0570/2/2023
MATHS O/L

SOUTH WEST REGIONAL MOCK EXAMINATION
GENERAL EDUCATION

THE TEACHERS' RESOURCE UNIT (TRU)

IN COLLABORATION WITH

THE REGIONAL INSPECTORATE OF PEDAGOGY FOR SCIENCE

AND

THE SOUTH WEST ASSOCIATION OF MATHEMATICS TEACHERS (SWAMT)

TUESDAY: 28/03/2023 - AFTERNOON ORDINARY LEVEL

Subject Title	MATHEMATICS
Paper Number	Paper 2
Subject Code Number	0570

Two and half hours

INSTRUCTIONS TO CANDIDATES:

This paper is arranged in two sections A and B. Answer all questions in sections A and B.

Section A: Answer all the questions in the spaces provided. The mark allocation for each question is indicated.

Section B: All questions in Section B carry equal marks.

You are reminded of the necessity for good English and orderly presentation in your answers.

In calculations, you are advised to show all the steps in your working, giving your answer at each stage.

Non – programmable calculators are allowed

SECTION A

1. Simplify $\frac{6+\frac{1}{4}+\left(\frac{4}{5}-\frac{3}{4}\right)}{\frac{1}{2}+1-\frac{4}{10}}$

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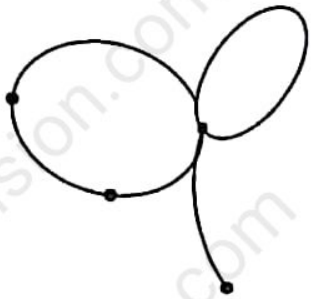
.....5 marks

2.



In the network diagram above, State the number of:

a) Nodes.....

b) Arcs.....

c) Regions.....6 marks

3. Solve for x in the equation $3^{2x+1} = 81^{x}$

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.....4 marks

4.

q	p	~q	p∧~q
T	T		
T	F		
F	T		
F	F		

Complete the table above. 5 marks

5. Solve the inequality $(2x-3)^2 - (x+1)^2 \geq 0$

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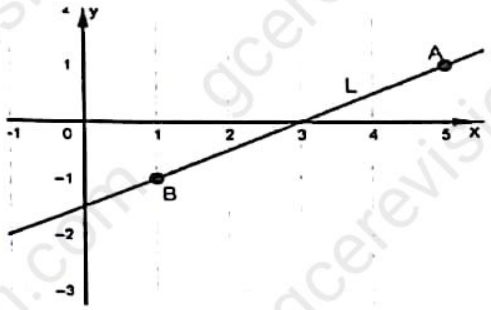
.....5 marks

6. Given the graph below,



Calculate:

a) The gradient of the line L

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b) The equation of the line L

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c) The distance between the points A and B

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.....6 marks

7. Peter and Mary went to a shop to buy ledgers and pens. Peter bought 5 ledgers and 5 pens at 6000frs, while Mary bought 2 ledgers and 8 pens for 9000frs.

a) Write down a system of equation to represent this information.

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b) Calculate the price of a pen and a ledger

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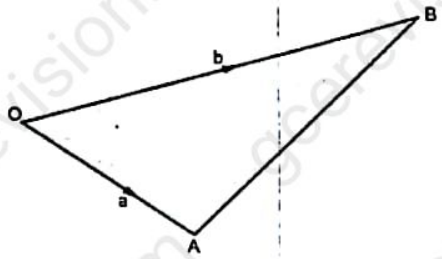
.....5 marks

8.



a) Using the diagram above, express the vector $\overrightarrow{AB}$ in terms of a and b

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b) Given that a = 2i + 5j , b = 3i – pj and $\overrightarrow{AB}$ = qi – 9j. Determine the values of p and q.

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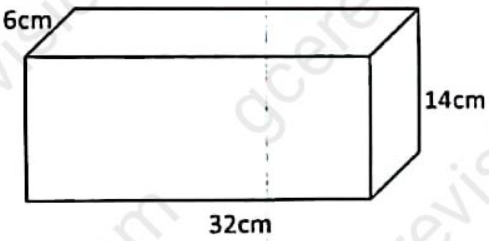
.....6 marks

9.



For the figure above, calculate the:

a) Surface area

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b) Volume

.....6 marks

10. X is 6 km due North of Y and Z is 3 km due East of Y. A ship started from Z and steamed in a direction N60°E.

a) Sketch the information

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b) Calculate the distance the ship had to go before it was due East at X.

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c) Calculate the distance it is then from X.

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.....6 marks

11. $f(x) = -2x^3 + 11x^2 - 17x + 6$

a) Show that $(x - 3)$ is a factor of $f(x)$

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b) Find the other two factors of $f(x)$

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.....6 marks

12. Given that triangle ABC with coordinates A(1, -1), B(1, 1) and C(5, 1) is reflected on the y-axis. Find the image of the given points and display the object and image on the same Cartesian plane.

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..... 7 marks

13. The third term of an Arithmetic progression is 11. If the common difference is 4

a) Calculate the first term

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b) Hence calculate the 20th term

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c) Calculate the sum of the first five terms

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.....6 marks

14. One angle of a pentagon is 120°. The other four angles are equal to each other. Find the them.

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.....5 marks

15. The table below is to be used to draw a pie chart

Type of item	rice	Garri	Fufu
Angle of sector	w	x	100,000frs
Amount	60°	y	z

a) Calculate the values of w, x, y and z in the figure above.

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b) Draw a pie chart to display the information

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..... 6 marks

SECTION B

1. i. Joan goes to a shop to buy a gas cooker which cost 140.000FCFA.
She pays 60% cash of the cost of the gas cooker and then pays the balance within 10 months of 7.000FCFA monthly. Calculate the:
a) Amount that she pays in cash.
b) Total amount that she pays for the gas cooker.
c) Determine how much more that she pays for the gas cooker.
d) She uses the gas cooker for 6 months and sells it for 160,000FCFA, calculate her gain percentage to one decimal place.

ii. Given that $\begin{pmatrix} 2 & 3 \\ 0 & x \end{pmatrix}\begin{pmatrix} -3 & y \\ 4 & 2 \end{pmatrix} = \begin{pmatrix} z & 18 \\ 4 & 2 \end{pmatrix}$. Find the values of x, y and z

2. i. Given the functions $f(x) = x^2 - 1$, $g(x) = \frac{1}{x+1}$ and $h(x) = kx + t$
Evaluate
a) f(0)
b) g'(2)
c) Determine the values of k and t given that $hof(x) = 2x^2 - 5$

ii. The playground of a certain school is xm wide and its length is 5m longer than its width.
Write expressions in terms of x for the
a) Length
b) Perimeter
c) Area
d) If the area of the playground is $500m^2$. Calculate the value of x.

3. i.
If $\varepsilon = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$
A = {Prime numbers}
B = {Odd numbers}
C = {Multiples of 3}
a) list the elements of the sets A, B and C
b) Draw a Venn diagram to illustrate the relation between the sets.

ii. Using a pencil, ruler and compass only, showing all constructions,

a) Draw a line AB of length 5cm
b) With AB as one side of the triangle ABC, construct the sides AC and BC having lengths 4cm and 3cm respectively
c) Bisect angles $C\hat{A}B$ and $A\hat{B}C$ to meet at point O
d) Using O as the center, draw a circle to touch the lines AC, BC and AB as tangents.
e) Using a ruler, measure and write the diameter of the circle.

4. i. Let $f(x) = -x^2 - 3x - 2$
a) Copy and complete the following table

x	-4	-3	-2	-1	0	1
f(x)	-6				-2	

b) Draw the graph f(x) for $-4 \leq x \leq 1$
c) On the same graph, draw the straight-line $y = x + 1$
From your graph
d) State the coordinates of the point of intersection of the curve of f(x) and the line $y = x + 1$
e) Solve the equation $f(x) = 0$

f) State the coordinates of the maximum turning points.

ii. James has 4 red balls and 6 blue balls in a bag. In the dark, he removes a ball at random one after the other without replacement. Find the probability that he takes out

a) 2 red balls

b) 2 balls of the different colours.

END