WAKISSHA JOINT MOCK EXAMINATIONS

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 **four** *items in all.*

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

All *answers* **must** *be written in the Answer booklet(s)/sheets provided.*

Graph Paper is provided.

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

Item 1

Musa bought 25 text books and 35 exercise books at Ugx. 135,000 from Kampala modern styles bookshop. From the same bookshop Menya bought 21 text books and 38 exercise books and spent Ugx. 13,000 less than Musa's expenditure.

In Mukono bookshop the cost of a text book is 5% less and that of an exercise book is 5% more than in Kampala modern styles bookshop. Menya still bought the same number of text books and exercise books and even Musa from Mukono bookshop.

Task:

(a) As a senior four student, help Musa and Menya to find out the price of an exercise book and a text book in Kampala modern styles book shop.

(b) Which bookshop would you advise Musa and Menya to buy from and why?

Item 2

Aisha and Zaharah are sisters who visited their parents on 1st-June-2025. On that day, Aisha resolved to visit their Parents every after five days while Zaharah resolved to visit them every after eight days, however Aisha is wondering whether they can ever visit their parents together in the near future for purposes of organizing a party for them.

Aisha is twice as old as Zaharah, they have both agreed to contribute to the party in the ratio of their ages. Zaharah found out that she will contribute Ugx 650,000, Aisha has to borrow 30% of her contribution which she had to withdraw from her account using a four-digit pin in base five after converting 179_{ten}.

Aisha can wash plates in four hours while Zaharah can wash the same number of plates in six hours. They are planning to work together on the party day but they don't know how much time they will take.

Task:

(a) Help Aisha to determine the date in the near future on which they can hold the party.

(b) Determine the amount Aisha borrowed.

(c) Help Zaharah to find the actual four-digit pin to use.

(d) Determine the time they will both take to wash the plates.

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This section has two parts; I and II

Part I

Answer only one item from this part.

Item 3

A poultry farm has three units; Sunrise, Meadow and Harvest. Each unit produces eggs and broilers with the following monthly output.

Sunrise: 25 trays of eggs and 25 broilers.

Meadow: 50 trays of eggs and 20 broilers.

Harvest: 40 trays of eggs and 15 broilers.

The farm sells each tray of eggs at Ugx. 10,000 and each broiler at Ugx. 20,000. The farm pays VAT of 20%. To optimize the packing process, the farm owner Mr. Owens decides to weigh a sample of 900 eggs and classify them according to their mass (in grammes) as shown in the frequency table below;

Mass in grammes	35 – 39	40 - 44	45 – 49	50 - 54	55-59	60 - 64
No's of eggs	40	180	320	210	120	30

Task

(a) Find the:
   (i) Total sales of the farm if all the eggs and broilers were sold.
   (ii) Total income from the sales of the farm every month.

(b) (i) Determine the median mass of an egg to the nearest value from the table above.
   (ii) What would be the percentage of eggs that would be classified as larger?
   (over 54 grammes)

Item 4

The sports teacher of your school is taking learners to participate in post primary games. The main games that the school will participate in are football, volleyball and Netball. However, he decides that they will participate in other games if the probability of getting a learner that plays none of the three games is more than 0.15. His target is to take more than 60 learners who play either football or volleyball. All the 75 learners he is taking play at most two games, 9 play only football, 12 play only volleyball and 5 play only Netball. 10 learners play volley ball and netball. 32 play football or volleyball but not Netball. The number of learners who play football is equal to those who play volleyball.

Task

(a) (i) Determine the number of learners who play none of the three games.
   (ii) What is the probability of selecting a learner who plays none of the games?

(b) Is the teacher's target reached; give a reason for your answer.

*Answer only **one** item from this part.*

Item 5

Francis deals in buying and selling of land. He has a plot of land on sale at Ugx. 15,000,000 cash. However, he also sells it at hire purchase by accepting a deposit of 60% of the cash price and then pay Shs. 815,000 per month for a year. Zura does not have cash and she wants to buy this plot but she is not sure of the total amount she will pay for it.

Francis has a land surveyor to mark the boundaries of the plot. The surveyor marks three points O, A and B in a triangular form on which $\overline{OA} = \underset{\sim}{a}$ and $\overline{OB} = \underset{\sim}{b}$. Points C and D are placed in the middle of OA and AB respectively. Another point E is to be marked on BC such that $\overline{BE} = \frac{2}{3} \overline{BC}$. Francis wants to know if Points O, E and D are collinear so that he pays the surveyor.

Task:

1. (a) What is the total amount of money that Zura will pay for the plot?

    (b) (i) Express the vectors $\overline{BE}$, $\overline{OE}$ and $\overline{BD}$ in terms of $\underset{\sim}{a}$ and $\underset{\sim}{b}$

    (ii) Should Francis pay the surveyor?

Item 6

Your sister works as a production manager of a company that deals in manufacturing of school laboratory supplies. The company has received an order of making 1420 pyramids for a certain school. The school wants a Pyramid with a square base measuring 6 cm and slanting edge of 7 cm. Your sister must submit a sketch that is to be folded to make the Pyramid that the school wants but she is finding it hard. The company packs the pyramids in a box that measures 66 cm by 24 cm by 15 cm and the manager wants to know the number of boxes that will be needed to pack all the pyramids that the school wants, as there only 5 boxes available in stock.

The company manufactures and sells each Pyramid at Shs. 25,000 and the company manager receives a commission of 12% on the first 500 pyramids and then 8% on the pyramids excess of 500. Your sister wants to know the total commission she will receive from the order made by the school.

Task

(a) (i) Help your sister to sketch the diagram she is to submit.
    (ii) How many pyramids can be packed in the box?
    (iii) Are the available boxes enough for the pyramids ordered for?

(b) Obtain the total commission that your sister will get from the order.

END

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