PRIME MINISTER'S OFFICE

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

DAR ES SALAAM AND GEITA REGIONS

FORM FOUR INTERSCHOOL PRE – MOCK EXAMINATION

041 **BASIC MATHEMATICS**
(For Both School and Private Candidates)

Time: 3:00 Hours **APRIL, 2026**

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 quation in section A carries **six (6)** marks while in section B each question carries **ten (10)** marks.
4. All working and answers for each question must be shown **clearly**.
5. Non – programmable calculators, NECTA mathematical tables and graph papers may be used.
6. All communication devices, programmable calculators and any unauthorized materials are **not** allowed in the examination room.
7. Write your ***Examination Number*** on every page of your answer sheet (s)

SECTION A (60 Marks)

Answer **all** questions in this section

1 (a) In a school garden, there are 8 rows of cabbage seedlings with 16 cabbage seedlings in each row, and 7 rows of tomato seedlings with 12 tomato seedlings in each row. How many seedlings of each kind are there?

(b) Rajab is making a small metal rod. He has three pieces of metal of length 432 cm, 648cm and 540cm. What is the longest length of rod he can make if the rods have the same length and no metal is wasted.

2 (a) If $\log_4 t = 12$, find $\log_2\left(\frac{t}{4}\right)$

(b) Express $\frac{\sqrt{2}-\sqrt{3}-\frac{1}{\sqrt{2}+\sqrt{3}}}{a+b\sqrt{c}}$ in the form of

3 (a) The probability that I wake up late in the morning is 0.75. When I wake up late, the probability that I am late arriving at School is 0.8. When I am not late waking up, the probability that I arrive late is 0.6. Find the probability that I am late arriving on any one morning.

(b) P and Q are finite sets such that $n(P \cap Q') = 15$, $n(P \cup Q) = 90$ and $n(P \cap Q) = 30$, without using Venn diagram, find $n(Q)$

4 (a) The lines $8px + 2y - 3py + 1 = 0$ $8px + 2y - 3py + 1 = 0$ and $px + 8y + 7 = 0$ $px + 8y + 7 = 0$ are perpendicular, find p p

(b) A student walks $800m$ in the direction of $S30^0E$ from the dormitory to the parade ground and then he walks $300m$ m due west to his classroom. Find the displacement from the dormitory to the classroom.

5 (a) The regular hexagon inscribed in a circle. If the area of hexagon is $24\sqrt{3}cm^2$ $24\sqrt{3}cm^2$, find perimeter of regular hexagon

(b) Prove that an exterior angle of a triangle is equal to the sum of the measures of the two non-adjacent interior angles of the triangle.

6 (a) A white pipe takes 20 minutes to fill 3000liters water tank. Calculate the rate at which the tank is filled

(b) y Varies directly as the square of x and inversely as z. If x increased by 10% and z decreased by 20%, find the percentage change of y.

7 (a) Juma, Ally and Amina share property in the ratio $2:p:q$ respectively. It is known that $q=p+2$, if the largest share holder had shs $39{,}100/=$ in monetary terms. Find the value the property

(b) Juma sells a car to Ally and makes a profit of 10%. Ally then sells the car to Ahmed for 250,800/= making a loss of 5%. How much did Juma pay for the car?

8 (a) In a fund raising for a certain School, 42% of the money collected is given as cash prizes. There are eight cash prizes altogether. The first prizewinner gets TZS 3,500/=, second winner gets TZS 3,100/=, the third winner gets TZS 2,700/= and so on. How much money does the school receive?

(b) If the sum of n terms of a G. P with 1st term 1 and common ratio $\frac{1}{2}$ is $\frac{63}{32}$, find number of terms.

9 (a) If α, β and λ are angles of triangle, evaluate $Cos\alpha + Cos(\beta+\lambda)$

(b) A pendulum 40 cm long swings to and fro through an angle of 30° on either side. How high does the lower end of the pendulum raise

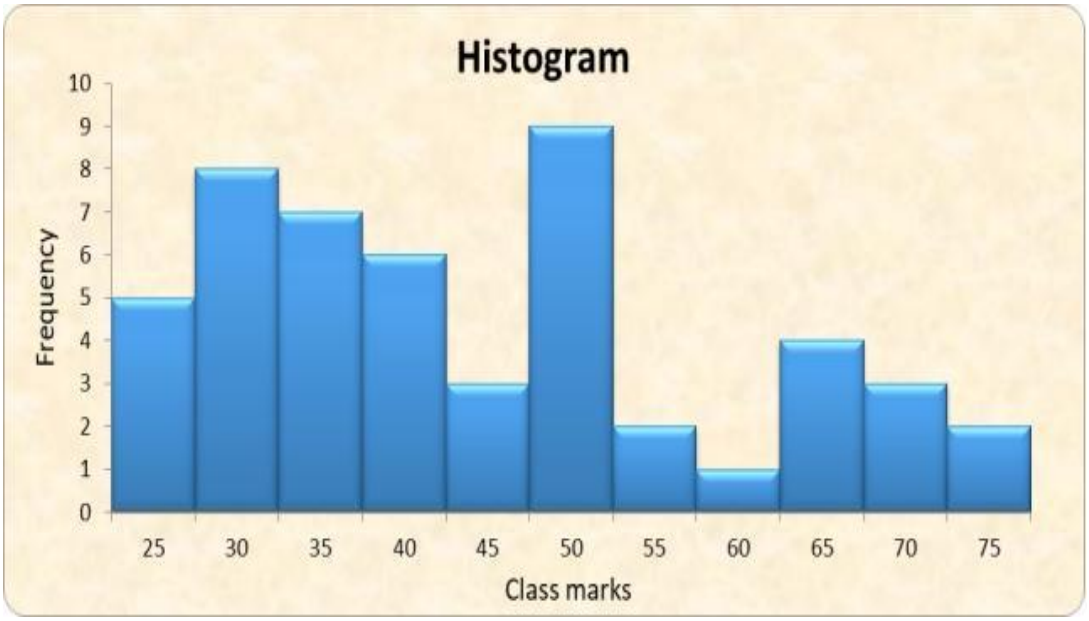
10 (a) In a graduation ceremony, 1,200 soda to be distributed to the people, if there is 45 people less, the share of each person would be 6 more, find the number of the people available in graduation.

(b) If $x+5$ is a factor of $2x^2+7x+k=0$, find the value of k and the other factor

SECTION B (40 % Marks)

Answer **all** questions from this section

11 (a) The graph represents marks scored by form four class from a mathematics test out of 100%. Use it to answer the following questions.



(i) Calculate the mean marks. Use model class as assumed mean marks
(ii) Calculated median
(iii) Computer mode

(b) Prove that angle in the semicircle is right angle

12 (a) A boat sails from $(70^0 S, 54^0 E)$ to $Q(70^0 S, 96^0 W)$ at speed of 120 Knots find how long the journey will take

(b) Egypt & Gabon both lie on longitude $25.9^0 E$. Their latitudes are $24.8^0 S$ and $31.6^0 N$ respectively. Calculate the shortest distance between the towns.

(c) Calculate the circumference of small circle in kilometers, along the parallel latitude of $30^0 N$. Use $\pi = \frac{22}{7}\ \pi = \frac{22}{7}$ and $R = 6370km\ R = 6370km$

13 (a) If $\begin{cases} ax - cy = q \\ cx - ay = r \end{cases}$, state conditions of which matrix method cannot be used to solve the given equation.

(b) In a form four class, there are ten more boys than there are girls. If there were one more girl, there would be twice as many boys as girls. How many boys and girls in the class. Use Matrix

(c) A linear transformation T maps $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ to $\begin{pmatrix} -1 \\ 4 \end{pmatrix}$ and $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ to $= \begin{pmatrix} -1 \\ 7 \end{pmatrix}$, by matrix method, find the coordinate of the point having an image of $(7 \quad 2)$ under T

14 (a) The function $f(x) = x^2 + 3x - 10$

(i) Identify minimum or maximum value of $f(x)$ $f(x)$

(ii) Find $f^{-1}(-6)$ $f^{-1}(-6)$

(b) Kellog is a new cereal formed of a mixture of bran and rice that contains at least 80g of protein and 42 mg of iron. Bran contains 8g of protein per kg and 6mg of iron and rice contains 10g of protein per kg and 3 mg per kg of iron, find how to produce the new cereal mixture at minimum cost if bran costs shs.500 per kg and rice is shs.450 per kg.