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**MATHEMATICS**

**PAPER 1**

April 2024

**CE**

**RE**

**TA**

2 ¼ Hours

**CENTRAL REGION TEACHERS’ ASSOCIATION (CERETA)**

*UGANDA CERTIFIFCATE OF EDUCATION*

**PRE- MOCK SAMPLE PAPER**

**MATHEMATICS PAPER 1**

2 Hours and 15 Minutes

**INSTRUCTION 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 booklets(s) provided.*
* *Graph paper is provided.*
* *Silence 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**.

Mr. Kauki the headteacher of Komamboga ss on his survey found out that 1/3 of his land has a cattle farm, ¼ has been covered by a coffee plantation and 2/5 of this land for mixed farming and he still has excess land of six (6) acres. He also owns a home near his farm, whose value was 250 million in 2019. After one year, the value of this house increased by 10% of its original value and also reduced by 4% after another year due to the damages that were cause by the heavy rains received in 2021. On a particular day, he invited his students of Komamboga ss for a study tour and discovered that 3/5 of the boys and 1/5 of the girls appeared for the tour. Komamboga ss has a student population of 4,000 students and only 1,500 students went for this study tour.

**Task;**

1. By calculations, help the school administration to know the total number of;
2. Boys
3. Girls who went for the study tour.
4. How many more boys went for the tour than girls?
5. What was the value of the Mr. Kauki’s house in 2021?
6. What is the size of Mr. kauki’s land if his cattle farm occupies 10 acres 0f land?
7. How many acres are used for mixed farming?

**Item 2.**

A transportation compony has two types of carrier vehicles, type **A** and type **B**. It was estimated that the average fuel consumption of Type **A** and that of type B vehicles are 10 litre per 50km and 10 litres for every 40km of travel respectively. The cost of a litre of fuel is five thousand shillings only. On a certain day, a type **A** vehicle set off at 7:00am from Kampala to Mbarara, a distance of 360km, and moved at a steady speed 40km/hr to Mbarara without any obstacle. On the same day, a type **B** vehicle set at 8: 40am from Mbarara to Kampala at a steady speed of 60 km/hr to Kampala. The company manager has tasked you to help him in finding out some information about these journeys.

**Task;**

1. As a senior four candidate, help the manager to estimate the time and distance from Kampala at which the two vehicles met.
2. How much more money was spent on fuel for the type **B** than **A** by the time they met.
3. Advise the manager with reason(s) on the type of vehicle to use in order for the company to maximise its profits if both vehicles perform the same piece of work.

**SECTION B**

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

**Part I**

Answer any **one item** from this part

**Item 3.**

Uganda roads authority (UNRA) is planning to construct a roundabout at a distance of 40km along Kampala-jinja highway. According to plan of the government engineer at the town where the roundabout is to be constructed, it should have a triangular shaped flower garden within, with a base length of 10m, and the other sides making angles of 450 and 600 with the base. Its also planned that the vertices of the triangular flower garden should just touch the roundabout at three different points.

**Task;**

1. As an architect who is part of the engineering team contracted to construct this roundabout, using relevant mathematical instruments / tools. Come up with a lay out of the actual plan of the roundabout.
2. Help your team members to estimate the distance around the roundabout to be constructed.
3. By calculations, estimate the area of the space left outside the triangular garden within the roundabout.

**Item 4.**

Mr. Ssali works under the government and is a manager of a certain pharmaceutical industry. Of recent, he came up with an idea of owning an industry and this can happen through getting a loan. Before he does that, he makes a background data check on the way his money is taxed in order for him to establish the actual amount of he can use per month to base on and get the loan. He gathers the following data from Stanbic bank; earns a gross salary of UGX. 5,000,000 per month which includes the following allowances; housing allowance UGX. 300,000 per month, marriage allowance of UGX. 500,000 per month, medical as 1/50 of his gross income and transport allowance of UGX. 10,000 per day. The rest of the of the income is subjected to an income tax which is calculated as follows;

7.5% on the first UGX. 1,000,000

12.5% on the next UGX.800,000

20% on the next UGX.500,000

30% on the next UGX. 300,000

35% on the remainder.

Mr. Ssali brings all this information to his personal accountant at the industry to verify all the information gathered. If bank offers a loan at a simple interest rate of 20% per annum;

**Task;**

As Mr. Ssali’s personal accountant, help him to determine;

1. His net income at the end of the month.
2. What percentage of his income goes to tax?
3. The amount he should borrow if he’s to pay a loan of 300 million in 10 years.

**Part II**

Answer **one** item from this part

**Item 5.**

Mr. Mukisa a mathematics teacher at a certain single sex school gave four mathematics test items to his learners. He has been setting a pass mark for his students in these test items and a few of them could meet his pass mark. Another colleague teacher from the neighbouring school advised him to set a suitable pass mark basing on the previous performance of his learners. In the process, he decided to use the data of the scores of a sample of 40 learners from the previous four tests and the following were the average scores of his learners.

43 40 49 80 76 46 60 55 58 55

75 79 70 83 82 56 67 63 67 63

69 53 73 61 48 58 60 75 73 69

77 62 66 54 53 63 73 49 59 78

**Task l;**

1. Help Mr. Mukisa to estimate the mark that can cater for 50 % of his learners basing on the data provided.
2. By graphical approach, estimate the mark that favours only 25% of his learners.
3. Basing on your answers in (a) and (b) suggest with reason(s) the suitable pass mark he can set for his learners in order to boost their love for the subject.

**Item 6**. Irene plans to borrow money from a commercial bank that offers a compound interest of 20% per year. She intends to use it to stock food for her kindergarten at the beginning of the term. In her survey about the price of the items she intends to stock and found out that; the cost of a bag of beans is UGX. 200,000 and the cost of a bag of maize flour to be UGX. 150,000. According to her, she plans to make stock as follows; To stock at most four bags of beans and not less than 8 bags of maize flour. She also plans to spend not more than 4,000,000.

**Task;**

1. Help Irene to identify the maximum number of bags of both beans and maize flour she can stock according to her plan.
2. If she plans to stock the maximum number of bags of both beans and maize flour, how much can she remain with as per her plan.
3. If she receives a loan just enough for her to the maximum number of bags possible, how much will she pay back after using the money for two years.

**END**