**NAME:……………………………………….……………………..ADM:……………..CLASS:……..**

**END TERM 1, 2023**

**FORM TWO**

**MATHEMATICS**

**MARCH/APRIL 2023**

**2 HOURS**

**INSTRUCTIONS TO CANDIDATES**

* Write your name and admission number in the spaces provided at the top of this page.
* Answer **ALL** questions in section I and **ONLY THREE** questions in section II.
* All answers and workings must be written on the question paper in the spaces provided below each question.
* Show all steps in the calculations, giving your answers at each stage in the spaces provided.
* Non-programmable silent electronic calculators and KNEC mathematical tables may be used, except where stated otherwise

**FOR EXAMINERS USE ONLY**

**SECTION I**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **TOTAL** |
| **Marks** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**SECTION II**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Question** | **14** | **15** | **16** | **17** | **18** | **TOTAL** |
| **Marks** |  |  |  |  |  |  |

**GRAND TOTAL**

**SECTION I (40 Marks) - Answer all questions in this section.**

1. a) Use the table of cubes to evaluate 23.53 (2 mark)
2. Find the cube root of 3.375 using prime factor method (2marks)
3. Evaluate using the table of reciprocals: (4 marks)
4. Simplify the expression (2 marks)
5. Use logarithm tables to evaluate: (3 marks)

1. Solve for *x* given that (3 marks)
2. A bank in Kenya buys and sells foreign currencies as follows.

|  |  |  |
| --- | --- | --- |
| Currency | Buying(Ksh) | Selling(Kshs) |
| 1Sterlingpound | 134.20 | 134.65 |
| 1US dollar | 71.40 | 71.84 |

A tourist arrived in Kenya with 4500 US dollars. He converted all the dollars to Kenya shillings at the bank. While in Kenya he spent Kshs 215,000 and then converted the remaining amount to sterling pounds in the same bank. Calculate the amount he received in sterling pound. (3marks)

1. The length of an arc of a circle is 8.8cm. If the arc subtends an angle 144 at the centre, calculate;

a) the radius of the circle (Take (2 marks)

b) the area enclosed by the arc and the radii (2 marks)

1. Determine the number of sides of a regular polygon whose sum of interior angles is 14400. (2marks)

1. A shopkeeper made a loss of 20% by selling a trouser at Sh. 960. What profit would he have made if he had sold it at sh.1500 (3marks)
2. A student spent of his pocket money on stationeries, a third on food-stuffs and of the remainder on transport. If he had Ksh. 150 left, how much pocket money did he have at the beginning? (3marks)
3. Two bells ring at intervals of 35 and 42 minutes respectively. The bells ring together at 8:48 a.m. Determine the time when the bells will ring together again. (3 marks)
4. A two-digit number is 18 more than the number formed by reversing the digits. If the sum of the digits is 10. Find the number. (3 marks)
5. Evaluate; (3 marks)

**SECTION II (30Marks)- Answer any THREE questions**

1. The figure below represents a piece of land consisting of a trapezoidal region and a semi-circular end of radius 87.5m

250m

200m

1. Calculate
2. The perimeter of the land (3marks)
3. The area of the land in hectares (3marks)

1. A private developer bought this piece of land at a price of Ksh 400,000 per hectare and later sold the all land at 2.25 million shillings. Determine;
2. The price at which he bought the whole piece of land (2marks)
3. His percentage profit (2marks)

1. The corner points A, B, C and D of a ranch are such that B is 8 km directly East of A and C is 6 km from B on a bearing of 30o. D is 7 km from C on a bearing of 300o.
2. Using a scale of 1 cm to represent 1 km, draw a diagram to show the position of A, B, C and D. (4 marks)

b) Use the scale to determine the;

1. compass bearing of A from D. (1 mark)
2. distance BD in kilometers. (2 marks)
3. bearing of D from B (1 mark)
4. perimeter of the ranch in kilometers. (2 marks)
5. a) A straight line L1, whose equation is 3*y* – 2*x* = -2 meets the x-axis at R. Determine the coordinates of R. (2 marks)

b) A second line L2 is perpendicular to L1 at R. Find the equation of L2 in the form y = mx +c, where m and c are constants. (3 marks)

1. A third line L3 passes through (-4, 1) and is parallel to L2. Find:

(i) the equation of L3 in the form y = mx +c, where m and c are constants. (2 marks)

(ii) The coordinates of a point S, at which L1 and L3 intersects (3 marks)

17. A cylindrical tank of diameter 3.6m and height 2.5m internally is two-thirds full of juice.

a) Calculate the volume of the juice in litres. (3 marks)

1. The juice is packed in small packets measuring 8cm by 5cm by 12cm. A packet retails at Kes. 40. Calculate;

i) the capacity of each packet in cm3 (2 marks)

ii) the number of full packets obtained (3 marks)

iii) the amount of money realized from the sale of the juice (2 marks)

18. Triangle PQR has vertices P(3,2), Q(-1,1) and R(-2,-1).

(a) Draw PQR on the grid provided. (1mark)

(b) Under a rotation the vertices of P1Q1R1 are P1(1,4), Q1(2,0) and R1(4,-1). Find the centre and angle of rotation using points P and Q. (4marks)

(c) Triangle PQR is enlarged with scale factor 3 centre O (0,0) to give triangle P2Q2R2. Draw triangle P2Q2R2 and state its co-ordinates. (2marks)

(d) Triangle P1Q1R1 undergoes reflection in line *y* = -*x* to give triangle P3Q3R3. draw P3Q3R3 and state its coordinates. (3armks)

