MATHEMATICS
Paper 1
Assessment, 2025
2hrs and 15 minutes



ALLIANCE JOINT EXAMINATIONS BOARD (AJEB)

Uganda Certificate of Education

MATHEMATICS

Paper 1

Assessment

2hrs and 15 minutes

INSTRUCTIONS TO CANDIDATES:

- \checkmark This paper consists of **two** sections; A and B.
- \checkmark It has **six** examination items. Section **A** has two compulsory items.
- \checkmark Section **B** has two parts; **I** and **II**. Answer one item from each part.
- ✓ Answer **four** examination items in all.
- \checkmark 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.

Item 1.

Your school plans a geography trip to a national park. The bus drives 6 km west and then 8 km south to reach the site. However, your teacher later realizes there is a shorter, direct road. The park charges an entry fee of UGX 40,000 per student and a guide fee of UGX 200,000 per group. The school is taking 35 students. The bus company offers a 10% discount on total transport cost if the trip exceeds UGX 500,000. The transport charge is UGX 15,000 per student.

Tasks:

- (a) Calculate the direct distance from the school to the national park.
- (b) (i) Find the total cost of the trip, including entry, guide, and transport (after discount, if applicable).
- (ii) Determine the cost per student for the entire trip.
- (c) The head teacher wants students to pay in two equal installments. How much should each student pay per installment?

Item 2.

A farmer wants to mix two types of animal feed—Feed X and Feed Y. Each bag of Feed X contains 10 kg of protein and 2 kg of fiber and costs UGX 40,000. Feed Y contains 5 kg of protein and 6 kg of fiber per bag and costs UGX 30,000. He wants to have at least 60 kg of protein and at least 24 kg of fiber in total. He can buy **at most 10 bags in total** due to space limits.

Tasks:

- (a) Write down the inequalities that represent the constraints on the number of bags of Feed X and Feed Y.
- (b) Represent the inequalities graphically on the Cartesian plane.
- (c) Using the graph, determine the number of bags of each feed that minimizes cost and state the total cost.

SECTION B

PART I (Answer one item only)

Item 3.

To address late arrivals, a school collects data on students arriving after the bell rings at 7:45 AM. Below are arrival times in minutes past 7:45 AM for 40 students:

Tasks:

- (a) Based on the mean arrival time, suggest a new time to ring the school bell.
- (b) If the school wants at least 80% of students to be present before the bell, when should the bell ring?
- (c) Based on your results, recommend the more effective bell time and justify your choice.

Item 4.

A health center conducted a study on patients who used three different drugs (A, B, and C) for flu treatment. 40 used Drug A, 50 used Drug B, 30 used Drug C.

- 15 used both A and B,
- 10 used both B and C,
- 8 used both A and C,
- 5 used all three.
- 12 used none of the drugs.

Tasks:

- (a) How many patients were surveyed in total?
- (b) What is the probability that a randomly selected patient used at least one drug?
- (c) Advise the center whether the drugs were widely used, based on your findings.

PART II (Answer one item only)

Item 5.

You are invited to a seminar at a university. Your uncle will drive you there.

Directions:

- Drive 10 km northeast to a fuel station.
- Then 6 km due west to a roundabout.
- Then 8 km southeast to the university.

Your uncle drives at an average of 60 km/h. The seminar starts at 9:00 AM.

Tasks:

- (a) (i) What is the direction of your home from the university?
- (ii) What is the direct distance from your home to the university?
- (b) If you use the direct route, at what time should you leave home to reach by 9:00 AM?

Item 6.

A builder is roofing a house with a rectangular base (12 m by 5 m). The roof is an isosceles triangle with a ridge 8 m above the base. He uses iron sheets of dimensions 12 ft \times 3 ft (1 ft = 0.3 m), costing UGX 35,000 per sheet.

He can buy type P (no discount) or type Q (5% discount on every 60 sheets). Each sheet covers 1.08 m² effectively.

Tasks:

- (a) Estimate how many sheets are needed and the total cost using each type.
- (b) Which type would you advise him to buy? Justify with calculations.

END