**Name: …………………………………………………… Adm no...................................**

**School: …………………………………………………Signature ……………………....**

**Date: ………………………**

**MATHEMATICS**

**PAPER**

**JULY /AUGUST 2016**

**TIME: 2 ½ HOURS.**

***TOP EVALUATION EXAMINATIONS – 2016***

 ***Form 2***

 **Mathematics**

 **Paper**

**INSTRUCTIONS TO STUDENTS:**

* *Write your name, Admission number, date and signature in the space provided at the top of the page.*
* *The paper consists of two sections; Section 1 and Section II.*
* *Answer* ***all*** *the questions in section I and Section II.*
* *All working must be clearly shown.*
* *Marks may be awarded for correct working even if the answer is wrong.*
* *Non – programmable silent electronic calculators and KNEC tables may be used.*

***For Examiner’s Use Only:***

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 |
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| 17 | 18 | 19 | 20 | 21 |
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 GRAND TOTAL

*This paper consists of 11 printed pages. Students should check to ascertain that all pages are printed as indicated.*

**SECTION I – ( 50 MARKS )**

1. Use squares, square roots and reciprocal tables only to evaluate the following giving

your answer correct to 2 decimal places. ( 3 marks )

 2 + 2

 √ 38.46 ( 8.67)2

2. Evaluate: (4 marks)

 ½ + 24/5 of 8 ÷ 6(2 x 42/5)

 2/4 of 6(8 ÷ 31/3)

3.The GCD of 6480, 7200 and a third number is 144. The L.C.M of the three numbers is 25 x 35 x 52 x 73. Find the smallest third number. (3 marks )

4. Solve the simultaneous equations. (4 marks)

 xy = 4

 x + y = 5

5. Find the equation of a line through the point (2, 1), perpendicular to the line ½ x +2y = -3. (3 marks )

6. The size of an interior angle of a regular polygon is 6 ½ times that of its exterior angle. Determine the number of sides of the polygon. (3 marks )

7. Tap A takes 4 minutes to fill a tank and tap B takes 6 minutes to empty the tank. If the tank has a capacity of 3000 litres find the volume of the tank after 2 minutes when both taps are open.

 (3 marks)

1. Cleophas is 11 years old. In three years time he will be 1/3 of his mother’s present age. How old was his mother 10 years ago? (3 marks)
2. The figure below shows quadrilateral ABCD in which AB = 6cm. BC = $\frac{1}{2}CD$, CD = DA and angle ADC = angle BCD = 900.

A

B

D

C

 Calculate the area of the quadrilateral ABCD. (4 Marks)

1. Reduce the following expression onto a single fraction. (3 marks)

 

1. A salesman is paid a salary of Sh. 10,000 per month. He is also paid a commission on sales above Sh. 100,000. In one month he sold goods worth Sh. 500,000. If his total earning that month was Sh. 56,000. Calculate the rate of commission. ( 3 Marks)
2. The curved surface area of a cylindrical container is 880cm2. Calculate to one decimal place the capacity of the container in litres given that the height is 17.5cm. (Take π = 22/7).

 (3 marks)

1. Given that ( 52.83)-1 = 0.01892 and (0.003735)-1 = 267.64, work out without using tables or calculators, the value of

 7 + 0.5

 0.5283 3.735 leaving your answer 4 s.f ( 3 marks )

1. 45 men can construct a road 210m long in 60 days. What length of road would be constructed by 72 men on 50 days, assuming all the work is done at the same rate? (2 marks )
2. A piece of wood whose volume is 90cm3 weighs 81 grams. Calculate the mass in kilograms of one cubic meter of the same wood. (3 marks)

1. Given that tan θ = 0.75, find without using mathematical table or calculators. (3 marks)

 2 sin θ + Cos θ

**SECTION II(50 Marks)**

1. The following measurement were recorded in a field book using XY as the baseline. XY = 400m.

|  |  |  |
| --- | --- | --- |
| C60B100A120 |  Y34030024022014080X | 1200160E160F |

1. Using a scale of 1:4000 draw an accurate map of the farm. (4 marks)
2. Determine the actual area of the farm in hectares. (4 marks)
3. If the farm is on sale at sh.80,000 per hectare find how much the farm costs. (2 marks)
4. The figure below shows a cone from which a frustum is made. A plane parallel to the base cuts the cone two thirds way up the vertical height of the cone to form frustum ABCD. The top surface radius of the frustum is labelled r and the bottom radius R.

A

D

A

C

y

V

R

r

1. Find the ratio r:R. (1 Mark)
2. Given that r = 7cm, find R. (2 Marks)
3. If the height VY of the original cone is 45cm. Calculate to the nearest whole number the volume of the frustum. (Take $π= \frac{22}{7}$ ) (4 Marks)
4. The frustum represents a bucket which is used to fill a rectangular tank measuring 1.5m long, 1.2m wide and 80cm high with water. How many full buckets of water are required to fill the tank. (3 marks)
5. In the figure below, O1 and O2 are the centres of the circles whose radii are 4 cm and 7 cm respectively. The circles intersect at A and B and angle AO1O2 = 60˚



 Find by calculation; take π = 3.142

1. The angle AO2O1 (1 marks
2. The area of the quadrilateral AO1BO2 (4 marks)
3. The shaded area (5 marks)
4. A swimming pool is 20m by 12m and it slopes gently from a depth of 1m at the shallow end to a depth of 3m at the deep end.
5. Calculate the volume of water in the swimming pool (in m3) when it is full. (3marks)
6. If the swimming pool is to be drained by a pump which removes water at the rate of 2.5m3 per minute, how long will it take this pump to drain the swimming pool if it was full? (3marks)
7. If the sides of the swimming pool and its floor are to be covered with square tiles of side 20cm, find to the nearest 100 the number of tiles required. (4marks)
8. A hotel bought a number of hens at sh. 500 each and a number of cocks at sh. 600 each. They paid a total amount of shs. 12,300. If they had bought twice as many as many hens and two cocks less, they would have spent sh. 5,300 more.
9. Find the number of each type of animals they bought. (6 marks)
10. The hotel sold all the animals at a profit of 20% per hen and 25% per cock. Determine the total profit they made. (4 marks)