Candidate's No. ……

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

FORM TWO SECONDARY EDUCATION EXAMINATIONS, 2006

0041 **BASIC MATHEMATICS**

TIME: 2½ HOURS

INSTRUCTIONS

1. This paper consists of sections A and B.
2. Answer ALL questions in both sections showing clearly all the working and answers in the spaces provided in this examination paper.
3. Write your examination number on the top right hand corner of every page.
4. Mathematical tables, geometrical instruments and graph papers may be used where necessary.
5. Calculators and Cellphones are not allowed in the examination room.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**SCORE**	**INITIALS OF EXAMINER**
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TOTAL		

This paper consists of 16 printed pages.

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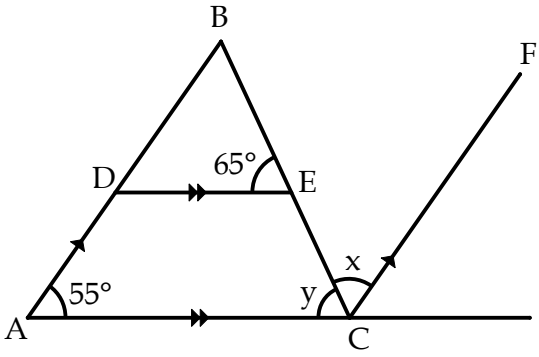
SECTION A (60 MARKS)

NO.	QUESTION
1. (a)	Arrange the following numbers from largest to smallest: $\frac{2}{3}, \frac{6}{12}, \frac{3}{2}, \frac{17}{20}$ and $\frac{3}{5}$
(b)	Given the number 0.00803, write the number of significant figures.
2. (a)	If $a * b = \frac{a-b}{a+1}$, find $7 * 3$

(b)	A clock loses 4 minutes every day. If the clock is set to start on Monday, on which day will it have lost 1 hour?
3.	Simplify $5 + \left(2\frac{1}{2} \div \frac{1}{8}\right) \times \frac{3}{4}$

4.	In the figure below, find the value of: (i) x (ii) y 
5.	A person borrows Tshs. 6,000 for a period of 6 years at 20% simple interest per annum. Calculate the total amount the person will pay back after 6 years.

6.	A straight line passes through two points $A(-3,6)$ and $B(-6,3)$. Find the equation of this line in the form $y = mx + c$.
7.	A shopkeeper makes 40% profit by selling an article for Tshs. 63,000. What would be his percentage loss if he sold the article for Tshs. 40,000?

8. (a)	Simplify $\frac{a^8p^2c^7}{a^5c^3}$
(b)	Approximate 13.95 and 9.72 to the nearest tens, hence evaluate 13.95 × 9.72 by using the approximated numbers.
9.	The length of a rectangle is twice its width. If the perimeter of the rectangle is 18cm, find its area.

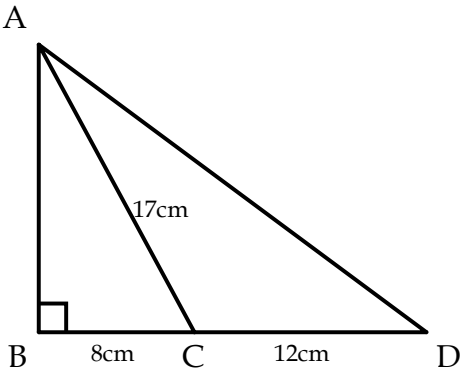
10.	Solve the equation $0.03x - 0.003 = 0.03$
11.	Make p the subject of the formula, given, that $D = \sqrt{\square - p}$

12.	If $x^2 + bx + c = (x - 3)(x + 2)$, determine the values of b and c.
13. (a)	Simplify $\log_{10}(0.001)$
(b)	Given that $\log_{10} 2 = 0.3010, \log_{10} 5 = 0.6990$, evaluate $\log_{10}(0.750)$

14.	Rationalize the denominator of $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{6}-\sqrt{2}}$
15. (a)	The transformation T maps the point (x, y) to $(x - y, x)$. Find the image of the point $(6, -2)$ under T.

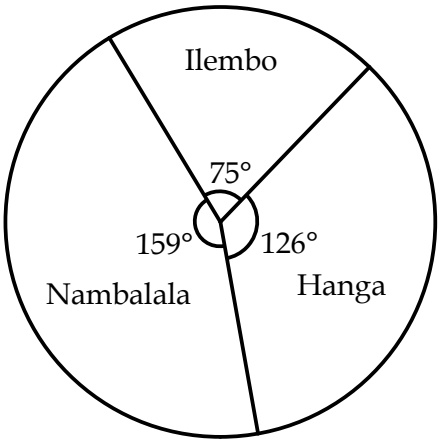
(b)	Find the image of a point $P(3,2)$ after rotating it about the origin through 90° in a clockwise direction.
16.	Without using tables, find the value of $\frac{6^{\frac{1}{2}} \times 96^{\frac{1}{4}}}{216^{\frac{1}{4}}}$

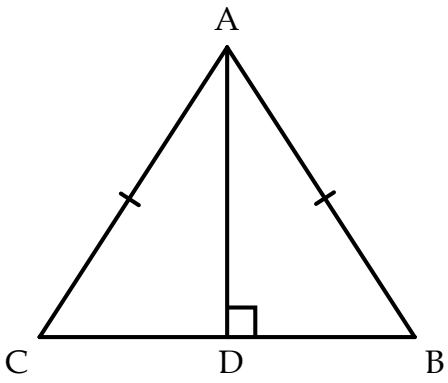
17.	Angle A is acute and $\tan A = 2.4$. Find in the simplified form of $\frac{a}{b}$ the value of $\frac{2\cos A + \sin A}{\sin A - \cos A}$
18.	If $E = \{0, 1, 2, 3, 4, 5, 6, 7\}, A = \{0, 1, 3\}$ and $B = \{5, 6, 7\}$. Find $A' \cap (A \cup B)$.

19.	From the following figure, find the length AD. 

20. (a)	Write the following number in the expanded form: 10685
(b)	Write in words the number 72,007

SECTION B (40 MARKS)

NO.	QUESTION
21.	The total production of maize in a certain year in the three villages shown in the figure below 57,000 tonnes. Calculate weight of maize produced by each village in that year. 

22.	Use the figure below to prove that triangle $ADB \cong$ triangle ADC 

23. (a)	Express 0.0003075 in the form $A \times 10^n$ where $1 \leq A < 10$, hence determine the values of A and n.
(b)	Find the value of y given that $1 + \log_2 3 + \log_2 y = \log_2 12$
24. (a)	The sum of the ages of David and Juma is 80 years. The difference of their ages is 10 years. Find the age of each of them.

(b)	Solve the following simultaneous equations $\begin{cases} 2x + 3y = 5 \\ 4x + 23 = 5y \end{cases}$