## GATITU SECONDARY SCHOOL, P.O. BOX 327 – 01030, GATUNDU.
## FORM 2 MATHEMATICS MID TERM EXAMINATION. TERM 3 2015.

NAME:_____ADM:_____ CLASS:_____

INSTRUCTIONS:

1. Write your name, adm. And class in the space provided above.
2. The paper consists of two sections. Section I and II.
3. Attempt BOTH sections.
4. All working MUST be shown in the spaces provided below each question.
5. Marks may be given for correct working even if the answer is wrong.
6. Mathematical tables and calculators may be used where necessary.

**(SECTION I)** Attempt all questions in this section.  $\left(50 \text{ Marks}\right)$

1. Without using Mathematical table evaluate  (3mks

a) $\dfrac{0.18 \times 4}{\sqrt{(3.24 \times 4)}}$

b) Work out the following giving the answer as a mixed number in its simplest form

$$\dfrac{\frac{2}{3} \div \frac{1}{2} \text{ of } \frac{4}{9} - 1\frac{1}{10}}{\frac{1}{8} - \frac{1}{6} \times \frac{3}{8}}$$

(3mks

2. Find the numerical value of:

a) $9^{\frac{1}{2}}$ (2mks

b) $64^{-\frac{1}{6}}$ (2mks

c) $243^{\frac{2}{3}}$ (2mks

3. Solve each of the following equation:

a) $(3^{2x})^3 = 3^4 \times 3^8$ (3mks

b) $2^{x/4} = 8$ (3mks

4.    Divide each of the following by:
i)    2

a)    T . 7076                                (2mks

b)    $\overline{3}$ . 6946                        (2mks

ii)    3

a)    $\overline{2}$ . 9754                        (2mks

b)    4 . 7938                                (2mks

iii)  Use tables to evaluate                          (4mks

$$\sqrt{\left(\frac{3.45 \times 16.7}{31.5}\right)}$$

5.  Write down the equations of the following lines' given their gradients and one pont on the line.

a)  (3, 0)    gradient  0                          (3mks

b)  (- , 0) gradient  -1                          (3mks

6. Given that $\tan \Theta = {}^{4}/_{3}$; where $\Theta$ is an acute angle. Find
a) Sin $\Theta$ (2mks
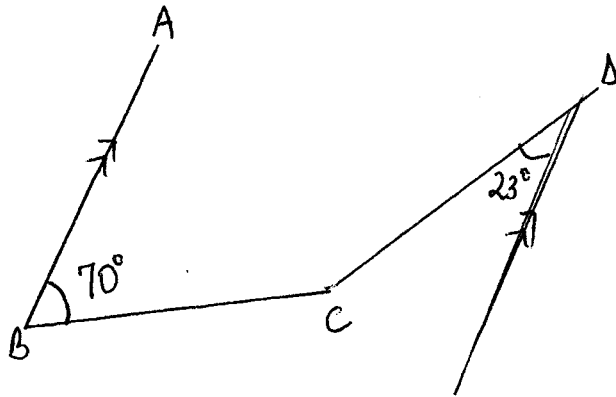
b) Cos $\Theta$ (2mks

7. If $2^{x+y} = 16$ and $4^{2x-y} = \frac{1}{4}$; find the ratio of $y-x : 2y$ (3mks

8. Solve the equation:
$(P + 1)^2 + 3P - 1 = 0$. (3mks

9. Three years ago Juma was three times as old as Ali. In two years time, the sum of their ages will be 62. Determine their present ages. (3mks

10. In the figure below AB//DE,   ABC = 70° and  CDE = 23° Find  BCD      (2mks )



SECTION  II - 50  MARKS
(attempt any five questions from this section)

11. The vertices of a quadrilateral are:
A(5,1)    B(4 , 4 )      C(1 , 5 )   and  D(2, 2).  Use gradients to show that.
a).      AB is parallel to CD                    (3mks

b)      AD is parallel to CB                    (3mks

c)      AC is perpendicular to DB.                        (4mks

12.     Form the quadratic equations in the form $ax^2 + b + c = 0$:                    Where a , b
and c are integers from the given roots.
a)      (-2, 2)                          (2mks

b)      (- 2 ½ ,  3 ½ )                  (2mks

c)      ( $\frac{1}{p}$ ,  $\frac{1}{q}$ )                  (2mks

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d)      (1/4 , -3)                          (2mks

e)      (0, - 3)                            (2mks

13.     Solve the following quadratic questions
a).     $\dfrac{3}{X2}$ - $\dfrac{8}{X}$ = 16                   (3mks

b)      (2x - 1)2 -    1 = 0                 (3mks

c)      A number of people bought a 300 – hectare farm which they shared equally.  If the number of hectares per person was 5 less than their numbers. Find the number of people.(4mks )
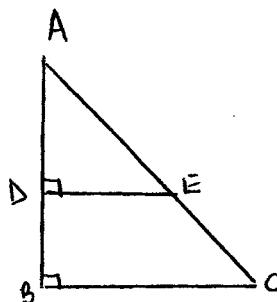
14. The figure below shows a triangle in which AB = 18cm, BC = 6cm, BD = 7cm, and DE is parallel to BC. If the triangle is rotated about AB, Calculate:
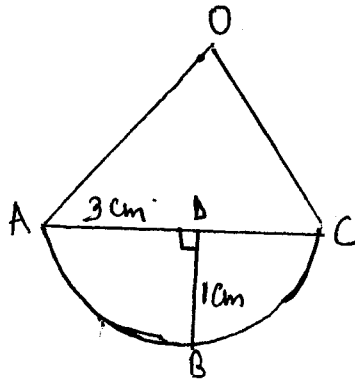
a) The surface area of the cone formed. (3mks

b) The volume of the cone (3mks

c) The volume of the trustrum formed by the portion B C E D. (4mks



15. In the figure below, ADC is a chord of a circle with centre O passing through A, B and C. BD is a perpendicular bisector of AC, AD = 3 and BD = 1cm.

Calculate:

a)    The radius OA of the circle                                         (4mks

b)    The area of the sector OABC                                     (3mks

c)    The area of the segment ABCD.                               (3mks

16a)   Given that cos X =      sin (3x + 10)  Find
i)      X                                                          (3mks

ii)     tan X                                    (2mks

b)     In the below  ABC = 30o, ACB =  ADC = 90o, AD = 4/3  3 cm  and  DC = 4cm,
Calculate the length of
a)     AC                          (2mks

b)     BC                          (3mks

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