

THE UNITED REPUBLIC OF TANZANIA

Competence Based Examination

JEPGOS - TANZANIA



Form Four Opening Examination

BASIC MATHEMATICS

Time 3h : 00min

JANUARY, 2026

wzaelimu.com

INSTRUCTIONS

1. This paper consists of section A and B
2. Answer **all** questions in section A&B
3. Each question in section A consists of **six (6) marks** while each question in section B consists of **ten (10) marks**.
4. All **necessary working** and **answers** for each question must be shown clearly.
5. Write your **names** on every page of your answer sheet
6. The following constants were used if necessary;
 $\pi = 3.14$, $R = 6370\text{km}$

Answer all questions

1. a) Evaluate $\frac{0.008 \times 10^6}{6 \times 10^{-4}}$ expressing your answer in standard form correct to three significant figures
 b) Determine the fraction notation for $0.06\dot{3}$

2. a) If $(3^{x-2})(2^{3y-3}) = 72$, find value of x and y .
 b) Find value of x if $3^x = 9^x$
 c) Simplify the expression $\frac{9x^2-49}{2-(3x-5)}$

3. a) Express $\frac{6}{\sqrt{7}-2}$ in form of $a\sqrt{b} + c$. Where a , b and c are integers and give the value of a , b and c .
 b) A test on three subjects; mathematics, physics and chemistry revealed the following, 20 students passed chemistry, 5 students passed all three subjects, 12 passed mathematics and physics and 16 students passed mathematics and chemistry. Each student passed at least two subjects;
 - i. How many students passed physics and chemistry?
 - ii. How many students did the test?

4. a) Find the value of x , y and z given that;

$$\frac{x}{3} = \frac{y}{4} = \frac{z}{2} \text{ and } 2x + 3y - z = 16$$
 b) Find the equation of straight line joining points A (2,1) and B(6, -3). Give your answer in form of $y = mx + c$

5. a) In a regular polygon, the exterior angle and interior angle are in ratio of 7:4. Find the number of the polygon.
 b) A rectangular field is 72m long and 40m wide. If a triangular field with a base of 60m has an area which equal to the area of the rectangular field, find the height of the triangular field.

6. a) A bus travels 240km using 16litres of diesel. How many litres of diesel are needed to drive 90km?
 b) If y^2 varies directly to $x - 1$ and inversely to $x + d$ and if $x = 2$, $d = 4$ for $y = 1$, then find x when $y = 2$ and $d = 1$

7. a) A house which its buying was 12,500,000 was sold at the loss of 20%. Find the loss made and selling price.
 b) Given the following balances use them to prepare profit and loss account for Mr. Kamilius for the year ended 31st December 2024.

Gross profit	sh. 900,000
Wages and salaries	sh. 100,000
Rents	sh. 50,000

Insurance	sh. 110,000
Discount receive	sh. 80,000
Discount allowed	sh. 300,000
Transport	sh.130,000
Commission received	sh.400,000
Office expenses	sh. 200,000
Bad debts	sh. 20,000
Advertising	sh. 70,000
Sundry expenses	sh. 150,000

8. a) Find the sum of all odd numbers less than 100 which are not multiple of 7
b) The 20th term of an arithmetic progression is 60 and the 16th term is 20. Find the sum of the first 20 terms.
9. a) Given that $\sin A = \frac{3}{5}$, find the value of;
i. $\cos A$
ii. $\frac{\tan A - \sin A}{1 + 2\cos A}$
- b) A man who is 3m tall stands on horizontal levels ground 20m from the wall of a building. The angle of elevation of the top of the building from his angle is 27°. Calculate the height of the building
- 10.a) Samira has Tsh. 1800 to spend on cakes. If the price of cakes is decreased by Tsh. 20, she can buy 3 more cakes. Find the price of the cakes.
b) A rectangular garden is 6m wide and 8m long. What should be added to the shorter and reduced from the longer side of a rectangular to have an area 45 square metres? (Use quadratic formula)
- 11.a) Carefully study the frequency distribution table show the marks of 100 students in a physics examination;

Marks	No. of students
41 – 50	10
51 – 60	22
61 – 70	34
71 – 80	25
81 – 90	7
91 – 100	2

Calculate;

- i) The mean given assumed mean is 75.5
ii) The median in two decimal places
iii) The mode in two decimal places

b) The sum of the first two terms of geometrical progression is 10 and the sum of the first four terms is 40. Given that all terms of a geometrical progression are positive, show that the common ratio $\sqrt{3}$

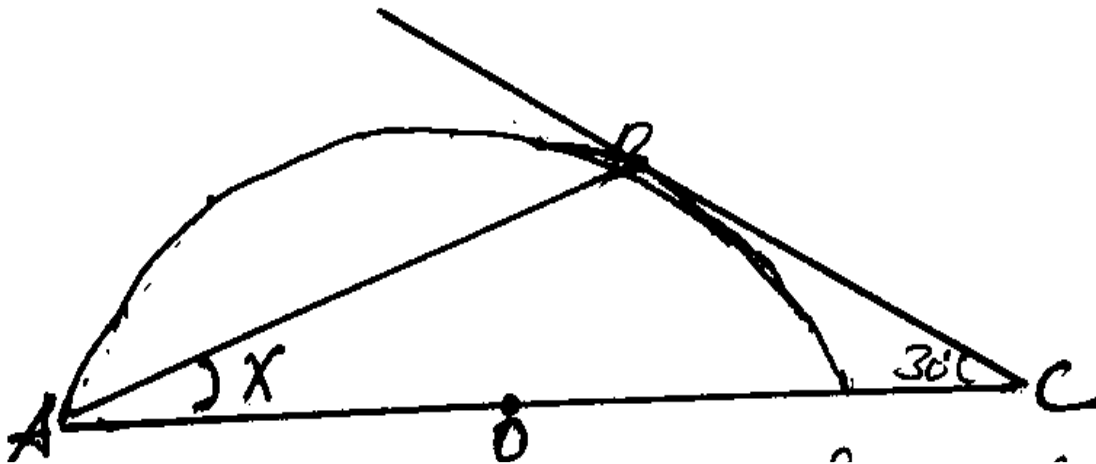
12.a) A ship sails from Remba (4.5S 39SE) to Dar es Salaam (7.5S, 39.5E). If it leaves Remba at 11:30pm and arrived in Dar es Salaam at 11:30pm.

b) A triangle ABC with the vertices A(1,0) (4, -2) and C(3,2) is reflected in y-axis. Find its image and sketch the triangle and its image in the same axis.

13.a) Draw a circle and show the following;

- i. Chord
- ii. Radius
- iii. Arc
- iv. Sector

b) Given the following circle equation. Find the value of x;



14.a) Given that;

$$f(x) = \begin{cases} -1 & \text{when } x < -1 \\ x^2 + 1 & \text{when } -1 \leq x \leq 2 \\ 5 & \text{when } x \geq 2 \end{cases}$$

b) Given the relation $R = \{(x, y): y = \sqrt{x + 3}\}$

- i. The inverse of R
- ii. State the domain and range of R
