THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
TANGA REGION FORM FOUR MOCK EXAMINATION

CODE: 041 **BASIC MATHEMATICS**

Time 3:00 Hours **MAY , 2024**

Instructions

1. This paper consist of two sections A and B with a total of **fourteen(14)** questions
2. Answer **all** questions in sections 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 work and answers for each question must be shown clearly
5. NECTA mathematical tables and non-programmable calculators may be used.
6. All communication devices and any unauthorized materials are **not** allowed in the examination room
7. Write your **Examination number** on every page of your answer booklet(s)

SECTION A (60 Marks)

Answer **all** questions in this section

1. (a) Ally, John and Amina are bell-ringers. Ally ring his bell after every 20 minutes, John ring his bell after every 24 minutes and Amina ring his bell after every 30 minutes. If they all ring together at 10:00 a.m, When do they ring their bells together again?

   (b) Msonde was given Tsh.60,000 by his father. He spend $\frac{1}{4}$ of the money to buy shoes, $\frac{3}{4}$ of the remaining to buy shirt. The rest he paid school fees. How much money did he pay for school fees?

2. (a) Find the value of x in a given exponential equation $\left(\frac{1}{2}\right)^{-3} = 8^{x}$

   (b) Simplify the radical $\sqrt[3]{729a^3b^3c^3}$

   (c) Determine the number whose logarithm to base 5 is -3

3. (a) In a certain street with 200 Houses, 170 have electricity and 145 Houses have glass door. Assuming that each house has either a glass door or electricity or both.

      (i) How many houses have both electricity and glass door?

      (ii) How many houses have electricity only?

   (b) A box containing 5 blue marbles and 6 green marbles. If two marbles are selected at random without replacement. What is the probability that

      (i) The first is green and the second is blue.

      (ii) They are of the same colour.

4. (a) Given the equation of a line $x = 2$. Find

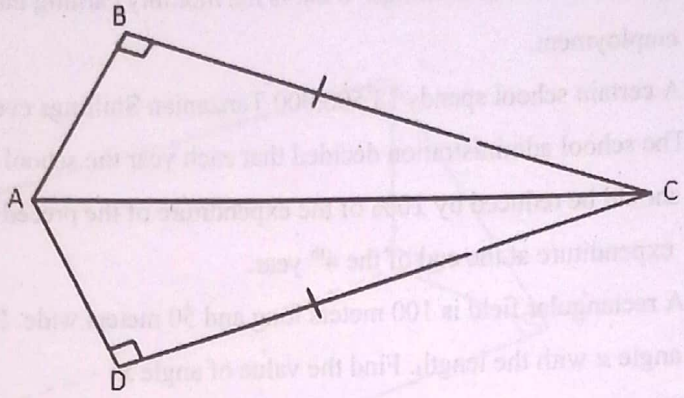
      (i) The slope of a line

      (ii) y-intercept of a line

      (iii) x-intercept of a line

   (b) A plane sets a course due to North at 80 km/h. If wind blows from west at 60 km/h, find the speed and direction of the plane.

5. (a) In the following figure, prove that $\bar{AC}$ bisects $B\hat{A}D$ and $B\hat{C}D$



(b) Two windows are similar with a scale factor 3, If the area of a smaller window is $2m^2$. Find the area of the larger window.

6. (a) The distance from Mwajuma's home to her school is $7km$. If Mwajuma goes to school daily. How many meters does she travels for 5 days in a week?

(b) If 8 men can assemble 16 machines in 12 days, how long will it take 15 men of the same ability to assemble100 machines?

7. (a) An Employer increase the salaries of his Employees in the ratio 4:5. What will be the new salary of Baraka who was earning Tsh.220,000 per month?

(b) The following informations represent assets and liabilities of Joseph`s business as on 31st December 2023

Creditor.....Tsh.100,000/=

Bank overdrafts.....Tsh.50,000/=

Stock.....Tsh.85,000/=

Premises.....Tsh.250,000/=

Debtors.....Tsh.150,000/=

Cash in hand.....Tsh.15,000/=

Furniture.....Tsh.42,000/=

Capital.....Tsh.392,000/=

Use this informations to find

(i) Total current assets

(ii) Total current liabilities

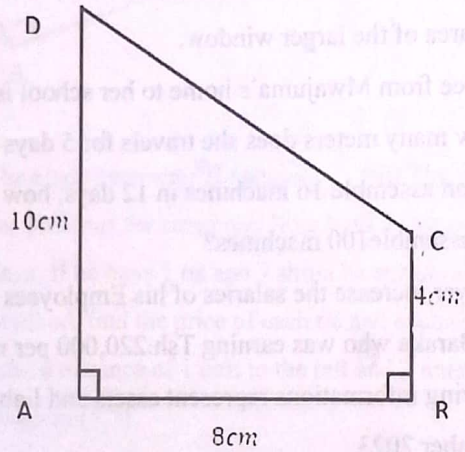
(iii) Working capital

8. (a) If Ally earns a salary of 800,000 Tanzanian Shillings per month. If his annual increment is 20,000 Tanzanian Shillings. What is his monthly earning during the 16^{th} years of employment.

(b) A certain school spends 18,500,000 Tanzanian Shillings every year for stationaries. The school administration decided that each year the school expenditure for stationaries should be reduced by 10% of the expenditure of the preceding year. Find the school expenditure at the end of the 4^{th} year.

9. (a) A rectangular field is 100 meters long and 50 meters wide. If one of the diagonals makes an angle x with the lengtl.. Find the value of angle x

(b) Use the figure below to find the length $\bar{}CD$



10. (a) If the length of a rectangle is twice of its width, and the perimeter of a rectangle is $60cm$. Find the dimensions of a rectangle.

(b) Find the two consecutive even numbers whose product is 80.

SECTION B (40 Marks)

Answer **all** questions in this section

11. The final score in Mathematics Examination were recorded as shown in the table below.

Scores	65 - 69	70 - 74	75 - 79	80 -84	85 -89	90 - 94	95 - 99
Frequency	10	12	21	6	9	4	4

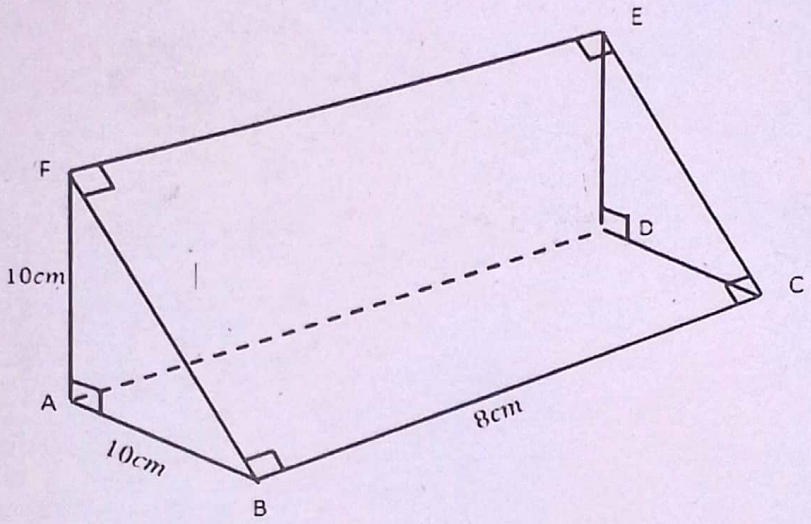
(a) Calculate mean mark using Assumed mean of 77 mark.

(b) Find the median score and give the interpretation of it.

(c) Calculate the mode of tl.e score and interpret the result.

12. (a) A ship sails from $J(0°, 20°W)$ to $K(10°N, 20°W)$ at 16 knots. If it leaves point J at 8:00 a.m on Tuesday. At what time will it arrive at point K ?

(b) Consider the figure below.



Calculate:

(i) The length $\overline{FB}$ (ii) The angle between $\overline{FB}$ and $\overline{AB}$ (iii) The volume of the figure

13. (a) Dereck has 83,000 Tanzanian Shillings for shopping. If he buys 2 ties and 2 shirts he remains with 9,000 Tanzanian Shillings. If he buys 1 tie and 3 shirts he spends all the money. By using inverse of matrix method, find the price of each tie and each shirt.

(b) A translation takes every point a distance of 1 unit to the left and 2 units downwards on the xy-plane. Find where it take point (3,7)

(c) Find the image of point (1,2) after reflecting in the line $y = -x$

14. (a) Find the turning point of $f(x) = x^2 - 2x - 3$ and then state its Domain and Range of $f(x)$

(b) Mr. Mbwiga grows tomatoes and peas on his 125 hectares of land. It cost sh.20,000/= to grow a hectare of tomatoes and sh.10,000/= to grow a hectare of peas. However NMB bank give him only sh.1,500,000/= as a loan. It takes18 working hours to grow a hectare of tomatoes and 6 hours to grow a hectare of peas. He wants to devote 1080 working hours for whole job. If the profit from a hectare of tomatoes and hectare of peas are sh.40,000/= and sh.25,000/= respectively.

(i) How many hectares of each should he grow to maximize his total profit?

(ii) What is the maximum possible profit?