

P425/1  
MATHEMATICS  
PAPER 1  
NOV/DEC 2025  
3 HOURS



**CHURCH OF UGANDA**  
**DIOCESE OF MA'DI WEST NILE SECONDARY SCHOOLS EXAMINATIONS COMMITTEE**  
**(MAWENDSSEC)**

**S.5 End of Year Assessment 2025**

**MATHEMATICS**

**Paper 1**

**3 hours**

**Instructions to candidates**

*This paper consists of two sections A and B*

*Section A is compulsory and section B has three different subsections and you are to answer **one** item from each section.*

*Each item has the same total scores*

*Graph work must be done on a graph paper*

*Neat and organized work is needed as dirty work will not be scored.*

## SECTION A (COMPULSORY)

### ITEM 1

Senior five students of a certain school during their mid-year orientation, were to solve the simultaneous equation  $2^x + 4^y = 12$  and  $3(2)^x - 2(2)^{2y} = 16$  and thereafter to show that  $(4)^x + 4(3)^{2y} = 100$  as part of their pre assessment into the combinations they were doing. In addition to that, they were told that  $\alpha$  and  $\beta$  are the roots of the quadratic equation  $ax^2 + bx + c = 0$  and that they were to determine the equation whose roots are  $\alpha + \beta$  and  $\alpha^3 + \beta^3$ . These two scenarios put the mathematics students in a total confusion thinking of changing their combination but was already late. In the process of handling the task above, they were given 30 minutes to consult any other students who may be of help. One of them is your brother and aware that you are good at mathematics and came with his colleagues for help.

#### Task

As a student of principal mathematics, help your brother and the colleagues out of the confusion.

### ITEM 2

It was discovered that for  $x$  to be equals to 2, it must satisfy the equation  $\log_x^8 - \log_{x^2}^{16} = 1$  and the students were to approve the discovery or disapprove it. The sum of  $p$  terms of arithmetic progression is  $q$  and the sum of  $q$  terms is  $p$ , the students were to find the sum of  $p + q$  terms but did not know exactly what to do with the letters  $p$  and  $q$  to help them come out of the situations.

#### Task

Help to provide the necessary information for the students.

## SECTION B (I)

*Attempt any one item*

### ITEM 3

The solar company is installing the solar panels on buildings in one of the districts in West Nile. To maximize the solar collection from the sun, the angle of the tilt of the panels should determine by solving the equation  $3\cot\theta + \operatorname{cosec}\theta = 2$  and that the angle values should be between  $0^\circ \leq \theta \leq 360^\circ$ . In addition the solar collection, the solar panels were to be maintained clean by doing regular cleanliness, but the district officials suggested an easier ways of doing the cleaning since it may not be easy to clean regularly, in the response, the solar company designed an equation  $2\sin x = \sin(x - 60^\circ)$  to help during rainy seasons for automatic cleaning as rain drops. However, this equation requires that the of tilt angle,  $x$  be determined to help set the solar but the

officials did not know how to determine the value of angle  $x$  which the company said should be in the range of  $-180^{\circ} \leq x \leq 180^{\circ}$ .

### Task

You have been identified by the district engineer as a principle mathematics student and you are to provide the necessary help. Guide the district officials on the above dilemma.

### ITEM 4

An airline flying from Entebbe to Arua was to move through the vector equation of the line whose coordinates were given by  $A(2,2,5)$  and  $B(1,2,3)$  but the pilot did not know how to obtain this equation. And that if the equation of the line above meet the line  $\frac{x-1}{1} = \frac{y-2}{0} = \frac{z-1}{3}$ , at point  $p$ , the coordinates of  $p$  and the angle between the two lines would allow safe landing but they did not know how to determine the coordinates of  $p$  and the angle between the two lines.

### Task

You have been approached as a student of principle mathematics to provide the much-needed information to the pilot, please help.

## SECTION B (II)

*Attempt any one item*

### ITEM 5

A farmer in a certain village normally uses different routes to reach his maize plantation in order to confuse the thieves that always come to still his maize after learning about his movement. The different routes that he followed is described by the equation  $y = (x + 1)^{\frac{1}{2}}(x + 2)^2$ . He was to get the gradient of his path so that he can have a simple equation than the one above, however, he did not know how to get it. Always when he is moving to his garden, he puts on his right circular cone hat whose base radius increases and the volume changes by 2% but the height of the cone hats remain constant. The farmer wanted to know the percentage increase in the circumference of the base but did not know how to get and looking for help.

### Task

As a student of mathematics and it happens that this farmer is your relative, help him with all the necessary information that he needs.

### ✓ ITEM 6

In a bicycle riding completion from one of the villages in West Nile, some young men were to ride from one trading center to another 40km apart. The path to be taken is described by the equation  $y = x^2 - 4x + 6$ . For them to move smoothly without any

interference, they are to pass through the line segment  $y = 3$ , cut from the curve above. The starter task them to find the area of the segment cut off from the curve by the line above but they did not know to do it. Similarly, one of them fell and rotated enclosing the area given by the curve  $y = x^4$  from  $y = 3$  to  $y = 6$  when it is rotated about  $x = 0$  and that one of the participants is to help find the volume formed when the man fell and rotated.

**Task**

As a student of principle mathematics kindly help in the two situations above so that the challenges being faced by the participants can be put to rest.

**SECTION B (III)**

*Attempt any one item.*

**ITEM 7**

The Human Resource Manager of a cleaning company is in the process searching for a new staff and he was given the following information, which he failed to interpret to be able to make a report to the administrative team of the company.

Age(years)	20-24	25-29	30-34	35-39	40-44	45-49
Number of applicants	14	12	7	8	9	0

**Task**

- (a). Help the Manager to display the data graphically for easy interpretation and help him to identify the modal age of the applicants from the graph.
- (b) By calculation or otherwise, help him to identify the median age of the applicants.

**ITEM 8**

A certain district in Uganda is organizing football competition and the condition for you to qualify to play is given in the table below.

Height(cm)	156	151	152	146	160	157	149	142	158	141
Mass(kg)	62	58	63	58	70	60	55	57	68	56

**Task**

As a mathematics student, plot the data on a scatter diagram to help the organizers interpret the allowable age and mass of the students. Help them to draw the line of best fit, which should later be used to estimate the mass corresponding to a height of 155cm. Also, from the data above, help them to calculate the rank correlation coefficient and use it to comment on the level of significance of the height and the mass of the students. (Spearman's and Kendal's rank correlation coefficient are, 0.79 and 0.64 respectively at 1% level of significance).