**SUNRISE ONE TERM 1 EXAMINATIONS 2023**

**Kenya Certificate of Secondary Education**

**FORM FOUR**

**Form 4 MATHEMATICS Term 1**

**PAPER 1 APRIL 2023 – 2½ Hours**

**Name**: ………………………………………………… **Adm** **No**: ………**Index No**.……

**Class**: ………………**Candidate’s** **Signature**: ……. **Date**: …..……………..

**Instructions to Candidates STUDENT’S TARGET …………**

1. Write your name, admission number and class in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above.
3. This paper consists of **two** sections**; Section I** and **Section II.**
4. Answer **all** the questions in **Section I** and any **five** questions from **Section II**
5. **Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question**
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, except where stated otherwise.
8. **This paper consists of 14 printed pages.**
9. **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

**For Examiner’s Use Only**

**Section I**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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** |
|  |  |  |  |  |  |  |  |  |

 **SECTION II (50MKS)**

1. Simplify without using a calculator. (4mks)

 2 ⅖ ÷ 3.3 – 1.75

 2 ¾ - 7 5/9 ÷ √5 1/16

1. Prime numbers in between 41 and 55 were cubed and summed up. The result was multiplied by 29. Write the total value of the second digit. (3mks)
2. The table below shows the currency exchange rate table used by the bank of Baroda in Nairobi.

|  |  |
| --- | --- |
| Selling (Ksh) | Buying (Ksh) |
| 10 US dollars ($) | 869.80 | 867.00 |
| 200 South African Rand Rn) | 5590 | 5440 |

Peterson arrived in Kenya with $ 75340. He exchanged all the dollars into Kenya shillings at a commission of 2%. While in Kenya he used Ksh 2,570,000 on charity and Ksh 1,750,000 on food and accommodation. At the end of his tour, he decided to exchange all the remaining Kenya shillings into South African Rands at a commission of 5%. Calculate to the nearest Rand, how many Rands he received from the bank. (4mks)

1. Kimani set out on a journey at 9.49a.m from Zimmaman to Ruiru town cycling at a speed of 30km/h. He cycled for a distance of 60km and then took a rest of 1.25 hours. He then walked the remaining distance at an average speed of 15km/h. If the distance between Zimmaman and Ruiru town was 75km, at what time did he arrive? (Write your answer in 24 hour clock) (3mks)
2. Find the value of ∟ABC (3mks)

 C D

 2*x*

 80⁰

 B E

 (*2x*-10)⁰

 100⁰

 (2*x*-40)⁰ P

 A

1. Use the reciprocal tables and square root tables to evaluate. (3mks)

 -20.15

 (0.007429) ½

1. A map is drawn to a scale of 1:200,000. Find the area of a village whose shape is a rectangle measuring 2cm by 3.2cm on the map in km2. (2mks)
2. Use matrix method to solve the pair of simultaneous equations. (3mks)

2*x* – 3*y* + 17 = 0

6*y* + 5*x* + 4 = 2

1. 100 pupils running 20km a day for 30 days survive on 12 dozens of milk. How many days

will 200 pupils covering 5km a day survive on 3 grosses of milk? (2mks)

1. Simplify without using a calculator. (3mks)

8⅔ x 6253/2

4 5/2 x 253/2

1. Given that , solve for without using a calculator or mathematical tables.

 (2mks)

1. Vector passes through the points and .Vector passes through and . If is parallel to , determine the value of (3mks)
2. In the figure below AB is an arc of a circle centre **O .G**iven that , and. Calculate the area of the unshaded region to (3mks)



1. Use logarithm table to evaluate (4mks)

1. The perimeter of a rectangle is 36cm. If the length of the rectangle is twice its width , find the length of the rectangle (3mks)
2. (a) Sketch the net of the sketch given below. (3mks)

 F E

12cm

 A D

 5cm

 C

 B 10cm

(b) Find its surface area from the net. (2mks)

 **SECTION II (50MKS)**

1. (a) The line L1 whose equation is 2 x + 1 ½ y = 8 is perpendicular to another line L2 passing through the point (-2, 3.5). Find the equation of line L2. (4mks)

(b) Line L2 is parallel to another line L3, which passes through the point (-4, -5). Find the equation of L3. Write your answer in the form of *ax*+*by* = c. (2mks)

(c) The line L3 intersects another line L4 whose equation is 2*x*+5*y*+33=0. Find the co-ordinates of the point of intersection. (4mks)

1. A, B and C contributed Ksh 2,451,300 such that A:B = 2 ⅔:5 ¾ and B:C = 3 ¼ :51/9. They decided to buy a matatu with all the money. Each month the matatu delivered a profit of Ksh 90,000. The matatu was operated for one full year. The matatu driver was being paid Ksh 27,000 a month. At the end of the year, they decided that the net profit would be shared in the ration of their contributions.

(a) Determine the ratio A:B:C (3mks)

(b) Determine the net profit realized after one year. (2mks)

(c) Partner A decided to buy dairy cows with his share at the rate of Ksh 60,000 per cow. How many cows did he buy? (2mks)

(d) In the second year, the partners decided to breakup. They decided to sell the car after it had depreciated by 20% and they divided the money in the ratio of contribution. If the profit was divided equally, how much did C receive? (3mks)

1. A triangle has vertices and .
2. Draw triangle ABC on a cartesian plane. (1mk)



1. Draw triangle the image of ABC under a rotation clockwise about the origin. (2mks)
2. Draw the image of ABC under a reflection in the line . State the coordinates of . (3mks)

 is the image of under reflection in the line . Draw

 and state its coordinates. (4mks)

1. Mr Kamau a salesman is paid a commission of 6% on goods sold worth over Sh. 600,000. In addition he is paid a monthly salary of Sh.35,000

i. Calculate his total earnings in a month when his total sales was Shs.750,000. (3mks)

ii) In the following month the rate of commission was changed to  **but** his monthly salary remained the same. If Mr. Kamau received a total monthly earning of k.sh 100,000 for selling goods worth the same amount. Find the value of (3mks)

iii) A trader made a loss of 30 % by selling an electric kettle at Sh.700. Calculate the percentage profit he would have made if he had sold it at Sh. 1150 (4mks)

1. On the grid provided, by shading the unwanted region, determine and label the region R that satisfies the three following inequalities and on the graph below. (10mks)



1. The distance between towns A and B is 360km. A minibus left town A at 8.15 a.m. and traveled towards town B at an average speed of 90km/hr. A matatu left town B two and a third hours later on the same day and travelled towards A at average speed of 110km/hr.

(i) At what time did the two vehicles meet? (4mks)

(ii) How far from A did the two vehicles meet? (2mks)

(iii) A motorist started from his home at 10.30 a.m. on the same day as the matatu and

travelled at an average speed of 100km/h. He arrived at B at the same time as the minibus. Calculate the distance from A to his house. (4mks)

1. In the figure below E is the midpoint of BC. and F is the meeting point of BD and AE. and



1. Express the following vectors in terms of **b** and **c**
2. (1mk)
3. (2mks)
4. If = and , Express AF in two different ways hence find the value of t and n (5mks)
5. State the ratio in which F divides
6. BD (1mk)
7. AE (1mk)
8. (a) Solve the equation (4mks)

 (b) The length of a floor of a rectangular hall is 9m more than its width. If the area of the floor is ,

1. Calculate the perimeter of the floor (3mks)
2. A rectangular carpet is placed on the hall leaving an area of .If the length of the carpet is twice its width, determine the width of the carpet. (2mks)