GATITU SECONDARY SCHOOL PO BOX 327-01030 GATUNDU

FORM 3 MATHEMATICS END OF TERM II 2016 PP 2

TIME 2 1/2HRS

NAME----------ADM----------

INSTRUCTIONS

(i) Answer all the questions in SECTION A and ANY five in SECTION B

(ii) All your working must be shown below each question

(iii) SECTION A (50mks)

1 Without using tables or calculator evaluate. (2mks)

$$\frac{3.8 \times 0.016}{10 \times 0.0076}$$

(b) $\dfrac{3.264 \times 1.215 \times 12.25}{1.088 \times 0.4725}$ (4mks)

2 A line L_1 passes through point P(-1, 2) and Q(2 , -7).

(i)Find the equation of a line which is perpendicular to L_1 and passes through point R (5 ,5) (3mks)

5 The exterior angle of a regular polygon of side 16 cm is 18^0. Calculate the area of the polygon to 2 d.p (4mks)

6 Express in surd form and simplify by rationalizing the denominator. (3mks)

$$\frac{1+\cos 30^0}{1-\sin 60^0}$$

7 Three men working 8 hours daily can complete a piece of work in 5 days. Find how long it will take 10 men working 6 hours a day to complete the same work, (3mks)

8 Given the equation $m= 1/4[3h^2 +8ah +3a^2]$ Calculate the exact value of m, when h=20 and a=-5. (3mks)

9 In a form two class there are 5 more boys than girls. On a certain day one-quarter of the boys and one-fifth of the girls went for games .If 8 students from this class went, find the number of students in the class.

(3mks)

10 Solve for y in the equation $2\log_{10}y + \log_{10}5 = \log_{10}10 + 2\log_{10}4$ (3mks)

11 Simplify completely $\dfrac{49a^2 - 9b^2}{14a + 7ab + 6b + 3b^2}$ (4mks)

12 Express $\dfrac{x-3}{x+3} - \dfrac{x+3}{x-3}$ (3mks)

13 Simplify

$$(x + y)^2 + (y + z)^2 + (z + x) - (x + y + z)^2$$ (4mks)

SECTION B (ANSWER ANY 5 QUESTIONS)

14 A teacher paid ksh 1,200 for some packets of coloured chalks and paid the same amount for some packets of white chalks. The price of a packet of white chalk was ksh 10 less than that of coloured chalk. The teacher got 4 more packets of white chalk than the packets of the coloured chalks.

(a)Taking x to be the number of packets of the coloured chalk the teacher bought.
(i)Find an expression for the price per packet of each type of chalk (2mks)

(ii)Form an equation in x and hence determine the number of packets of the coloured and white chalks bought (5mks)

(b)The teacher sold all the packets at the same price per packets making a profit of 28 1/3%. Calculate the selling price of each packet.(3mks)

15(a)Complete the table below for the function $y = 3x^2 - 2x - 1$ for $-3 \leq x \leq 4$ (2mks)

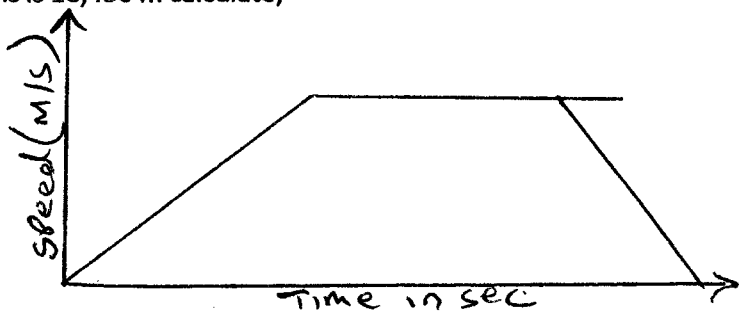
x	-3	-2	-1	0	1	2	3	4
y		15				7		

(b) Draw the graph of $y=3x^2 - 2x - 1$ on the grid provided(3mks)

(c) Draw the line y=3x +1 on the same axes, hence find the value of x for which y=3x +1 and $y= 3x^2 -2x -1$ (2mks)

(d)Write down a simplified quadratic equation whose roots are the solution of the simultaneous equation in (c) above (3mks)

16 The diagram below shows the velocity time graph for a train travelling between two stations. The train starts from rest and accelerates uniformly for 150 seconds. It then travel at constant speed for 300 seconds and finally decelerates uniformly for 200seconds. Given that the distance between the two stations is 10,450 m calculate;



(a)The maximum speed in km/h the train attained. (3mks)

(b) The acceleration. (2mks)

(c) Distance the train travelled during the last 100 seconds. (2mks)

(d)Time the train takes to travel the first half of the journey. (3mks)

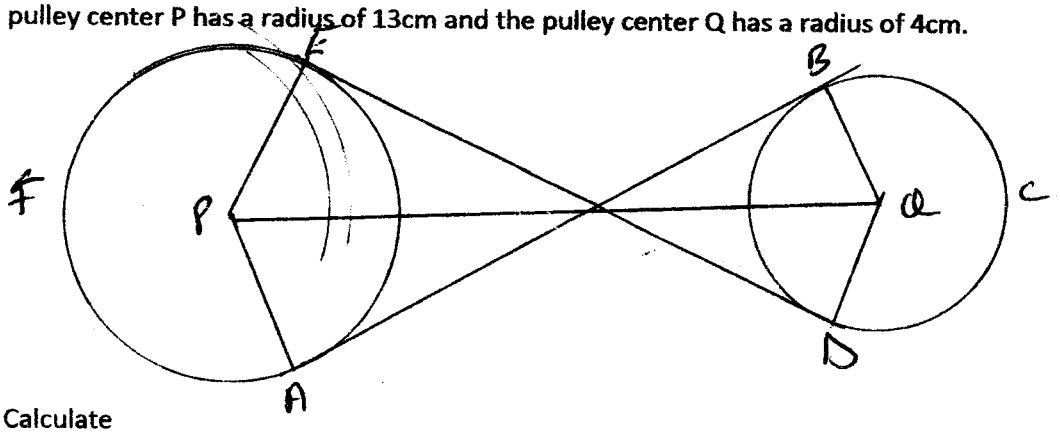
(a) Using a ruler and a pair of compasses only construct a rhombus ABCD such that AB=6cm and angle ABC $=135^0$ (4mks)

(b) Drop a perpendicular from C to AB extended meeting at N .Measure BN and CN (3mks)

(c)Bisect <DAB, let the two bisector meet at M, measure MA. (1mk)

(e)Determine the area of triangle ABM. (2mks)

17 The figure below shows two pulleys whose centers are 30cm apart connected by belt ABCDEF. The pulley center P has a radius of 13cm and the pulley center Q has a radius of 4cm.



Calculate

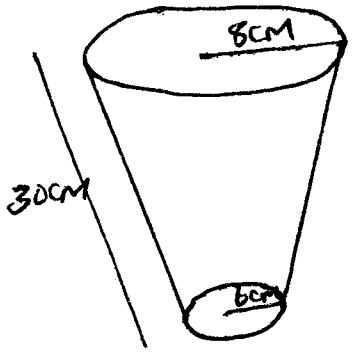
(a) The length AB. (2mks)

(b)The reflex angles EPA and BQD . (2mks)

(c)The arc length AFE and BCD. (4mks)

(d)The total length of the belt. (2mks)

18 A pail is in shape of a container frustum with base radius 6cm and top radius 8cm. The slant height of the pail is 30cm as shown below. The pail is full of water.

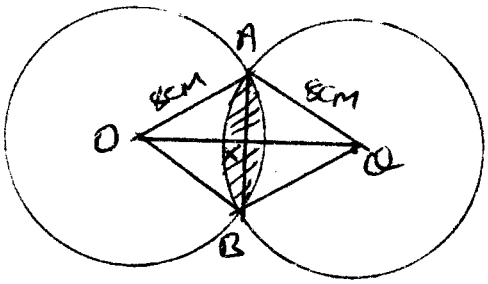


(a)Calculate the volume of water. (6mks)

(b) All the water is poured into cylindrical container of circular radius 7cm, if the cylinder has the height of 35cm,calculate the surface area of the cylinder which is not in contact with water. (4mks)

19 Two equal circles with centers O and Q and radius 8cm intersect at points A and B as shown below.

Given that the distance between O and Q is 12cm and that line AB meets OQ at X, find;



(a)The length of chord AB. (2mks)

(b)The area of the shaded region. (6mks)

(c)The reflex angle AOB. (2mks)