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MATHEMATICS
Paper 1
2025
$2\frac{1}{4}$ hours

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.

SECTION A

Answer **all** items in this section.

Item 1

Your school is buying three computer types DELL, Lenovo and Hp. The ICT teacher has provided that the ratio in numbers of Dell to Lenovo is 1:2 and the ratio of Lenovo to Hp is 6:7. The bursar has funds available for 80 computers but doesn't know how many Hp lap tops he will buy.

The school with an enrollment of 2500students also wants to construct a swimming pool. A survey was conducted to know which students can swim. It was noted that sixty percent of the students are males of which three of fives of the males can swim. Also it was noted that 80% of the females can swim. A swimming pool will be constructed if at lest 500 students can swim.

Task:

(a)   Recommend to the bursar find how many Hp lap tops he will buy.

(b)   Assist the school administration decide on whether they should go ahead and construct the swimming pool.

Item 2

A printing company has been contracted to print your school's calendars for sale on this year's school day. For this school's order, they want the order done in 45 hours for quick delivery. The company has nine workers who can do the work in 55 hours. The manager wants to know how many more workers he needs to hire to complete the task. The charges for hiring the buses are shs. 400,000 for bus and shs. 350,000 for the coaster.

The head of Geography department has organized to take 576 of the students to Kasenyi Landing Site for a Geography tour using a bus and a coaster. The bus can carry 64 students and the coaster can carry 48 students. The number of coasters should be more than that of buses since they are cheaper and He has to use less than 10 coasters.

Task

(a)   Advise the manger whether the workers are enough for the order.

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

        (ii)   By shading the unwanted regions, show the feasible region satisfying the four inequalities on a graph.

        (iii)   Use your graph to determine the number of buses of each type that should be used to minimize the cost.

SECTION B
This section has two parts; **I** and **II**
Part I
Answer **one** item from this part

Item 3

The FN students bought pineapples to make juice during the exhibition day from the agriculture students who had planted them in the previous rainy season. The masses of the pineapples are given in the table below. They wanted to know the mass that makes good juice.

32	41	26	31	39	17	39	36
43	29	28	20	18	35	49	29
35	32	21	37	31	42	47	28
24	40	16	33	36	34	27	37
44	33	14	38	11	45	23	46

The other 35 students belong to three clubs Biology, History and Fine Art. The class teacher wants to add all those that belong to only one club to the new Maths club that has started this term. 20 students belong to history club, 13 belong to biology while 17 belong to Fine art club. 9 students belong to both biology and fine art, 3 belong to biology and history while 8 belong to only History and Fine art. 2 belong to all the three clubs.

Task

(a)   Help the students record the:

    (i)   Average mass of the pineapples

    (ii)   Mass weighed by majority of the pineapples.

    (iii)   The class rejected 30% of the pineapples for not making good juice, what is the minimum mass of the pineapples that makes good juice.

(b)   Help the class teacher obtain the actual number to be put to the Maths club.

Item 4

Your Uncle who is a teacher has been visited by his best man who has come with his little child at 9:00pm. So your aunt has prepared tea unfortunately there is power black out. So she goes to her cup board that has 8 big cups and 6 small cups. She is to pick two cups randomly to make tea and the cup that she picks is not replaced. She prefers that she will serve tea if she picks two different cups.

In there discussion they agreed to buy soda, beers and water from three suppliers A,B and C for the three ceremonies of introduction, weeding reception and after party. Supplier A was contracted to supply 10 crates of soda, 20 crates of beer and 30 cartoons of water. He

sells each crate of soda at shs 20,000, each crate of beer at shs 30,000 and each carton of water at shs 40,000 for the introduction ceremony

Supplier B was contracted to supply 15 crates of soda, 15 crates of beer and 20 cartoons of water. He sells each crate of soda at shs 25,000, each crate of beer at shs 35,000 and each carton of water at shs 45,000 for the wedding reception.

Supplier C was contracted to supply 20 crates of soda, 10 crates of beer and 15 cartoons of water. He sells each crate of soda at shs 30,000, each crate of beer at shs 40,000 and each carton of water at shs 50,000 for the wedding reception. Your uncle's colleges at school have told him that they will fully sponsor the most expensive function.

Task:

Will she make tea of not? Justify your answer.

Assist your uncle identify the function to be sponsored by his collegues.
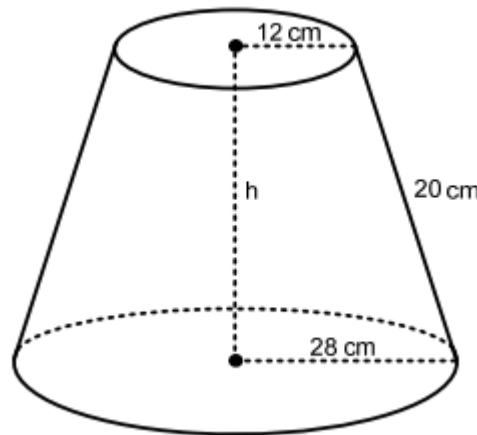
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SECTION B
This section has two parts; **I** and **II**
Part II
Answer **one** item from this part

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Item 5

Tim has just woken up at 4:45am and is late for the morning lessons. He goes very fast to the tap to fetch water using this bucket that fills at a rate of 2 cubic centimeters per second. He has get out of the dormitory in time. The warden closes the dormitory at 4:55am every day.

Task

Will Tim get out of the dormitory in time? Justify your answer.

Item 6

The table below shows the income tax rates of a certain country for the government employees.

TAXABLE INCOME (SHS.PER MONTH)	TAX RATES IN %
1 – 100,000	7.0
100,001 – 200,000	15.0
200,0001 – 400,000	22.0
400,001 – 700,000	35.0
700,001 and above	45.0

Kintu earns a gross monthly income of shs. 1,250,000 which includes the following allowances;-

- Marriage allowance of 12% of the gross income.
- Child allowance of shs. 100,000 per month.
- Housing and transport allowance of shs. 1,572,000 per annum.
- Medical care of shs. 109,000 per month. Calculate the;

Kintu wants to know the percentage of his income that is deposited to his **TIN** (Tax Identification Number)

Task

What percentage of Kintu's income goes is deposited to his **TIN.**

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END

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