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MATHEMATICS
Paper 1
March. 2025
2¼ Hours



WUNNA EDUCATIONAL SERVICES
LEARNERS' ASSESSMENT BOARD (WESLAB)

Uganda certificate of Lower secondary education

MID-TERM I ASSESSMENT 2025

S.3 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.*

SECTION A

Answer all items in this section

Item one

- (a) A certain member of your family rewrote each digit of his 4-digit visa card pin from number system 10 (base 10) to another number system less than 4. Now he's sick in the hospital he can neither talk nor write but his account is needed to finance hospital bills. Here is how he wrote the pin **32 13 23 30**. Assuming that you have been to encrypt the visa pin for the family and fans are available to care of him. The hospital has a nurse who checks on every after 4 hours and 30 minutes both medical personnel last checked on him at 7:30am. He was treated well, discharged and advised as follows. He was advised to spend three-eighth resting, one-sixth of the day eating, two thirds of the remainder having a healthy diet and the rest of the day resting for hospital for further checkup.

Task

- (i) Which number system do you think he used to re-write the pin and why?
- (ii) Use the identified number system to help your family members to regenerate the original pin.
- (iii) At what time did the nurse and doctor visit him at the same time.
- (iv) How hours of the day in the week does he have to spend visiting the hospital.

Item two

Your parents have given you the following instructions to make juice for sale while ensuring minimum costs of production. The juice should consist of passion fruits and oranges and you should start with a total of 25 fruits

In order to make a very good juice, you should make sure that the difference between the number of passion fruits and oranges is at least 4. The number of oranges must not be less than 5. Each passion fruit costs Shs 300 and an orange costs Shs 200.

Task

- (a) Express the conditions for making juice as inequalities.
- (b) (i) Show the feasible region of the conditions on the Cartesian plane.
- (ii) Determine the number of passion fruits and oranges you should use to minimize the costs of production.

SECTION B

This section has two parts **I** and **II**

Part I (*Answer **one** item from this part*)

Item three

The geography department of your school is organizing a study tour of S.4 class. Basing on last year's complains due to poor feeding The department has decided to interview students of this year to find out the number of students that would like to eat matooke(M), Posho(P) or Rice(R). They came up with the following:

19 liked matooke, 24 liked posho. 25 liked rice. 3 liked matooke and rice only. 2 liked posho and rice only. None of the students liked matooke and posho only. 4 students disliked all the foods.

Task

Draw a plan to help the geography department to prepare meals for all the S.4 students and use your plan to find how many consumed all the three food types. And what is the probability that a student was chosen at random liked at most two types of food

Part II

(Answer **one** item from this part)

Item Five

Juma is tasked to take company goods from a factory to three trading centers. The car he is going to use has 20 litres of fuel and it uses 1 litre of fuel for every 15 km. he left the factory to the first trading centre which is 70 km away on a bearing of N60°E. He then moved Eastwards at an average speed of 60

km/hr. for 30 minutes to the second trading centre. From this centre he took a bearing of 200° and moved a distance of 50 km to the third trading centre.

At this centre he was shown a direct-route that would take him back to the factory but was not sure whether the remaining fuel in the was enough for that journey since he did not know the distance.

Task:

(a) Help Juma to determine;

- (i) The distance of the direct route from the third trading centre to the factory.
- (ii) Whether the remaining fuel in the car will be enough for journey using the direct route.

Item Six

A certain island has been having a serious problem of poor network for a long period of time. The government with the network providers are planning to establish a mast with a frequency that can cover the whole highland. The highland is in the shape of the triangle ABC with AB = 10 km as the main landing site. Side BC = 8 km and AC = 6 km

Task:

- (a) By scale drawing, help the government to come up with an accurate drawing of the island.
 - (i) Find the angle ABC
 - (ii) Given that the mast must be established where two perpendicular bi-sectors meet, establish with point M, where the mast must be and find its perpendicular distance from the main landing site.
 - (iii) It is known that the frequency must cover the highland, draw the locus of the frequency and measure its radius.