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MATHEMATICS
Paper 1
(Theory)
May /June 2026
 $2\frac{1}{2}$ Hours



ASK INTEGRATED TEACHERS' EXAMINATIONS BUREAU LTD

Uganda Lower Secondary Certificate of Education

S.4 PRE MOCK SET I ASSESSMENTS 2026

MATHEMATICS

PAPER 1

INSTRUCTIONS TO CANDIDATES:

*This paper consists of **two** sections; **A** and **B**.*

It has six examination items.

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

*All responses **must** be written in the answer booklet(s) provided.*

*Section **B** has two parts; **I** and **II**. Respond to **one** item from each part.*

Responses to each item should start on a fresh page.

*Respond to **four** items in all.*

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

SECTION A

(Respond to all items in this section with in the spaces provided)

Item 1

The Executive Director of AITEL Examinations Bureau has allocated a new digital storage system to the IT department to support secure handling of candidate records. The system has a total capacity of 42 terabytes. The department plans to use:

- 25% of the storage for archiving scanned answer scripts
- 25 of the storage for storing video recordings of examination sessions
- The remaining space will be used for storing encrypted candidate bio-data.

However, the Director of Systems advised that half of the video storage should be mirrored for backup purposes to prevent data loss. The IT team implemented this recommendation.

Tasks

- a) If the total storage capacity is 42 terabytes, determine the percentage occupied by video recordings.
- b) Determine the fraction of the storage used for scanned answer scripts.
- c) What percentage of the storage was used for backup of video recordings?
- d) What percentage of the storage was used for encrypted candidate bio-data?

Item 2

The Executive Director of LISSA (Supporting and Sustaining Lives) donated a financial package to the staff of the organization's IT department to strengthen their welfare and operations. The total package was UGX 400,000.

The staff initially agreed that each member would contribute UGX 5,000 from their own allowances to supplement the package. However, 10 members later opted out of the plan. The remaining staff decided to top up their contributions, and together they raised UGX 480,000.

This touched the hearts of the coordinators, who then decided to purchase crates of bottled water for the team. Ambrose, one of the committee members, was assigned to make the purchase. He returned with four crates and a balance of UGX 3,000 after spending UGX 5,000 on transport.

Tasks

- (a) Find the number of staff members in the IT department.
- (b) Find the amount of money each had to pay to top up on the collection.

(c) Determine the unit price of a crate of bottled water.

(d) Were the crates of bottled water enough for the whole staff? Were there some bottles left?

SECTION B

PART I

Respond to only one item from this part.

Item 3

Phresh Tech Media Services organized a **computer training program** for 50 participants. The program was divided into three modules: **Networking (Section A)**, **Programming (Section B)**, and **Cybersecurity (Section C)**.

Here is what happened during registration:

• Two participants did not register for any module.
• Three registered for Networking only.
• Five registered for Programming only.
• Four registered for Networking and Cybersecurity only.
• Five registered for all three modules.
• The number of participants who registered for Networking and Programming only was three less than those who registered for Programming and Cybersecurity only , and also three times those who registered for Cybersecurity only .

The IT coordinator noted that some participants registered in overlapping modules to broaden their skills, while others limited themselves to one module. This overlap created challenges in scheduling and resource allocation.

Tasks

(a) Represent the above information using an appropriate diagram.

(b) Find how many participants registered:

(i) in each module

(ii) in Cybersecurity only.

(c) If a participant is selected at random, what is the probability that he or she registered in at least two modules?

(d) Given that those who registered in at most one module did not qualify for advanced certification, how many participants were they?

(e) In your opinion, why do you think Phresh Tech designed the training with overlapping modules instead of keeping them strictly separate?

Item 4

AITEL Examinations Bureau was preparing to print examination papers for the new term. The Executive Director instructed the procurement team to purchase printing materials for three different exam sections: **Science**, **Mathematics**, and **Humanities**.

- For **Science**, the team ordered 2 reams of paper, 3 toner cartridges, 1 stapler, and 1 binding machine.
- For **Mathematics**, they ordered 4 reams of paper, 2 toner cartridges, and 1 stapler.
- For **Humanities**, they ordered 1 ream of paper, 5 toner cartridges, and 2 binding machines.

The prices of the items were as follows:

- Ream of paper: UGX 6,000
- Toner cartridge: UGX 800
- Stapler: UGX 1,000
- Binding machine: UGX 5,000

Tasks

- (a) Represent the information in suitable matrices.
- (b) State the order of the matrices.
- (c) Help the procurement team to determine the total amount of money AITEL Examinations Bureau will spend on printing materials.

PART II

Respond to only one item from this part.

Item 5

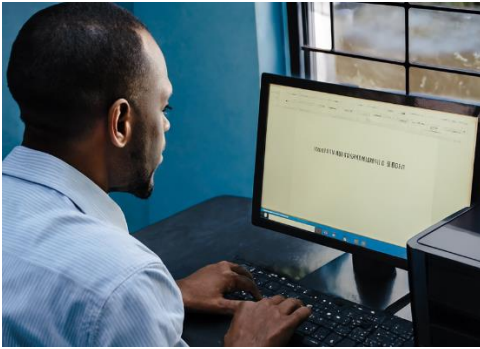
The staff of **Nabingoola Secondary School** are planning to print end-of-term examinations. To achieve this, they need to acquire printing equipment and supplies. The school management has asked the finance committee to analyze two financing options before making a final decision.

Option 1: Loan from a local bank

- Amount required: UGX 6,000,000
- Plan A: Simple Interest at an annual rate of 20%, repayable after 2 years.
- Plan B: Compound Interest at a monthly rate of 2%, repayable after 2 years.

Option 2: Hire purchase agreement with a printing supplier

- Total cost of printing equipment: £7,500
- Down payment: £3,000
- Monthly installments: £900 for 7 months
- Exchange rate: £1 = UGX 4,750



Tasks

(a) Calculate the total repayment amount for each financing option over the loan term and compare them to determine which option would be more cost-effective for Nabingoola Secondary School.

(b) Analyze the monthly cash flow implications for the school under each financing option, considering its ability to manage operational expenses alongside loan repayments.

(c) Based on your calculations and analysis in (a) and (b), provide Nabingoola Secondary School with a recommendation on which financial option would be optimal for printing exams, taking into account both total repayment amount and monthly cash flow considerations.

Item 6

During a school sports day at **Kasenge High School**, a drone was used to capture aerial footage of the event. While reviewing the footage, the media club noticed that the drone hovered directly above the center of the football pitch and cast a shadow that reached the edge of the pitch, exactly 12 meters away from the center.

The drone operator mentioned that the drone was flying at a height that was **four times the length of a straight pole** they had used earlier to calibrate the camera angle. The pole is known to be 3 meters long.

The school administration has a policy that drones must not exceed **12 meters in altitude** when flying over students.

Tasks

(a) How far from the center of the pitch should the pole be placed to match the shadow length observed?

(b) Should the drone be grounded for exceeding the altitude limit? Give a reason to support your answer.

END