**456/1**

**MATHEMATICS**

**PAPER 1**

**2 ½ HRS**

**Uganda certificate of education**

**Registration examinations 2016**

**Mathematics**

**Paper 1**

**2hours 30minutes**

**Instructions**

Answer all questions in Section A and any five questions from Section B

All necessary calculations must be given in the answer booklet provided.

Graph papers shall be provided

Silent , non-programmable calculators may be used.

**SECTION A (40MARKS)**

Attempt **ALL** questions in this section

1. Factorise completely . (4marks)
2. Solve the equation; . (4marks)
3. Make D the subject of the formula.

. (4marks)

1. The sum of the ages of three brothers Fred, Mark and Aaron is 65 years. Mark is twice as old as Aaron, and one and a half times as old as Fred. Determine their ages. (4marks)
2. Given the matrices and and that , Find the inverse of R. (4marks)
3. Find the values of which make the following inequality true and show it on a number line.

(4marks)

1. The bearing of point A from B is N670W, What is the bearing of B

from A? (4marks)

1. The image of under an enlargement of scale factor -2 is . Find the coordinates of the centre of enlargement.
2. If = 12, and that Show that (4marks)
3. Find the size of the largest angle of the triangle below. (4marks)

C

6cm

12cm

B

A

9cm

**SECTION B (60MARKS)**

Attempt only **FIVE** questions from this Section.

11. a) On squared paper plot the points and the vertices of triangle ABC. On the same grid draw the line

b) Write down the coordinates of;

i) the images of A, B and C under a reflection in the line .

ii) the images of under a reflection in the x-axis.

c) Determine the transformation matrix P which maps triangle ABC onto triangle (12marks)

12. Given the frequency distribution table below;

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Class | 30 – 39 | 40 – 49 | 50 – 59 | 60 – 69 | 70 – 79 | 80 – 89 |
| Frequency | 2 | 5 | 3 | 7 | 5 | 3 |

a) Calculate;

i) the mean using a working mean of 64.5

ii) the median

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

13. Given the equations and where .

a) Draw the graphs of the above equations on the same axes.

b) Use your graphs to solve the equations;

i)

ii) (12marks)

14. A plane flies on a bearing of 0650 from air port A at a steady speed of 200km/h-1 for 2hours, and reaches airport B. keeping the same speed, the plane leaves B takes off on a bearing 1500 flies for 1½ hours and reaches C. From C the plane takes a bearing 2300 and flies at a steady speed of 300kmhr-1 to airport D. The entire journey takes 5 hours.

a) Use a scale 1cm to represent 50km to draw the journey accurately.

b) What time will the plane take to fly from D back to A if its speed is 100kmhr-1 and on what bearing? (12marks)

15.

84cm

230cm

The tank consists of a cylindrical part and a hemispherical top. The total height is 314cm. Calculate;

1. The total curved surface area of the tank
2. The cost of spraying the curved surface given that 1m2 costs

Ugshs 9500.

1. The cost of gas filled into the tank, given that 1m3 is sold at Ugshs 5500. Use (12marks)

16. a) If find two possible values of m. (6marks)

b) A trader ordered for Omo from a wholesale shop as indicated in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Size** | | | |
| **Small** | **Medium** | **Large** | **Giant** |
| 10 | 40 | 20 | 0 |
| 30 | 0 | 25 | 0 |
| 0 | 20 | 10 | 10 |

Given below is the cost for each size of soap (Omo).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Size** | | | | |
|  | **Small** | **Medium** | **Large** | **Giant** |
| Costs (Ushs) | 6000 | 7200 | 8400 | 96000 |

1. Write down;
2. 4 x 3 matrix for the quantity of Omo ordered.
3. 4 x 1 cost matrix. (2marks)
4. By suitable matrix multiplication, find the amount the trader spent in purchasing the Omo. (4marks)

17. A rectangle of length and width has an area10cm2.

Find;

1. The value of (6marks)
2. Its length and width (3marks)
3. Its perimeter (3marks)

***\*\*END \*\****