041

Candidate's Number .....

SMZ

ZANZIBAR EXAMINATION COUNCIL

FORM THREE ENTRANCE EXAMINATION 2014

MATHEMATICS

TIME: 3:00 Hours

INSTRUCTIONS TO CANDIDATES

1. This paper consists of TWO sections A and B.
2. Answer ALL questions in Section A and any FOUR questions in section B.
3. Each question in Section A carries 7 marks while each question in Section B carries 11 marks.
4. ALL WORKING must be clearly shown in both sections.
5. Calculators and mobile phones are not allowed in the examination room.
6. Write your examination number on every page in the spaces provided.
7. You are required to circle each question you have attempted in the Question number "column".

	FOR EXAMNAER'S USE ONLY	
QUESTIONS NUMBER	MARKS	SIGNATURE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
9.		
10.		
11.		
12.		
13.		
14.		

THIS PAPER CONSISTS OF 20 PRINTED PAGES

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SECTION A (60 MARKS)

1. List down all factors of

i) 16

ii) 24

Hence find the greatest common factor (GCF) of 16 and 24.

b) i) Round off each of the numbers 8.7, 69.5, 210.11 and 146.8 to th nearest unit.

ii) By putting the rounded numbers in b(i) above, approximate the value of the numerical expression:

$$\frac{146.8 \times 210.11}{69.5 \times 8.7}$$

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2. a) Simplify: $(3\frac{1}{2} + 4\frac{3}{5}) \times 2\frac{1}{2}$

b) i) Increase 75 by 8 percent

ii) Decrease 12½ by 12 percent

3. a) Perform the following operations

i) (5km + 50m + 3000cm) + (2km + 25m + 500cm)

giving your answer in metres

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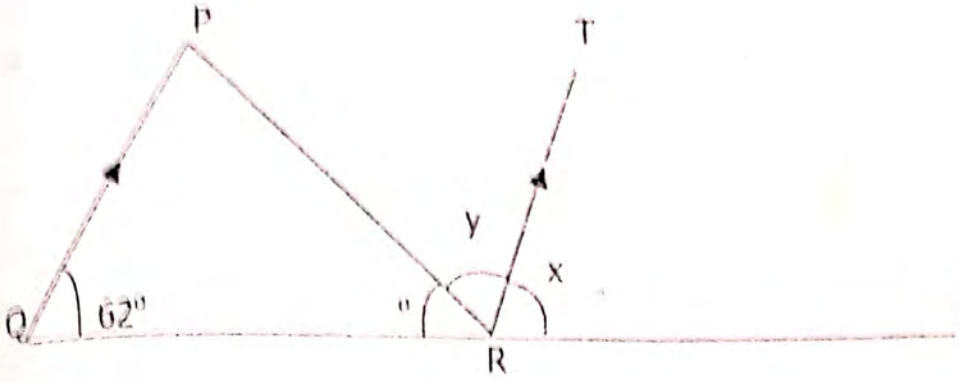
ii) (3.5 litres + 500 millilitres) – (1.8 litres + 700 millilitres)

giving your answer in milliliters

b) A person changed 450 US dollars and obtained 765,000 T. shillings. Wh
was the exchange rate in T. shillings per dollar?

4. a) In the figure 1 below, find the size of the angles marked by the letters x and y.



(figure 1)

b) A rectangular garden of length 24 metres has an area of 240 metre square. Determine:

i) Its width

ii) The length of its diagonal

a) What number must be added to the expression $x^2 + 6x + 7$ to make it a perfect square?

b) Ali is now 12 years younger than her sister Masha. The ratio of their ages three years ago was 1:3.

i) Translate the above statement into a mathematical equation.

ii) Hence, by solving the resulting equation find their present ages.

c) Solve for t : $4t - 2(5 - t) = 8 - 3(t + 1)$

a) Rationalize the denominator and simplify

$$\frac{\sqrt{6}}{\sqrt{6}-\sqrt{3}}$$

b) Obtain the values of x and y such that $2^{x-y} = 16$ and $3^{x-y} = 9$

7. a) Determine the exact values of:

i) $\sqrt{2}\,(\cos 45^0 + \sin 45^0)$

ii) $2\sqrt{3}\cos 30^0 - \tan 45^0)$

b) If $\cos P = \frac{15}{17}$ where P is acute angle, find the value of

i) Sin P (ii) tan P

8. a) Solve for y

$$\log_{10}(y+7) = \log_{10} y + 1$$

b) Find the value of $\log \sqrt[3]{\left(\frac{b}{a}\right)^2}$ given that log a = 1.83 and log b = 2.73

c) Suggest any four ways of reducing Industrial pollution in the World

b) i) Plot the points A(4,0), B(0,3) and the origin on a graph pap
what is the common name of the resulting shape when thes
points are joined?

ii) Calculate the length of the line from A to B.

10. a) i) How many subsets are there in a set with three (3) elements?

ii) List down all subsets of the set S = {a, b, c}

b) Out of 200 students appeared in Form Three Entrance Examination, 140 passed Mathematics and 100 passed Physics. If 40 students failed both subjects. Find by using a Venn diagram; the number of students who passed.

i) Both subjects

(ii) Physics but not Mathematics

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11. a) i) Express the equation $\frac{x+3}{x-1} = 2(x-5) + 11$ in the form $x^2 + bx + c = 0$ where b and c are integers.

ii) Solve the resulting equation in part 11 (a) (i) above by factorization method.

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b) Given that m * n = ½ (m + n) – m. Evaluate (9 * 17) * 6.

2. a) If A:B = 3:4 and B:C = 5:6, find C:A.

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b) In setting the selling price P of an article, a shopkeeper doubled its price. What will be the profit of the article whose selling price is T. Shillings 46,500?

13. a) In the figure 2 below, AB = 4cm, BC = 3cm and the area of the re ACDE is $20m^2$.

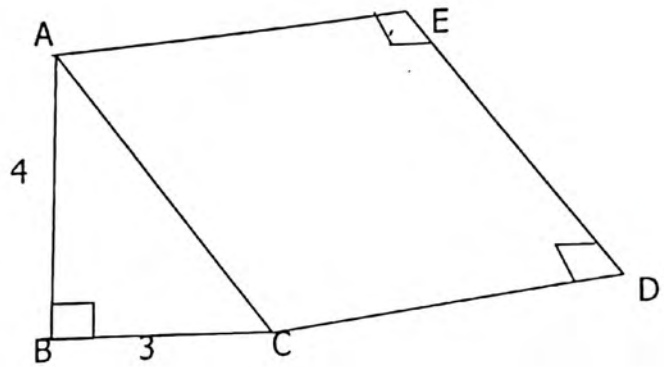

Figure 2

i) Determine the perimeter of the polygon ABCDE.

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ii) What is the name given to this polygon?

b) Figure 3 shows triangles KLM and KPN.

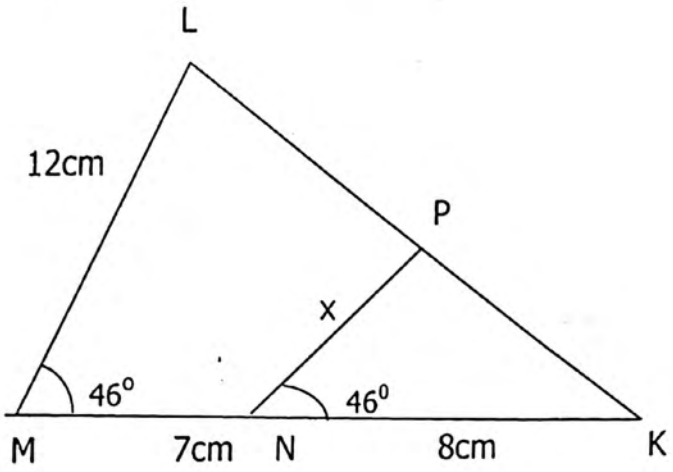

Figure 3

i) Show that these triangles are similar

ii) Using similarity property, calculate the length of the side labele
x.

14. a) The ages of 30 people (adults) who attended a clinic on one parti
were recorded as follow.

35	46	41	59	55	47	38	32	27	35
52	45	40	56	49	53	33	42	39	36
43	42	53	41	43	29	32	25	38	44

i) Prepare a frequency distribution which includes cumulative
frequencies by grouping the ages into class intervals 25-29,
34, ---, 55 – 59.

ii) Hence draw the cumulative frequency curve (ogive).

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b) Ten (10) packets of a chemical are such that, five (5) weigh 20.01g three (3) weigh 19.98 g each and 2 weigh 20.03g each. Calculate mean (average) mass of the packets.