

456/1

MATHEMATICS

Paper 1

2024

21/4hours

Uganda Certificate of Education

S.4 PRE- REGISTRATION

MATHEMATICS

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

This paper 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 sheets provided.

SECTION A

Answer all items in this section.

ITEM ONE

A census enumerator has been sent to count people in your village. He has been given an i-pad that is fully charged for the exercise. Unfortunately, there is a small note of the PIN to help you access the software for the exercise. The note indicates that the pin number is a two digit number in base ten. This number is equal to five times the sum of the digit. It is also nine less than the number formed by interchanging the digits. The enumerator comes to your home and seeks assistance to help him find the PIN for the i-pad. The census in Uganda is held every after 10 years. It was last held in 2014 and then previously 2004. The census in 2024 has revealed that there are **14,400** people in your village. This has increased by **60%** as revealed by the census in 2014 having been previously increased by **80%** earlier in 2004. The enumerator claims for transport refund every after four days, for the 4-day journey made in the exercise. He travels a certain amount on the first day, on the second day, on the third day and finally on the fourth day. The enumerator travelled a total distance of 50km during the four-day exercise. Each kilometer travelled is paid **UGX28,000**

TASK:

- (a) Help the enumerator encrypt the PIN.
- (b) How many people were in the village in 2004.
- (c) How much did she receive on each day.
- (d) In your view why do you think the National Census is necessary. **(20 Scores)**

ITEM TWO:

Four girls whose homes once located on a grid map form a regular polygon, would like to meet at the Centre of their homes to play soccer since they believe that location would be a fair distance for all of them. One girl is located on coordinate **(1,5)**, another at coordinate **(4,1)** and the other girl is located on coordinate **(1,-3)**. On the same day they wanted to buy clothes. They realized that if they buy them in a bunch, it will be cheaper. So they mobilized themselves and each person contributed as follows:

Girl 1: Contributed one hundred thirty-three thousand two hundred fifty shillings.

Girl 2: Contributed 20% more than that of girl 1

Girl 3: Contributed $\frac{3}{2}$ of the amount girl 1 contributed

Girl 4: Contributed a fraction that is $\frac{1}{5}$ less than the fraction of girl 3 of the amount of girl 1

TASK:

- a) Locate the homes of the girls on a grid while labeling their coordinates.
- b) i) On which coordinate will the fourth girl be located on the grid
ii) On which coordinate will they meet?
- c) What amount did each girl contribute. Hence find the total amount all the four girls had to contribute? (**20 Scores**)

SECTION B

This Section has two Parts; I and II

Part I

Answer one item from this paper

ITEM THREE

Three schools from a Busongora North want to participate in the National Schools Football Sports Gala to be held in Fort-portal at Buhinga play ground. Unfortunately none of the schools has a school bus and they want to hire a bus for one day for the activity. The bus charges ugx **25,000 per km** moved. The three schools through their Sports master agreed to share the cost of the bus equally amongst them selves. One day they hired a bus from your school in **Maliba** and they set off at **4:30 am** and increased the speed gradually to **90 km/hr** reaching **Rwimi** at **6:45 am**. From there the bus driver maintained this same speed for two and a quarter hours reaching **Rubona**. From Rubona , he reduced speed to **60km/hr** and moved slowly reaching **Fort-portal** at **9:30 am**. The games started at exactly **10:00 am** sharp and each team played six games. School A won **3** games, drew **2** and lost **1** game. School B won **4** games and lost **2** games. School C won **2** games and drew **4** games. The organizers award three points for a win, one point for a draw and no point for a loss. They declared these schools the first three schools in order of their points they obtained from the games. They were to receive the prize money of sixteen millions five hundred thousand shillings.

TASKS:

- (a) Find how much each school paid for the bus.
- (b) Decide the cash prize for the schools. (**20 Scores**)

ITEM FOUR

The length of a rectangular plot of land exceeds the width by **7ft** and its area is **60Sq ft**. Three business partners Wambusa, Aisha and Wekesa contributed Shs 300.000, 500.000 and 700.000 respectively to start a business on the land. They decided that $\frac{1}{3}$ of the profit was to be ploughed back to the business, $\frac{1}{5}$ of the remainder would be kept for emergencies and the rest to be shared in the ratio of their capital contributions. In that year the profit realized was one and a quarter times that of capital. On Easter day ,they hired a magician who organized a presentation in their village to entertain the villagers. He had a bag that contains x red balls and $(x - 8)$ white balls. If the probability of drawing a red ball is $\frac{2}{3}$.

TASK:

- (a) Find the dimensions of the plot of land
- (b) Determine the amount received by each partner that year.
- (c) Find the number of balls in the bag. (20 Scores)

Part II

Answer one item from this part.

ITEM FIVE

A school head teacher is thinking of how he can boost the mathematics department of your school. He can either add another teacher or buy more books or both. He has decided that he will do both if the average performance for this year's performance for the **50** students is lower than that of the previous which was **64**. He asked the department to give a test and the these were the student's marks.

86 30 26 64 87 47 49 26 43 25

45 38 44 56 59 52 76 27 89 46

90 57 73 48 58 89 51 32 56 88

66 62 52 67 69 68 49 92 66 95

54 74 32 39 35 36 69 50 71 92

He also visited the library and found out that the previous's candidates used three books for their revision. **Longhorn, Baroque** or **Maths Consult**. From the librarian's records its is clear that all the candidates that did not use any book failed the subject greatly. Out of the **35** candidates this year **13** used Longhorn, **20** used Baroque and **17** used Maths Consult. **9** used Longhorn and Maths Consult, **3** used Longhorn and Baroque while **8** used Baroque and Maths Consult only. The records show that **2** used all the three books. He observed that he should replace one book type of the three with Fountain publisher since no student read it only alone.

TASKS:

- (a) Help the head teacher group the marks to make an informed decision on the fate of the department and defend it.
- (b)(i) Help the head teacher identify the book he should replace and explain why?
- (ii) Find the probability that a student selected from the class failed (**20 Scores**)

ITEM SIX

Your neighbour is a man in your village who fetches water to earn a living. He uses his bucket of height **63 cm**. The bucket has a top diameter of **30 cm** and a bottom diameter of **48 cm**. Your family is organizing your eighteenth birthday and your neighbour has been contacted to fetch water for the party and he has to fill a **500 litre tank**. He is payed **UGX500** per bucket.

As he was sittted down on the well fetching the water, he observes a crested crane at the top of the tree of height 20m at an elevated angle of **30°**. When he stood up, In **2** seconds, he observed the crested crane flying to the next tree behind of the same height and the elevated angle decreased by **12°**.

TASK

- a) How much was he paid for the task.
- b) I) At what distance from the foot of the tree was he observing the crested crane sitting on the tree?
 - i i) How far did the bird (crested crane) fly in the mentioned time when he stood up

.....**GOOD LUCK**.....

PRACTICE MAKES MATHS EASIER

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