of the cash price and the balance subjected to a 20% interest per annum for a period of 12 monthly installments. Elijah paid cash while Mangara bought the fridge on hire purchase. The shop had bought the fridge from china at UGX 1,050,000.

Elijah 's uncle in Canada wants to buy a piece of land. He sent Elijah **2500**$ to buy the land on his half with intention of buying it at a higher price. He enters the forex bureau which has displayed the selling and buying prices for the dollar as follows.

Selling Price: **1**$ at $UGX3650$ and Buying Price: **1**$ at $UGX3640$

The valuer estimates that the land will appreciate at 20% at the end of the first year and also appreciate by 18% by the end of the second year. Elijah's uncle wants the estimate price of the land after two years. He will sell the land if the estimate price is higher than $12.5\ millions$.

Task

(a)   On which customer did the shop make more interest.

(b)   How much money did Elijah receive from the forex bureau.

(c)   Should the land be sold after the two years? Justify your answer.

Item 6

Kyakabi Engineers Consult a construction company has been contracted to marking the Soroti− Gulu road. They were not very sure of the distance in between, so they set out two of there engineers Ian and Zion from Kampala. Ian went 320km due East to Soroti while Zion went 384km North East to Gulu.

The company pays UGX13,500 to every employee for each kilometer marked and there are 25 employees. The government levies a 25% income tax as PAYE for all wages received on contracts.

At Dokolo trading center there is triangular flower garden measuring 85m by 90m by 95m. they are supposed to draw a circular mark outside the garden touching the three vertices of the triangular garden. They want to erect a sign post in the center of the garden and a path from the center to the three vertices of the garden.

(a)   Help the construction company obtain the distance between Soroti and Gulu.

(b)   How much will government get by taxing these employees of the company.

(c)   What is length of the path from the sign post to the flower garden corners.