MATHEMATICS

PAPER 1

February, 2024

$2\frac{1}{4}$ hours

END OF TERM ONE EXAMINATION-2024

SENIOR FOUR

MATHEMATICS

PAPER ONE

$2\frac{1}{4}$ HOURS

INSTRUCTIONS TO CANDIDATES:

- Attempt only four items in this paper
- All items carry equal marks

ITEM ONE:

Kyazze and his father Kyagulanyi have an age difference of 20 years and the product of their ages is 800 years. One day during a mathematics lesson Kyazze borrows a calculator from his neighbor and on the screen he finds a number 840 which made him wonder which two numbers he could have entered to get the as a product of the figure. Later on during the festive season Kyazze and his elder brother David were visited by their uncle and were each given shs.42000 and shs.53500 respectively. Kyazze used all his money to buy 4 shirts and 3 vests while David used all his money to buy 5 shirts and 4 vests.

Tasks:

(a) How old do you think is Kyazze and his father Kyagulanyi.

(b) Help Kyazze figure out all the possible values that his neighbor could have typed in the in the calculator to get the number on the screen.

(c) Help the two brothers explain to their father how much he would spend if he wanted to buy three vests and five shirts for their cousin brother Isaac.

(25 scores)

Item two:

Mr. Lwanyaga the head of mathematics department organized a mathematics study trip to Namanve where assembling of Toyota vehicle and manufacturing of Coca-Cola products are done, and in his report to the members of mathematics department shows the cost of hiring a school bus is constant for any a bus and other varies as the distance covered by the bus. He later reviled that if a bus covers 100km then charged kshs.4500 and kshs.4000 for a distance of 60km. The distance between the school and Namanve is 480km and they expected to live the school at 8:00am at an average speed of $100km/hr$ according to the school's study trip rules and procedures and after the trip they students would rest for forty-five minutes and then proceed back to school.

Tasks:

a) As the treasure of the mathematics department help Mr. Lwanyaga to know total expenses for the total journey.

b) By representing the journeys on a suitable graph explain the motion of the bus to the bus to the school administrators. *(25 scores)*

Item three

In Uganda, many are worried about the fire problem in schools which is becoming a threatening hazard. Research experts have carried out a survey to investigate the likely cause of the rampant fires in Education institutions. Findings showed that, three categories of stake holders were found to be responsible for the fire outbreaks in Education institutions. 50 respondents said they are learners, 50 respondents said they are parents and 40 respondents said they are school administrators. 10 respondents attributed it to all categories. 15 attributed it to learners and parents, 20 attributed it to parents and school administrators and 15 attributed it to learners and school administrators.

Task:

a) Help the expert researchers to summarize their report and be able to establish number of respondents who attributed it to;

i. Learners only

ii. Parents only

iii. School Administrators only

b) Find the total number of the respondents in the survey.

c) What is the probability that the fire problem in schools is attributed to learners? (25marks)

Item four

Henry is a farmer in mityana district who practices both farming and rearing of animals on a large scale. Due to demand of products that come out of animals, henry puts much emphasis on rearing of birds and cows on his farm. All together there at least 200 heads of birds and cows and There are at most 240 legs of birds and cows on the farm, the number of birds on the farm are two times than cows on the farms. Henry wishes to maximizes profits by selling each bird at shs. 50,000 and each cow at shs.1.5million but doesn't know the number of birds and cows to sell to fulfil his wish.

Task:

(a) write mathematical statements that show the relation between the cows and birds.

(b) Show the feasible region of the relation on the Cartesian plane.

(c) Help your friends to determine the maximum amount of money they will possibly make from the sale of cows and goats.

Item five.

The caterer of a school located in Makindye division -Kampala city is required to buy food stuffs for a school party. The foodstuffs to be bought include: 100 kg of rice, 150kgof meat and 200kg of Irish potatoes. The cost is UGX 3500, UGX15,000, and UGX1500 per kg of rice, meat and Irish potatoes respectively in Nakasero farmers' market. The same items cost UGX. 3000, UGX. 12,000 and UGX. 1,100 per kg of rice, meat and Irish potatoes respectively, in Kalerwe farmers' market. To hire a

pick-up from Nakasero farmers' market to school costs UGX 60,000 while a pick-up hire from Kalerwe farmers' market is UGX95,000.

Task:

(a) What would be the easiest way to display the information provided above?

(b) Using the information provided above, how would the caterer decide on where to do the shopping from? Justify your answer. **(25 Marks)**

Item six.

In order to improve on the livelihood among the community, the government has embarked on distribution of improved seeds to boost the yield of agricultural product in **Nwoya** district, **Koch Goma** sub-county which has 4 wards. The wards are A, B, C and D. Basing on the size of land in each ward for every 100 packets of seed, ward **A** gets 30 packets, ward **B** gets 20 packets, ward **C** gets 40 packets and ward **D** gets 10 packets. The government has procured 45,000 packets which are **all** to be shared equitably according to the community.

Task:

By using a statistical graph, help the local leaders to distribute these seeds to the community in wards. (25 marks)