**SEETA HIGH SCHOOLS**

**END OF TERM ONE EXAMS 2019**

**S.4 MATHEMATICS PAPER 1**

**TIME: 2 ½ HOURS**

**INSTRUCTIONS TO CANDIDATES:**

* Attempt all questions in section A and not more than five questions from section B
* All necessary workings should be clearly shown
* Graph papers are provided
* Silent non- programmable scientific calculators may be used.

**SECTION A (40 MINUTES)**

1. Solve the equation

(2y + 1) = (y + 5) (4 marks)

1. Make P the subject of the formular

D = (4 marks)

1. The image of a point A(4,6) under an enlargement scale factor 0.5 is A1(2,3). Find the centre of enlargement. (4 marks)
2. Simplify the following expression to its simplest form

(4 marks)

1. Given that P = has no inverse, find the two possible values of m. (4 marks)
2. Solve the inequality and represent the solution on a number line

2x – 5(x -4) 17. (4 marks)

1. Given that tan = and 900 3600, find cos without using tables or calculators. (4 marks)
2. In the figure below O is the centre of the circle ABCD and angle ABC = 580, calculate angle AOC and angle ADC.

A C

D

1. Solve the pair of equations by matrix method - = and - =1

(4 marks)

1. A bag contains Red, Blue and green pens, the probability of picking a red pen is and that for Blue is . If there are 5 green pens. How many Red pens are in the bag? (4 marks)

**SECTON B (60 MARKS)**

**Attempt any five questions from this section**

1. (a) draw the graph of the curve y = x2 – 2x + 1 for -3 x 3.

(b) Use your graphs to find the solutions of the following equations

(i) x2 - 2x + 1 = 0

(ii) x2 - x – 6 = 0 (12 marks)

1. (a) Given that matrix P= , find p2

(b) find the matrix q such that p2 = 3p + q

(c) given the matrices P = , Q = and that R = PQ, find the inverse of R. (12 marks)

1. Town B is 180km on a bearing of 0500 from A. another town C is on bearing of 1100 from town A and on a bearing of 1500 from town B. town D is 240km on bearing of 3200 from town A.
2. Draw a sketch diagram to show the position of the four towns
3. Calculate to the nearest kilometer
4. The distance AC
5. The distance CD (12 marks)
6. The points A(0,0), B(-3,1), C(1,3) and D(4,2) are the vertices of a parallelogram an enlargement centre (0,0) and scale factor -2

(a)(i) Find the coordinates of A1B1C1DI

(ii) Draw ABCD and A’B’C’D’ on the same grid

(b)The points A’’(0,0)B’’(6,2),C(2,6) and D’’(8,4) are the vertices of A’’B’’C’’D’’, the image of ABCD under a transformation m.

Find m and describe the matrix of transformation fully

1. Find a single transformation T that maps A’B’C’D’ onto A’’B’’C’’D’’
2. The data below shows the weights of 50 patients admitted atutur hospital in a certain week

|  |  |
| --- | --- |
| Class | F |
| 20-29 | 4 |
| 30-39 | 10 |
| 40-49 | 14 |
| 50-59 | 9 |
| 60-69 | 8 |
| 70-69 | 5 |

1. Calculate
2. The mean value
3. The median value of the grouped data

(b)Draw a histogram and use it to estimate the mode. (12 marks)

1. A man started on a walk of 12km. after walking half the distance at xkmh-1 he reduced his speed by ½ kmh-1. If he had walked at x km-1 all the way, he would have called 10 minutes. Form an equation in x and solve it.

(b)Geoffrey is now 3 times as old as his daughter and 4 times as old as his son. 8 years from now Geoffrey’s age will be 12 years more than the sum of the ages of his son and daughter. Find Geoffrey’s present age. (12 marks)

1. (a) by shading the unwanted region, show the region that satisfies the following inequalities 5x-4y+160, 4x + 7y 28 and 3x + y 21.

(b) Calculate the area of the region that satisfies the above inequalities. (12 marks)

**END**