**END OF TERM TWO EXAMINATION 2023**

**S.2 MATHEMATICS**

**2HOURS 30 MINUTES**

***INSTRUCTIONS: ATTEMPT FOUR QUESTIONS***

1. A farmer wants to make a rectangular paddock for his cows. He has 60m of fencing materials to cover three sides, with other side being a brick wall, the farmer’s objective is to construct a paddock with an area of 450m2.advise the farmer on how to choose the length and width of the paddock to achieve his objective. (06 marks)

(b). Solve the following quadratic equations.

(i).

(ii). (06 marks)

(c). Factorize the following expressions completely.

(i). (ii). (06 marks)

(d). use the difference of two squares to evaluate the following:

1. Factorize completely hence solve the equation
2. (a). Calculate the area of the shaded region in the figures below

**6cm**

**3cm**

**6cm**

(i). (05 marks)

(ii).

**33cm**

80cm

**33cm**

(10marks)

200cm

(b). The area of the circle is 56cm2.find its radius and diameter. (take (05 marks)

(c). A circular piece of radius 3.5cm was cut out from a rectangular piece of timber measuring 3cm by 9cm.find the area of timber left (05 marks

1. Represent the following inequalities graphically
2. (10 marks)

(b). solve the inequalities below and hence represent the solution set on a number line

1. (15 marks)
2. With out using tables or calculators evaluate

(v).

1. A farmer producing maize is looking forward to harvest his maize. the number of sacks harvested in a day are related to the number of workers in employed by the relation for values of ranging from using intervals of . Represent the above relation in a table. (12 marks)

(b). the table below shows the results obtained by a group of senior two learners when carrying out an experiment to determine the boiling point of water

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Temperature(0c) | 0 | 34 | 47 | 60 | 73 | 87 | 100 | 100 | 110 |
| Time (minutes) | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 |

(a). using a suitable scale, plot a graph of temperature against time

(b).at what temperature was water after heating for 25 minutes

(c). using the graph, determine the time when the temperature was 900

(d). what happened between 30 and 35 minutes (13 marks)

1. Given where O is the origin find

(i). the position vector of B

(ii). (05 marks)

(b). triangle OPQ with vertices Is mapped onto triangle by translation vector.determine the coordinates of and show the two triangles on a graph paper (15 marks)

(c). given the vectors find /AD/ (05 marks)

**END**