PRESIDENTS OFFICE

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

MATHEMATICS

MOEDP-THE SCHOOL ORIENTED PROJECT HOLIDAY EXAMINATION – FORM FOUR

APRI L 2023

062 MATHEMATICS FORM FOUR

TIME: 2:30 HOURS APRIL 2023

INSTRUCTIONS

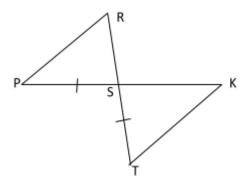
- 1. This paper consists of sections A and B with a total of FOURTEEN (14) questions.
- 2. Answer ALL questions in section A and B.
- 3. Each question in section A carries six (06) marks while each question in section B carries ten (10) marks.
- 4. All necessary working and answers for each questions must shown clearly.
- 5. NECTA mathematical tables and non-programmable calculator may be used.

SECTION A (60 MARKS)

Answer all questions in this section

- 1. (a) Write 300.3267 correct to;
- (i) three significant figures
- (ii) three decimal places
- (iii) 698.704 round to the nearest whole numbers
 - (b) (i) Evaluate $\sqrt{8935967}$
 - (ii) Change 0.96 in the form of $\frac{a}{b}$ where a and b are integers such that $b \neq 0$
- 2. (a) Rationalize the denominator of $\frac{3\sqrt{2}+1}{2\sqrt{2}-1}$
 - (b) If $\sqrt[3]{64} = 4^y$, find the value of y.
 - (c) If $\frac{\log \log y}{\log \log 3} = \frac{\log \log 16}{\log \log 4}$, find the value of y.
- 3. (a) In a class of 35 students, 21 study commercial subjects, 15 study both commercial and science subjects and 4 students study science subjects only. Use a venn diagram to find the number of students who study:

- i. Either science or commercial subjects.
- ii. Neither commercial nor science subjects.
- iii. Science subjects
- (b) What does it mean when we say the probability is;
 - (i) zero
 - (ii) one
- 4. (a) Prove that the quadrilateral with vertices at A(0,-2), B(4,2), C(0,6), D(-4,2), taken in order, is a square.
 - (b) Find the equation of the straight line that passes through the mid-point of A(1, 9) and B(-5, -3) and perpendicular to the line whose slope is $-\frac{1}{4}$.
- 5. (a) The area of triangle ABC is 60cm^2 . If $\overline{AB} = 10cm$, find \overline{AC} given that the included angle is 150° .
 - (b) Using the figure below, prove that $\overline{RS} = \overline{KS}$



- 6. The value V of diamond is proportional to the square of its weight W. It is known that a diamond weighting 10 grams is worth Tshs 200,000/=
 - (a) Write down the expression which relates V and W.
 - (b) Find the value of a diamond weighing 30 grams.
 - (c) Find the weight of the diamond worth Tsh.5,000,000/=
- 7. (a) If 42,000 women is an increase of 20% on the number of women ten years ago, how many women lived in the village?
- (b). Mr. Msuta started business on 1^{st} January 2020 with a capital of sh 60,000/=. Then made the following transactions:

 2^{nd} January bought furniture and fitting sh 10,000/=

3rd January bought goods for cash sh 25,000/=

4th January sold goods for cash sh 32,000/=

6th January paid advertising charges sh 1,500/=

7th January bought goods for cash sh 32,000/=

9 th January transport charges	sh 5,000/=
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Prepare cash account and balance it at the end of the month.

- 8. (a) Find the nth term in the following sequence: 1, 3, 5, 7, 9 ...
- (b) Mary wishes to save Tshs 817,500/= in 3 years to purchase a shamba. How much money must she invest now at 5% per annum compound interest in order to buy the shamba?

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, find the value of: $\frac{\tanh A + \sinh A}{1 + \cos A}$

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(b) Without using mathematical tables evaluate
$$\frac{Tan45^{\circ} + \sin 90^{\circ}}{Tan30^{\circ} \cos 30^{\circ} \sin 30^{\circ}}$$

10. (a) Solve for x if
$$\frac{x}{4} = \frac{5}{x} - x$$

(b) The product of two consecutive odd numbers is 143, find the two numbers.

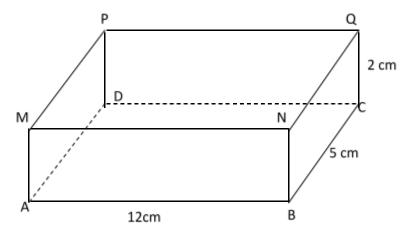
SECTION B (40 MARKS)

Answer all questions

11. The scores of Basic Mathematics test of 60 students of Chigongwe secondary school were recorded as follows;

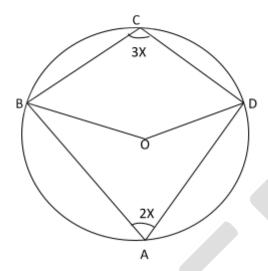
Class	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
interval										
Frequency	7	10	8	9	5	2	8	5	4	2

- Find the mode and mean (i)
- (ii) Draw the cumulative frequency curve (Ogive) and use it to estimate the median.
- 12. The figure below shows a rectangular prism in which AB=12cm, BC=10cm and QC=5cm;

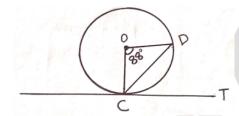


Calculate;

- (i) Its total surface area
- (ii) The angle between PB and the plain ABCD
- (iii) The volume in litres the prism can hold (1 litre=1000cm³)
- 13. (a) If O is the centre of a circle, find the value of x



(b) In the diagram O is the centre of the circle. If $m < COD = 88^{\circ}$, find m < TCD.



- 14. Given that $f(x) = \{x + 2 \text{ for } x < 0.2 \text{ for } 0 \le x \le 2.x^2 \text{ for } x > 2.$
 - (a) Draw the graph of f(x)
 - (b) State the domain and range of f(x)
 - (c) Calculate the value of f(1) and f(-1)