

NAME.....CLASS..... ADM NO.....

**MATHEMATICS**

**FORM 2**

**TIME:**

**END-TERM EXAMINATION TERM 2 2019**

**MATHEMATICS FORM 2**

**TIME: 2 ½ HOURS**

**INSTRUCTIONS TO STUDENTS**

1. Write your name and Admission number in the spaces provided.
2. This paper consists of 2 sections. Section I and section II
3. Answer **All** questions in Section I and II
4. All answers and working **MUST BE** written on the question paper in the spaces provided below.
5. Show all the steps in your calculations
6. Marks may be given for correct working even if the answer is wrong.
7. Non programmable silent electronic calculators and KNEC mathematical Tables may be used.

**FOR EXAMINERS USE ONLY**

**SECTION 1**

<b>QUESTION</b>															
<b>MARKS</b>															

**SECTION II**

<b>QUESTION</b>															
<b>MARKS</b>															

**GRAND TOTAL**

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**SECTION 1 (50 MARKS) ANSWER ALL QUESTIONS IN THIS SECTION.**

1. Use logarithm to evaluate

(4marks)

$$\left[ \frac{0.9346 \times 72.93}{89.33} \right]^{1/3}$$

2. The Interior angle of a regular polygon is 14 times the size of the exterior angle.

Find the sum of the Interior angle

(3 marks)

3. Simplify by use of common factors  $\frac{2m - am - 2y + ay}{2m + 2y - am - ay}$

( 3marks)

4. Find the equation of a straight line which passes through (3, -1) and is perpendicular to the line  $3y - 7x + 6 = 0$  leaving your answer in the form  $ax + by = C$  (3marks)

5. The marked price of a bull is sh 25200. The bull is sold at a discount of 20 % and the dealer made a profit of 40 % above the cost price. Determine the cost of the bull. (3marks)

6. Three persons A, B and C constituted a capital of sh. 420,000, sh.560, 000 and sh.630, 000 to start a business respectively. They shared 30% of their profit equally, and 45% in the ratio of their constitution. The rest was saved for business expansion. Determine the share of B, if they made a profit of sh. 460,000. (3marks)

7. Give that  $9^{2x} \times 2^y = 72$ . Find the value of x and y (3marks)

8. A two digit number is such that its value is equal to four times the sum of its digits. If 27

is added to the number, the result is equal to the value of the number obtained when the digits are reserved . What is the number (3marks)

9. The exchange rate for a certain year were as follows:-

	Buying (ksh)	Selling (ksh)
1 Chinese yuan	12.34	12.38
1 Us Dollar	80.24	80.44

A Kenyan business man had 100,000 dollars which he converted to Kenyan shillings.

He spends 5 million Kenyan shillings to Import goods from China. How much is his balance in Chinese Yuan (3marks)

10. Use tables of cubes, square roots and reciprocals to evaluate (4marks)

$$\frac{5}{\sqrt{0.876}} - (23.59)^3$$

11. The masses of two similar containers are 24g and 37 g. If the surface area of the smaller container is  $40\text{cm}^2$ . Find the surface area of the larger one. (3marks)

12. A cylindrical tank whose diameter is 1.4 metres and height 80cm is initially empty. Water whose volume is 492.8 litres is poured into the tank. Determine the fraction of the tank filled with water (4marks)

13. When coffee beans are dried to become Mbuni the mass decreases in the ratio 5: 13. Find the mass of green coffee beans which must be dried to give 650 kg of Mbuni (2marks)

14. Solve the equation;

$$\frac{x-2}{3} - \frac{3-x}{4} = \frac{x-2}{2}$$

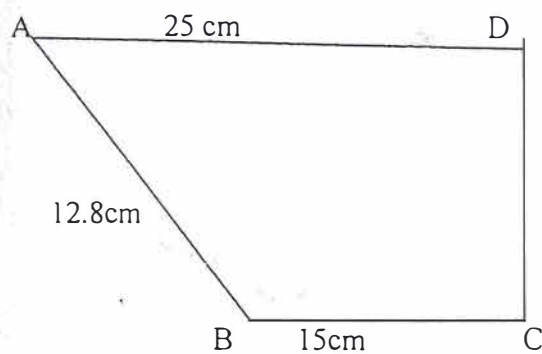
( 3 marks)

15. A cylindrical piece of wood of radius 4.2 cm and length 100cm is cut lengthwise into two equal pieces

Calculate the surface area of one piece (Take  $\pi = \frac{22}{7}$ ) (3marks)

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16. In the figure below A B C D is a trapezium in which AD is parallel to BC. Given that AD = 25cm, BC= 15cm AB =12.8cm and angle DAB = $40^{\circ}$ , Calculate the area of the trapezium to dp.



(3marks)

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**SECTION II (50 MARKS)**

**Answer all questions in this section**

17. Two points are P (1, 5) and Q (-3, -7)

(a) Find the coordinates of M the mid-point of PQ (2marks)

(b) If Q is the image of P after a reflection. Find the equation of the mirror line (3marks)

(c) Another line L passes through point (-1, 2) and is parallel to PQ. Find the equation of L, Giving your answer in a double intercept form (3marks)

(d) Calculate the length of PQ to 4 sf, (2mks)



18. Three warships A B and C are set at sea such that ship B is 400 km on a bearing of  $030^{\circ}$  from ship A. Ship C is 750 km from B. The bearing of B from C is  $300^{\circ}$ . An enemy warship D is sighted 1000 km due south of ship B.

(a). By taking a scale of 1 cm to represent 100km, locate the positions of A,B, C and D (6marks)

(b) Use your diagram in (a) above to determine: (1mark)

(i) The distance of D from A (1mark)

(ii) The distance of D from C (1mark)

(iii) The bearing of C from D (1mark)

19. In the year 2016, the price of a smart phone was 12,000. Calculate the amount of money received from the sale of 240 smart phones (2marks)

(b) In the year 2017, the price of each smart phone was increased by 25% and the number of smart phones sold decreased by 10%. Calculate

(i) The new price of each smart phone (2marks)

(ii) The new number of the smart phone (2marks)

(iii) The amount of money received from the sale of smart phones (2marks)

(iv). The percentage increase in the amount of money received (2marks)

20. (a) Water and alcohol are mixed in the ratio 1: 4. Find the density of the mixture if the density of water is  $1\text{ g/cm}^3$  and the density of alcohol is  $0.8\text{ g/cm}^3$  (Give your answer in  $\text{Kg/m}^3$ )

(5 marks)

(b)  $40\text{ cm}^3$  of water is poured into an empty measuring cylinder. A stone of mass  $12\text{ g}$  is put into cylinder. If the density of stone is  $8.6\text{ g/cm}^3$ . Find the new reading of the cylinder in  $\text{M}^3$

(5marks)

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21. The vertices of a quadrilateral are A (5, 1) B (6, 3) C (4, 4) and D (2, 3)

(a) Plot the quadrilateral A B C D on the grid provided (2marks)

(b) Write down the co-ordinates of  $A'B'C'D'$  the image of quadrilateral ABCD when reflected  
In the line (3marks)

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(c) On the same graph, find the co-ordinates  $A''B''C''D''$  the image of quadrilateral  $A'B'C'D$  when reflected in the line  $y = 0$  (2marks)

(d) On the same graph find the coordinates  $A'''B'''C'''D'''$  the Image of quadrilateral  $ABCD$  when rotated by  $-90^\circ$  about the origin (3marks)

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