TANZANIA HEADS OF ISLAMIC SCHOOLS COUNCIL

FORM FOUR INTER ISLAMIC MOCK EXAMINATION

BASIC MATHEMATICS

041 (For both School and Private Candidates)

TIME: 3 Hours **Monday, 31st August 2026 a.m.**

Instructions

1. This paper consists of sections A and B.
2. Answer **all** questions in both sections.
3. All necessary workings and answers for each question must be shown clearly.
4. Mathematical tables and calculators may be used.
5. All writing should be in blue or black ink, while drawings should be in pencil.
6. Communication devices and any unauthorised materials are not allowed in the examination room.
7. Write your Examination Number on every page of your answer booklet(s) provided.

Shulelibrary.com

SECTION A (60 Marks)

Answer **all** questions in this section

1. (a) Kulwa and Doto are riding on a circular path. Kulwa completes a round every 24 minutes while Doto completes a round every 36 minutes. If they both started at the same place and time and went in the same direction, after how many seconds will they meet again at the starting point?

   (b) A chef was peeling bananas and found that 8% of the mass was lost. If a bag contains 80kg of bananas. Calculate;
   (i) The total mass (kg) left after peeling all bananas
   (ii) If each peeled banana weighs 200 grams, how many bananas were peeled?

2. (a) (i) Solve for y : If $2^{(y+7)} - 2^{(y+5)} = 3$.
   (ii) Rationalise the denominator $\frac{\sqrt{x}-\sqrt{y}}{2+\sqrt{y}}$

   (b) Given that log 2 = 0.3010, find the value of log 5 without using a calculator or mathematical tables.

3. (a) A group of 50 people were asked whether they had been to either of the two regions: Iringa or Mtwara. The results were: 17 had been to Iringa only, 22 to Mtwara only, and 10 to neither region. Calculate the number of people who had been to both regions.

   (b) In a class, a teacher displayed counting numbers less than 30. From the displayed numbers, a student selects a number at random. What is the probability that a number is a multiple of 3 or divisible by 2?

4. (a) Mr Mambo puts a point on (-3,-2) and Mr Mbegu puts its point at the midpoint of (2,13) and (2,7) on the xy plane. How far is Mr Mambo's point from Mr Mbegu's point?

   (b) A boat sails due North at a speed of 110km/h and a wind blows at a speed of 30km/h due East. Find the actual speed of the boat.

5. (a) In a regular polygon, the ratio of the degree measure of the exterior angle to the interior angle is 1:5. Find the number of sides of the polygon.

   (b) Two triangular plots of Mr Said are similar. The ratio of their sides is 5:3. If the area of the smaller plot is $36m^2$, find the possible area of the larger plot.

6. (a) A crown of gold and silver is made in the ratio $\frac{3}{2}:\frac{9}{4}$ by mass. If the mass of gold is 24 grams, find the mass of silver in the crown.

Shulelibrary.com

(b) If m varies inversely as t and directly as n^3, find the value of **n** in terms of m and t, given that m = 3 when n=2 and t = 3.

7. (a) Amina, Aisha and Fatma started a tailoring shop. The money they invested for this is in the ratio 5:7:8. They also divide the profit in their ratios. After one year, Fatma had 1,800 shillings more than Amina. How much did each get?

(b) The following information refers to Mr Amali, a trader as of 31st Dec 2025.

Purchases	…….. 180,000
Carriage inwards	……. 30,000
Sales	…….. 245,000
Return on sales	…….. 15,000
Other expenses	……. 42,000
Opening stock	……. 120,000
Closing stock	……. 70,000

(i) Calculate the gross profit/loss.

(ii) Determine the net profit/loss.

8. (a) The fifth and eleventh terms of an AP are 8 and -34, respectively. Find the sum of the first ten terms.

(b) A farmer deposited Tsh 25,000 in a bank; after two years, he found Tsh 32,000 in the account. Find the nominal rate of interest compounded semi-annually.

9. (a) Given that $\tan\theta = \frac{-3}{4}$ and $90^o < \theta\ 180^o$. Find $5\sin\theta\tan\theta + \cos\theta$.

(b) (i) Without using mathematical tables or a calculator. Evaluate cos 15 °.

(ii) A man who is 172cm tall notes that the length of his shadow is 158cm. What should be the angle of elevation of the sun?

10. (a) If (ax-1) and (x-3) are factors of quadratic equation $2x^2 - bx+3=0$, find the values of a and b.

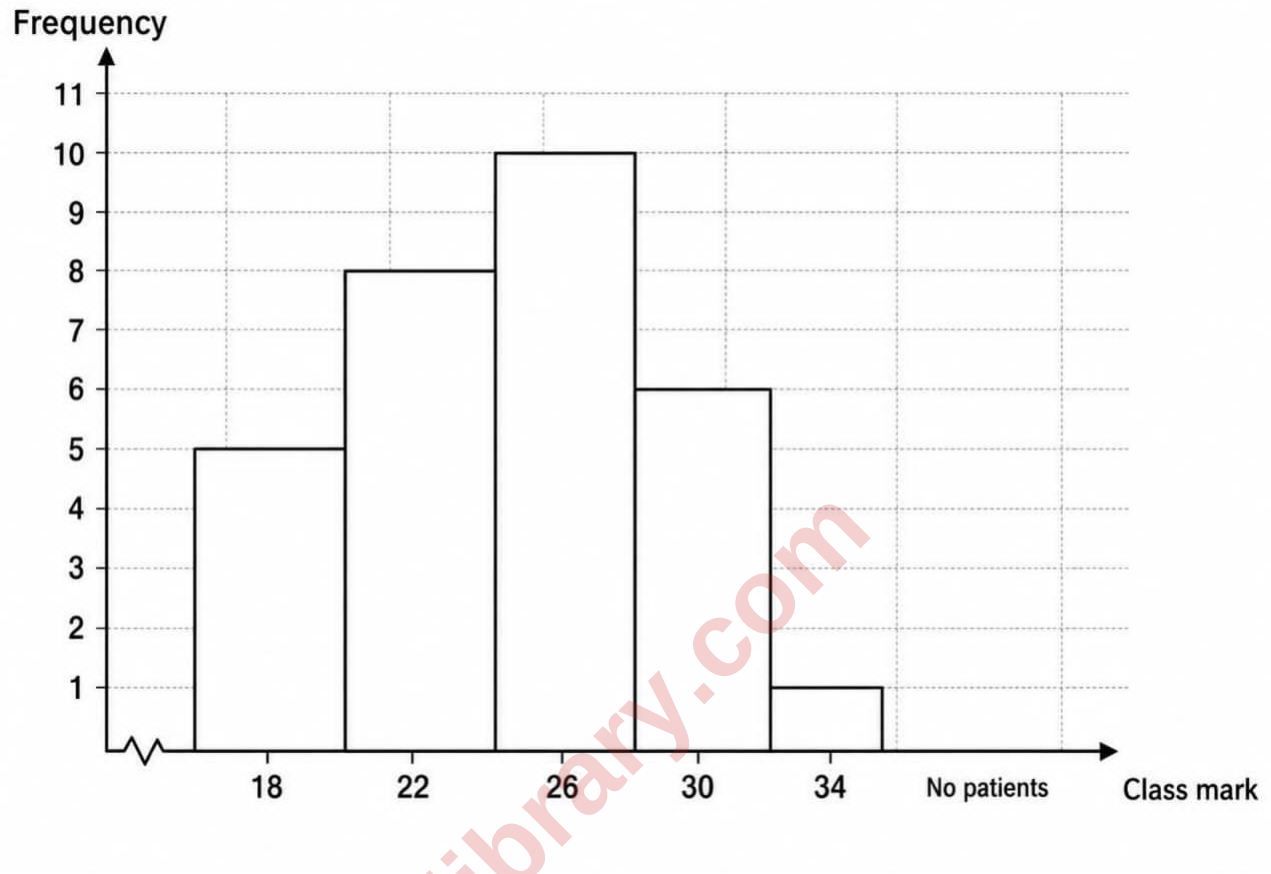
(b) Some students from a certain school in the Mara region planned a picnic. The total budget for hiring a bus was 1440 shillings. Later on, eight of these students refused to go and instead paid their full share towards the fee of one economically weaker student in their class, and thus the cost for each member who went on the picnic increased by 30 shillings. How many students attended the picnic?

Shulelibrary.com

SECTION B (40 Marks)

Answer **all** questions in this section

11. (a) The histogram below shows patients with malaria in Ukerewe District, Mwanza, April 2025. Use it to calculate the mean and median.



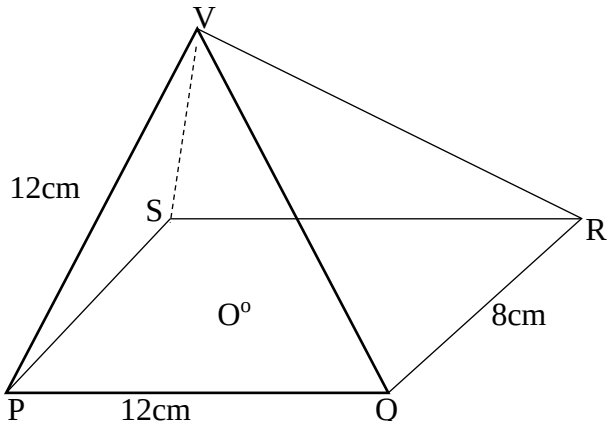
(b) An athlete runs for 80m along a circular running track of radius 50m. Through what angle has he turned?

12. (a) A plane starts the Journey at (20°S, 30°W) and flies south to (50°S, 30°W), taking 3 hours. What was its speed in

(i) Knots?

(ii) Kilometers per hour? Use π=3.14 and R=6370km

(b) In the right rectangular-based pyramid below: PQRS is a base, O is the centre, and VO is the altitude. Where PQ = 12cm, OR = 8 cm, the slanting height PV is 12cm long.



Shulelibrary.com

Calculate:

(i) The angle that edge VR makes with the PQRS

(ii) The total surface area of the pyramid

13. (a) If P = $\begin{pmatrix} 2 & 1 \\ -3 & 2 \end{pmatrix}$I, determine the value of r and s such that $p^2 - rp = I$, where I is an identity matrix.

(b) A man owns 60 domestic animals. Each of his domestic animals is either a cow or a chicken. If the domestic animals have a total of 200 legs, use the matrix method to find the number of cows and the number of chickens the man owns.

(c) Find the image of the line 3x+2y = 6 when translated by a vector (-2, 4).

14. (a) The programmed function used in designing different samples of symbols in the first assembling of fabric sheet is given by h(x) = $\sqrt{2x+3}$. Find the domain and range of the inverse of the function.

(b) Jamal and Juma both operate a knitting machine in a factory. In a week, Jamal can make 50 jerseys on his machine, while Juma can make 25 on his machine. At least 400 jerseys are to be made on these machines within 12 weeks. If x is the number of weeks Jamal works on these jerseys and y is the number of weeks Juma works;

(i) Write down the inequalities for x and y.

(ii) If the operating cost for Jamal's machine is Tsh 300,000 per week and that for Juma's machine is Tsh 100,000 per week, how many weeks should each machine operate to make these jerseys at the minimum cost?

(iii) What is the minimum cost?

Shulelibrary.com

Wabillah Tawfiiq