

P456/1
MATHEMATICS
Paper 1
Jul./Aug. 2024
 $2\frac{1}{4}$ hours



BRIGHT EXAMINATIONS BOARD

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** 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.

Your brother deals in the sale of I phones. He plans to go out for shopping to buy I phone X and I phone XR. He does not know how many phones in total he should buy so as to obtain a maximum profit. He plans to buy **more** X phones than XR phones. The number of XR phones **must exceed** one and those of X phones will be **at most** 7. An X phone is rated at Sh. 2,000,000 each and XR phone at Sh. 2,000,000 each but has **not more than** Sh. 20,000,000 for shopping. Once shopping is done, he plans to sell an X phone at Sh. 2,500,000 and XR phone at Sh. 3,000,000.

Support Material:



Task:

- (a) How many phones of each type should he buy so as to fulfil his goal? (17 scores)
- (b) How much profit will he obtain maximumly? (03 scores)

Item 2.

Your Aunt wants to visit you at your school on the visitation day. She calls you a day before to give her directions to the school. You inform her that there are two routes and these are;

Route 1.

From home, she takes the north eastern direction to reach a supermarket 5km away, then take a turn of 150° and drive 4km to reach a washing bay. From there, she takes the south eastern direction to reach the school.

Route 2.

From home, she takes the western road to reach a junction that is 6km away, then take the southern road and drive 5.5 km to reach a petrol station. From there, she takes the south eastern direction to reach the school. Now, she is finding it difficult to decide on which route she should take so as to reach school as early as possible.

Task:

- (a)(i) Describe the position of your home from the school. (16 scores)
(ii) How far is the direct route of your home from school? (02 scores)
(b) Which route should your Aunt take so as to reach school early and why? (02 scores)

SECTION B

This Section has two parts;

Part I

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

Item 3.

Your Uncle usually buys items from a shop that is near your home where one kilogram of rice costs Sh. 3,200. Three weeks ago, your brother went to this shop and bought a loaf of bread and a quarter a kilogram of sugar at a total of Sh. 5,900. In the last week, your uncle visited this shop and spent a total of Sh. 13,600 to buy two loaves of bread and one kilogram of sugar. Now, he won't be around but he leaves Sh. 70,000 for you to carry out shopping in the next two weeks and tells you to keep the remaining money and give it to him when he comes back. In the first week, you bought one loaf of bread, two kilograms of sugar and three kilograms of rice. In the second week, you bought two loaves of bread, three kilograms of sugar and six kilograms of rice.

Support Material:



Task:

- (a) What is the cost of one loaf of bread and one kilogram of sugar from this shop? (10 scores)
(b) How much money will you give to your uncle when he comes back? (10 scores)

Item 4.

Your mathematics teacher set a test to your class so as to observe their performance. The paper was made up of three sections A, B and C and after marking, he notices that 16 students attempted questions from all the three sections, 18 students attempted questions from C only, 13 students attempted questions from A only and 15 students attempted questions from B only. 49 students attempted questions from A, 53 students attempted questions from B and 52 attempted questions from C. He also realizes that a half of the number of students that attempted questions from all the three sections never attempted questions from any of the three sections. He therefore wants to know how many students did the test.

Task:

- (a) How many students did the paper? (16 scores)
(b) What is the probability that a learner attempted questions from only two sections? (04 scores)

Part II

Answer **one** item from this part.

Item 5.

Your guardian is planning to travel to her new home that is in town K from town R. she is going to use both a salon car and a lorry for the journey. The salon car consumes 0.06 litres of petrol per km and the lorry consumes 0.075 litres of diesel per km. the cost of one litre of petrol is Sh. 5050 and one litre of diesel is Sh. 4850 but does not know how much in total she will spend to purchase fuel. The lorry driver expects to start the journey at 06:00am at a speed of 80km/h but after $1\frac{1}{2}$ hours of travel, he will take a rest up to 9:00am. From there, he will increase his speed to 100km/h and expects to reach town K at 11:24am. Thirty minutes after the lorry starts moving, the salon car driver will also start moving at a speed of 90km/h nonstop up to town K and will reach there at 10:30am.

Support Material:



Task:

- (a) At what time will the salon car overtake the lorry during the journey? (10 scores)
(b) How much money will she spend to purchase the fuel? (10 scores)

Item 6.

Your friend wants to paint the wall and the ceiling of his bedroom. It has a floor of 4 meters by 5 meters. It has a door of size 2.5 ft by 6 ft and a window of 3 ft by 4 ft. The ceiling is 10 ft above the floor. The paint he wants to use is sold in full tins and full jerry cans. A tin which can paint 250 ft^2 is sold at Sh. 52,000 and a jerry can which can paint 300 ft^2 is sold at Sh. 75,000. He must buy either tins of paint or jerry cans of paint but not both. (1 meter = 3.3 ft)

Support Material:



Task:

- (a) Basing on mathematical calculations, advise your friend on the paint he should buy to minimize the expenditure. (18 scores)
(b) How much more money would he spend if he used the other paint other than the chosen (02 scores)