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MATHEMATICS
Paper 1
NOVEMBER, 2024
$2\frac{1}{4}$ **hours**

CLEVERLAND HIGH SCHOOL- MAYA
END OF TERM THREE ASSESSMENT EXAMS
Uganda certificate of education
SENIOR THREE
MATHEMATICS
Paper 1
2hours 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 items in all
- Any additional item(s) will not be scored
- **All** answers must be written in the answer booklets or papers provided
- A graph paper will be provided
- Silent, non programmable scientific calculators and mathematical tables with a list of formulae may be used

SECTION A

ITEM 1

Your guardian has a budget of shs.700, 000 for your school expenses. To get to the school where your guardian wishes to take you for 'A' Level, your guardian drove 4km east from your home to the stage and then 8km north to reach there. However, you realized later that there was a direct route from home to school your guardian could have used.

On reaching the school, you found out that, the school fees, admission fees and uniform fees are shs. 900,000, shs. 100,000 and shs. 350,000 respectively. The school also offers a bursary of: 60% off school fees free admission and eighty seven thousand five hundred shillings off uniform fees to those who got first grade according to you results, you qualify for this bursary.

It also has two payment plans on school fees that the guardians can choose from and they are;
- Paying in two installments that is to say, two thirds of the school fees at the beginning of the term and the balance at their visitation day or end of term.
- Paying in three equal installments, at the beginning of the term, on visitation day and end of term respectively.

Task.

(a) How far is it from your home to school if you travel through the direct route?

(b) (i)Since you qualify for the bursary, how much will you pay?
(ii)Will your guardian afford the school expenses according to his budget?

(c) (i)How much will those who are to pay school fees of shs. 900,000 pay per installment, according to each of the payment plans?
(ii)Which payments plan would you recommend for them and why?

ITEM 2

You are the CEO of a certain construction company that has been contracted to construct a bridge in a swamp has a scale reading 1:250,000. On this map, the swamp of the area is $7.36cm^2$.

According to the work plan, you will use either a bulldozer vehicle if the actual area of the swamp is less than $40km^2$ or an excavator vehicle if the actual area of the swamp is greater than $40km^2$. If you are to use a bulldozer, 25 operators will be

needed each being paid UGX 65,000 per day and if you are to use an excavator, 14 operators will be needed each being paid UGX 125,000 per day. The company has been given fifty million shillings to do the work in only two weeks.

Task.

   (a) (i)Calculate the actual area of the swamp in km^2.

      (ii)Which types of vehicle are you going to use?

   (b) How much money will be paid to the operators for the duration you will construct the bridge?

   (c) What is the difference between your payment and director's payment?

SECTION B
PART I
Attempt one question from this part

ITEM 3

Your guardian realizes during holidays that he may find it difficult to pay for sports uniform that costs ugx 38000 at the beginning III. He decides to keep you busy during the last week of your holiday moving around the village buying cabbages at ugx 800 per cabbage. You will later group them into two groups: Group A shall be cabbages whose weight is below the average weight and group B will be cabbages whose weight is above the average weight.

Support material

Later, you will sell the cabbages and the profits from sales will be to cover the cost of the sports uniform. A cabbage will be sold at ugx 1350 each while group B cabbages will be sold at ugx 1650 each. Before displaying the cabbages for sale, you measure and record their weights in grammes as follow.

104	99	107	96	101	84	102	78	106	108
63	104	86	111	102	100	95	100	65	112
76	87	95	85	95	103	61	105	73	99
86	102	102	97	92	90	113	107	88	102
110	91	90	100	82	66	92	91	108	73

Task

(a) Using suitable statistical, find the average weight of the cabbages.
(b) If you sell all the cabbages at the planned selling price; will the guardian be able to meet his goal?

ITEM 4

Three secondary school team x, y and z qualified for football tournament, which was played into round with other teams. In the first round, team x won one game, drew one and lost 3 games, team y won 3 games and lost 2 games then Z won 2 games, drew 2 and lost 1 game. In the second round team x won 2 games , drew 2 and lost I game, team y won four games and drew I then team Z won 2 games, drew 3 and lost one game.

TASK

(a) Write down a 3x3 matrix to show the performance of the teams in each of the two rounds.
(b) A matrix which sho3ws the overall performance of the team into rounds
(c) If three points are to be awarded for a win, two points for a draw and no point for a lose. Use matrix multiplication to determine the winner in the tournament.
(d) Given that 1475000 is to be shared by the three teams according to the ratio of their points scored in the tournament, find how much each team will get?

ITEM 5

The cost (c) of printing a copy of a newspaper is partly constant and also inversely proportional to the number (n) of copies printed. When 20 copies are printed the cost per copy is shs. 850. When 300 copies are printed the cost per copy is shs. 750.

Task

    (a) Form an equation relating c and n.
    (b) Calculate the cost per copy when 150 copies are printed.

ITEM 6

      Your friend is a market vendor. She realizes that her customers prefer buying tomatoes in small quantities, so he decided to re-package her tomatoes in into heaps of four. One day she bought nine heaps of tomatoes which had eight tomatoes each from the market at a cost of ugx.2, 000 per heap and was given a discount of 5%. She decided to sell her heaps of four tomatoes at ugx.1,200 each and hence wants to find out how much gross profit she will earn from all heaps. She further intends to visit the queen Elizabeth National park in December, 2024. Her uncle visited the same tourism center last December 2023 with his 3 children and spent ugx.17,000 on entrance ticket. Mr. and Mrs. Mukasa visited the same park in June, 2024 with their child and spent ugx.14,000. She plans to buy entrance ticket for herself, husband and five children and hence needs to know how much she will need if park charges are adjusted every after five years.

Task.

How much;

    (a) Gross profit will she earn from her heaps after repackaging.
    (b) Money will she spend in total to buy the ticket she needed.

END

MERRY X-MASS AND HAPPY NEW YEAR