Candidate's Examination Number _____

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

041 MATHEMATICS

TIME: 2:30 HOURS FRIDAY 6th DECEMBER, 2019 a.m.

INSTRUCTIONS TO CANDIDATES

1. **This paper consists of TWO (2) sections A and B.**
2. **Answer ALL questions in section A and any FOUR (4) questions in section B.**
3. **Write your answers in the spaces provided.**
4. **Write your examination number on each page.**
5. **Cellular phones and calculators are not allowed in the examination room.**
6. **Use blue or black pen in writing.**
7. **Mathematics tables are allowed in the examination room.**

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**MARKS**	**SIGNATURE**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9		
10		
11.		
12.		
13.		
14.		
TOTAL		

This paper consists of 19 printed pages

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SECTION A: (60 Marks)
Answer ALL questions in this section

1. a) Given the following numbers
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.
Identify all prime numbers and show them on number line.

b) Find 50% of the content in a box weigh $7kg\ 500\ gm.$

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2. A pipe line is assembled from the sections, each measuring $6.55\ m$ long.

   a) If 60 sections are needed, how long is the pipe line?

   b) How many sections are needed if the pipe line has a length of $455m$?

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3. a) Which is greater $\sqrt[3]{27}$ *or* $\sqrt[5]{32}$.

b) Rationalize the denominator of $\frac{7}{4+\sqrt{2}}$, hence find its value correct to two decimal places given that $\sqrt{2} = 1.4142$.

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4. a) Evaluate $3\frac{1}{5} \div \frac{0.32}{0.15}$ Give your answer in fraction form.

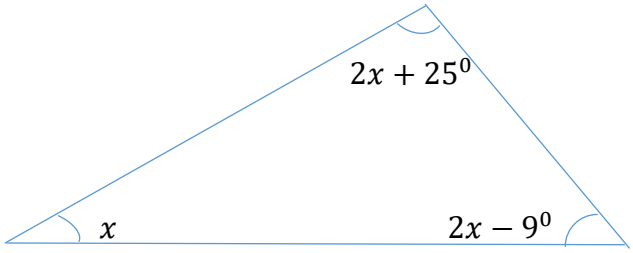
b) Find 5.84×6 correct to 2 significant figure.

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5. Solve $\begin{cases} 4x + 3y = 5 \\ 2x + 5y = -1 \end{cases}$ by the elimination method.

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6. a) Calculate the size of angle x in the following figure.



b) A girl from point O walks $4\ km$ due north to point A and then walks $3km$ due east to point P. What is the shortest distance from point O to P?

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7. Factorize the expression $\frac{1}{10}xy^3 - \frac{1}{12}x^3y$.

8. A lump sum of money was deposited in a bank which gives the interest of 8% per annum. If the simple interest earned after 5 year was 24000/=, how much was deposited?

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SECTION B: (40 marks)
Answer ANY four (4) questions in this section

9. a) Express $x(x+5)+(x-1)(x+3)$ in the form ax^2+bx+c where a, b and c are real number.

b) If $x * y = x^2 + y^2 - 3xy$, evaluate $(4 * 3) * 2$.

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10. a) Find the ratio of the area of the circle to its circumference.

b) If the circumference of the circle is 44cm and its diameter is 14. Write in fraction the ratio of this circumference to the given diameter.

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11. a) Triangle ABC and STU are similar. $AB = 3\ cm\ and\ ST = 2cm$. The area of triangle STU is 6 cm^2, find the area of triangle ABC.

b) The translation T maps the origin onto appoint $P(4,8)$. Where T map the points
   i) Q(0,4)

   ii) N(-10,8)

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12. a) Without using table find the value of $\frac{6^{\frac{1}{2}} \times 96^{\frac{1}{4}}}{216^{\frac{1}{4}}}$.

b) Find the value of y given that $1 + \log_2 3 + \log_2 y = \log_2 12$.

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13. a) Express 0.0003075 in the form of $A \times 10^n$ where $1 \leq A \leq 10$. Hence determine the values of $A \ and \ n$.

b) Solve the following equation by using the quadratic formula.

$$\frac{x(x-4)}{3} = -1$$

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14. a) There are 24 people at a meeting, 12 are farmers, 18 are soldiers and 8 are both farmers and soldiers. Use formula to answer the following questions.
    i) How many are farmers or soldiers.
    ii) How many are neither farmers nor soldiers.

b) Angle A is acute and $\tan A = 2.4$. Find the value of $\frac{2\cos A + \sin A}{\sin A - \cos A}$.

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ROUGH WORK