NAME:	چې
SCHOOL:	
	C <sup>45</sup> EP <sup>202</sup>
	esteers
121/2	raw.
MATHEMATICS	4 4
JULY/AUGUST - 2012	

INDEX NO:
DATE:
SIGN:

121/2**MATHEMATICS** PAPER 2 JULY/AUGUST - 2012~ TIME: 2 <sup>1</sup>/<sub>2</sub> HOURS

# MANGA DISTRICT JOINT EVALUATION EXAM-2012

de.

Kenya National Examination Council (K.C.S.E)

## for more 121/2**MATHEMATICS** PAPER 2 JULY/AUGUST - 2012

Free e

TIME: 2<sup>1</sup>/<sub>2</sub> HOURS

## **INSTRUCTIONS TO CANDIDATES**

- Write your name and Index number in the spaces provided above. 1.
- 2. The paper contains two sections. Section I and II.
- 3. Answer all the questions in section I and only any FIVE questions from section II.
- 4. All answers and working must be shown on the question paper in the spaces below each question.
- 5. Show all steps in your calculations, giving answers at each stage.
- 6. Marks may be given for each correct working even if the answer is wrong.
- 7. Non-programmable silent electronic calculators and KNEC mathematical tables may be used.

### FOR EXAMINER'S USE ONLY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL

### **SECTION II**

### **GRAND TOTAL**

17	18	19	20	21	22	23	24	TOTAL	

This paper consists of 16 printed pages. Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

© 2012 Manga District Academic Committee

Mathematics 121/2

Turn Over



(3mks)

Solve for x, for  $0^0 \le x \le 360^0$ 3.  $4 \tan^2 x + 3\tan x = 0$ 

(3mks)

4. Momanyi deposited sh. 24,000 in a fixed account for a period of 24 months .The bank pays compound interest on quarterly basis. At the end of this period, Momanyi's account had ksh. 64,200.Determine the rate at which interest is paid per annum. (3mks)

Simplify the following surd in the form  $a\sqrt{2}+b\sqrt{5}$  where a and b are constants. 5.

(3mks)



The figure below is a circle of radius 8cm.Point A,B and C are vertices of the triangle ABC, in which  $(ABC = 80^{\circ})$  and  $(ACB = 60^{\circ})$  which is in the circle.

com



Calculate the area of the triangle ABC

(4mks)

Expand completely  $(x-0.2)^5$ . 7. Hence use your expansion to find the exact value of  $(9.8)^5$ 

(3mks)

8. Make b the subject of the formula  $a = \frac{bd}{\sqrt{b^2 + d}}$ 

(3mks)

(3mks)

- visit www.freekcsepastpapers.com 9. The eleventh term of an A.P is four times the second term. If the sum of the first seven terms of the A.P is 175 find the first term and the common difference. (3mks)
- For More Free KCSH Past An object whose area is  $80 \text{cm}^2$  is mapped onto an image where area is  $40 \text{cm}^2$  after a transformation represented by the matrix  $\begin{pmatrix} k & 2 \\ 3 & 4 \end{pmatrix}$ Find the value of k.
  - The gradient of a curve at any point is given by the function  $2-x^2$ . If the curve passes through the 11. point (-1,3). Find its equation (3mks)

12. The velocity of water flowing through a pipe is inversely proportional to the square of the radius of the pipe. If the velocity of the water is 30cm/s when the radius of the pipe is 2cm. Find the velocity of the water when the radius of the pipe is 4cm. (3mks)

		coth	
13.	The su the sec	um of two numbers is 15. The difference between five times the first number and the cond number is 19.	ree times
	Find ti	ne two numbers	(3mks)
		Pers visit "	
14.	Find t	$\sqrt[6]{6}$ distance along a parallel of a latitude between the points A(75 <sup>0</sup> N,38 <sup>0</sup> E) and	
	B(759	N,42°W) in Kilometers	(2mks)
e free			
\$0°t NOT	(b)	nautical miles (Take Radius =6370 km)	(2mks)

15. Nyambane missed two types of coffee, type A and type B in the ration 1:3 by mass. The coffee type A and type B cost sh. 180 per kg and ksh. 120 per kg respectively. Calculate the percentage profit when the mixture is sold at ksh. 162 per kg. (3mks)

A nail is known to have a diameter of 5mm. it is measured with a micrometer screw gauge and the diameter is recorded as 4.986 mm.
Calculate the percentage error in this measurement. (3mks)



#### SECTION IL(50 MARKS) Answer ONLY FIVE Questions

17. Use the taxation rates in the table below to answer the questions that follow:

20×	
Taxable income in K£ p.a	Rate (%)
1-4500	10
4501 - 7,500	15
7501 - 10,500	20
10501 – 13,500 💉	25
13,501 – 16,500	30
Over 16,500,	35

Mr Okweba is a manager of a certain company who is entitled to a monthly personal relief of sh. 3000 and his tax (P.A.Y.E) is sh. 9000 per month and cooperative shares of sh. 1200 per month is contributed.

Calculate

Mr. Okweba's total deductions per month from his earnings, (2mks)

- ج<sup>or</sup> (b) Total tax per month without relief.
  - (c) Mr. Okweba's monthly basic salary in his monthly allowances amounted to sh. 12,000 (7mks)

(1mk)

18. In the figure below  $AB = a AD = b AX:XC = 26^{\circ}$  and  $DX:XB = 4:5^{\circ}$ 



com

(b) Express DC in terms of a and b in the simplest form (2mks)

(c) If BC = n a + m b, find the values of n and m. (3mks)

19. The marks scored by 50 students in a maths test were as follows:



con

			COR	
	(c)	From tl (i)	ne graph in (b) above determine <sup>5</sup> . The mediun mark	(1mk)
		(ii)	The quartile deviation	(3mks)
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	et Pape	ta 24	
&1 <sup>ee</sup>	4CSE F	(iii)	The pass mark is 44% of the students passed the test.	(1mk)
**************************************	Given t (a)	that x+y x <sup>2</sup> +2xy	$x=8$ and $x^2+y^2=34$ . Find the value of $+y^2$	(2mks)

(b) 2xy

(2mks)

(c) $x^2 - 2xy + y^2$	(2mks)
-----------------------	--------

(d)	х-у	(1mk)

(2mks)

- (e) x and y (3mks) (a) (3mks) A particle moves such that t seconds after passing a given point O, its distance S metres from O is given as S = t(t-2)(t-3)21. given as S = t(t-2)(t-1)
- Find its yelocity when t=2 seconds (a) (3mks) ROT MOTE Free KCSB Dast Dast

Find its minimum velocity

(c) Find the time when the particles is momentarily at rest. (3mks)

(d) Find its acceleration when t=3 seconds

10

(2mks)

- com On the grid provided, draw triangle ABC, AC(-2,2), BC(-5,2) and C(-5,6) and its image 22. (a) A`B`C` under negative quarter turn about origin. (4mks)
  - Draw the image  $A^B^C^ of A^B^C^ under a reflection in the line y+x=0$ (3mks)
  - Draw the image  $A^{\circ\circ}B^{\circ\circ}C^{\circ\circ}$  of  $A^{\circ}B^{\circ}C^{\circ}$  under a reflection in the line x=0 (2mks)
  - Describe a single transformation that maps A```B```C``` onto ABC. (d) (1mk)



© 2012 Manga District Academic Committee

23. The triangle below shows a triangular prism.AB=20m, BC=10m. AE=ED=BF=FC=8cm.



1	\ <i>(</i> • \		(2, 1)
(b	) (1)	Calculate the angle between line AF and the base ABCD	(3mks)

1	::\	End the engle between m	long ADE and the hose ADCD	<b>O</b> 1	
Ľ	11)	Find the angle between t	Diane ADF and the base ABCD (	ZINKST	
٠.	,	i inte tine tingite settin p			

(c) Find the volume of the prism

www.freekcsepastpapers.com The results of an experiment on the variation of P and Q are tabulated below. A relationship of the town  $P=aQ^n$  is expected to hold between P and Q where a and n are constants. 24.

Q	5 00+	10	15	20	25
Р	<b>4</b> 7.67	31.86	44.97	57.42	69.42
(a) $\oint$ raw a suitable linear graph to verify that the assumed relation					

FOT NOTE FILE ACSE (7mks)



(b) Hence determine the values of a and recorrect to 2d.p.

(3mks)