**456/2**

**MATHEMATICS**

**PAPER 2**

**Nov, 2020**

**2 ½ hours**

**ST. MARYS’ KITENDE**

**UGANDA CERTIFICATE OF EDUCATION**

**RESOURCEFUL MOCK EXAMINATIONS 2020**

**MATHEMATICS**

**Paper 2**

**2 hours 30 minutes**

***Instructions***

* ***Answer all questions in Section A and any five questions from Section B.***
* ***Any additional question(s) will not be marked.***
* ***All necessary calculations must be shown clearly.***
* ***Non- programmable calculators may be used.***

**SECTION A : (40MARKS)**

**Attempt all questions in this Section.**

1. Simplify; . (4marks)

2. Determine the range corresponding to the domain for the mapping. (3marks)

3. Find the equation of a line that passes through the point and is parallel to the line State the y-intercept of the new line. (5marks)

4. and are two points with position vectors and respectively. Find;

i) ii) the angle makes with the x-axis. (4marks)

5. Given that A=

B=

Find (4marks)

6. Muzee sold a bicycle at shs.150,000, making a loss of 25%. Find the cost price of the bicycle? (3marks)

7. On a map, a swamp of area 2 is represented by 2, find the representative fraction of the map. (4marks)

8. A certain amount of money was shared between Joseph(J), Peter(P) and Zaida(Z) in the ratio 2:3:6 respectively. If Zaida got shs 28,000 more than Joseph how much did Peter get? (5marks)

9. A car covered 60km at a speed of 30kmh-1, and then the next 150km were covered in 1½ hours. What was the average speed for the whole journey?

(5marks)

10. The angle of elevation of the top of a building tall from a point A, due East of the building is 300. Find the distance of point A from the building. (3marks)

**SECTION B: (60MARKS)**

*Answer any* ***five*** *questions from this Section.*

11. a) Given that find (5marks)

b) The functions . Find the value(s) of x for which (7marks)

12. Maya SS has 1020 students. According to the school rules and regulations, students should batheveryday(B), wash their clothes every week(W) and iron their clothes(C). During a certain month it was found out that out of 102 senior four students, 41 obeyed B, 35 obeyed W and 52 obeyed C. 9 students obeyed B and W, 10 students obeyed C and W and 24 students obeyed B and C. If 17 students obeyed neither rules,

a) Represent this information on a Venn diagram.

b) From the venn diagram, find the number of students who;

i) obeyed all the three rules

ii) ironed clothes only

c) If a student is picked at random from senior four, find the probability that he obeyed at least two of the rules. (12marks)

13. The diagram shows two circles intersecting at and . The bigger circle has radius of and Centre . The smaller circle has radius of and centre . Given that angle .

P

B

Y

X

Q

600

a) Find the value of angle .

b) Show that .

c) Hence show that triangle Y is an equilateral triangle.

d) Find the area of sector

e) Calculate the area of the shaded part. (12marks)

14. Pakwach town is about from Kampala. A Gaaga bus leaves Pakwach for Kampala at travelling at a steady speed of 80kmh-1. The bus stopped for 30minutes at Karuma check point which is from Kampala and continues with the steady speed of 60km-1 non-stop up to Kampala.

On the same day, a Presidential Escort car left Pakwach 2hours later after the Bus had left and moved non-stop at a steady speed of 160kmh-1 up to Kampala.

On the same axes, draw the distance-time graphs for the motion of the two vehicles (Use: m on the vertical and on the horizontal axes).

a) From the graph, find the time and the distance from Kampala when the presidential car overtook the bus.

b) Determine the period of time between the arrival of the two vehicles. (Give your answer in minutes) (12marks)

15. A community organization gives the following allowances to its employees.

Transport 40,000/= per month

Insurance 120,000/= per month

Housing 65,000/= per annum

medical 180,000/= per annum

Yaka electricity 20,000/= per month

The tax structure used by the organization is;

|  |  |
| --- | --- |
| **Taxable income(sh)** | **Rate(%)** |
| 150,001 – 300,000 | 10 |
| 300,001 – 500,000 | 15 |
| 500,001 – 750,000 | 20 |
| 750,001 and above | 30 |

Given that Charles paid of tax, find

1. Total monthly allowances
2. Charles’ gross salary
3. The percentage of the gross paid as tax. (12marks)

16. a) Express in the form where, and are intergers and state the value of .

b) Find the value of .

c) Given that find the value of . (12marks)

17. The triangle has pints and on and respectively such that and lies on suchthat . Given that and .

**B**

**N**

**M**

**T**

**C**

***a***

***b***

**A**

a) Express the following vectors in terms of ***a*** and***b***.

i) ii) iii) iv)

b) Show that points and are collinear. (12marks)

**END**