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MATHEMATICS
Paper 1
July /August, 2025
2 ¼ hours

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GLORISO EXAMINATIONS BOARD (GEB)-KAMPALA

SECONDARY SCHOOLS JOINT MOCK EXAMINATIONS, 2025

Uganda 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* f**our** *examination items in all.*
- ✓ *Any additional item (s) answered will* **not** *be scored.*
- ✓ **All** *answers* **must** *be written in the Answer booklet (s) provided.*
- ✓ *Graph paper is provided.*
- ✓ *Silent, non – programmable scientific calculators and mathematical tables with a list of formulae may be used.*

SECTION A:

Answer **all** *items in this section.*

Item 1.

Ruben wants to design a right angled triangular garden in his backyard. The base of the triangular garden is **12 metres** long and the height is **8 metres**. He plans to divide the garden into three section to plant different flowers. Ruben decides to allocate a third of the garden to roses, a quarter to tulips and the remaining section to sunflowers. He realizes that the roses need **20%** of their section to grow properly, the tulips need **15%** and the sunflowers require **3.5%.** Ruben decides to install a decorative border around the perimeter of his garden so that it just touches the edges of the garden and the border costs **UGX 35000** per metre. Ruben has a house valued at **35 million shillings**. Its value increased by **20%** after the first year but in the second year, the value of the house depreciated by **10%.**

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Task:

(a) What is the total cost of installing the decorative border?
(b) What is the area in square meters allocated to each type of flower?
(c) Find out how many square metres of each flower bed should be allocated for optimal growth.
(d) Find the value of his house at the end of the second (2^{nd}) year.

Item 2.

A certain manufacturing factory makes **two** types of hoes **A** and **B**. The following conditions applied to daily production for the month of June, 2025.

- Each type of **A** costs **sh.3,000** and each type of **B** costs **sh.5,000** and the manufacturer has a maximum of **sh.450,000** available.
- Due to labour shortage, the production of type **A** plus **Four** times that of **B** should not exceed **160**.
- A study of the market recommended that the number of type **B** produced should not exceed twice the number of type **A** produced.
- The manufacture gets a profit of **sh.1000** from the sale of type **A** and **sh.2000** from that of type **B**.

Task:

(a) Given that x and y represent hoes of type A and type B respectively, write down five inequalities satisfying the above conditions.
(b) Show graphically the region containing the points satisfying the above conditions.
(c) Find the number of each type of hoe that should be made to obtain the greatest profit hence determine the total profits the manufacturer gets in that month.

SECTION B

This Section has two Parts; **I** *and* **II**

Part I

Answer o**ne** *item from this part.*

Item 3.
A parent intends to make shopping of scholastic materials for his children who are going back to school for a new term by the names of Jane, Mary and Darin. They budgeted as below basing on the list of requirements that they were given by their class teachers.

- Jane: **6** exercise, **3** pencils, **2** Graph books, **3** pens
- Mary: **3** pencils, **1** Graph book, **6** exercise books, **3** pens
- Darin: **2** Graph books, **4** exercise books, **3** pencils and **5** pens

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At that time the prices were **1** Graph book costs sh. **2000**, **1** pencil **sh.100**, **1** exercise book **sh.1,500** and **1** pen **sh. 500**.

On reaching school they found out that the canteen manager had increased prices of the items by **10%** and also they found out that the school administration had decided that on each item listed they should increase the number for each by **2** since school administration had decided that the students extend by two weeks when the term ends in order to compensate for the time students had lost the previous term.

Before leaving their home, they were given by their father **sh. 200**, **800/=** so that they can finish the clearing process at school and then after wards they share equally the remaining money to be used as their pocket money.

Task:
(a) Assuming they were to buy the items before going to school, using the matrices help the father to determine how much he would give to each child.
(b) By use of matrices determine how much each child paid to the canteen attendant in order to acquire the items.
(c) Help the children determine how much each shared as pocket money after buying the items from the school canteen.

Item 4.
A school is wishing to offer bursaries to sports men and women as long as more than **50%** play at least one of the games in Football (F), Net ball (N), and Basketball (B) while more than **40%** must know how to play at least two of the three games. It was discovered that out of **85** students who had applied, **36** students played football, **33** played Netball while **30** played Basketball. The number of those who played Netball and Basketball only is **4**, Football and Basketball is **16** while Football and Netball is **9**. Those who played none of the three games are three times those who played all the three.

Task
(a) Basing on the calculation from the information given, advise whether the school should offer sports bursaries.
(b) Calculate the probability that a student picked at random played only one sport game.

Part II

Answer **one** *item from this part*

Item 5.

Onzima and Kapere are employees of Crown Beverages company limited. They earn monthly gross income of **115** Euros and **215** Euros respectively. Crown Beverages company limited compute and deduct income tax from their employees using the tax bands as indicted in the table below.

Income (UGX.)	**Tax rate (%)**
000000-240,000	0
240,001-340,000	5
340,001-490,000	10
490,001-565,000	25
Above 565,000	30

Note: The exchange rates are **1Euro = UGX. 4,000**.

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Task:

Determine, for each employee the

a) Taxable income
b) Income tax
c) Net income.

Item 6.

A bucket of homogeneous paint is in shape of a frustum with an open end of diameter **28cm**, bottom diameter of **18 cm** and **22 cm** deep. The bucket of paint is used to paint a cylindrical pillar of a storeyed building. The pillar measures a diameter of **100m** and is 140m high.

Two hundred thirty-five litres of the paint is made by mixing three paints **A**, **B** and **C**. The ratio by amount of paint **A** to **B** is **4:5** and that of **B** to **C** is **6:8**. Paint A costs **sh. 7200** per litre, paint B costs **sh. 18,000** per litre and paint C, **sh. 6375** per litre.

($\boldsymbol{Take\ \pi = \frac{22}{7}}$, **1** ***litre of paint can paint*** **440** ***square meters***)

Task:

Determine;

(a) i) the number of litres of paint needed to paint the cylindrical pillar.

ii) the capacity of the bucket in litres.

iii) the number of buckets of paint required to paint the pillar.

(b) i) the amount of each paint in the mixture.
ii) how much is 1 litre of mixture.

****THE END****