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CANDIDATE IDENTIFICATION NUMBER	SUBJECT CODE 0570	PAPER NUMBER 2	
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 LITTORAL MATHEMATICS TEACHER'S ASSOCIATION (L.I.M.T.A.) 		GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION	
SUBJECT TITLE MATHEMATICS		SUBJECT CODE 0570	PAPER NUMBER 2
		EXAMINATION DATE : APRIL 2021	

Two and a Half hours

Enter the information required in the boxes above.

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 indicate.

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.

Calculators are allowed.

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Turn Over

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Marked by : Signature: Date	<u>SCORE</u>
Checked by : Signature: Date	

SECTION A

ANSWER ALL 15 QUESTIONS

1. Evaluate

(i) $-6 + 12 \times 2 \div 4$.

(2marks)

(ii) 4.5×0.02 leaving your answer; in standard form

(2marks)

2. A map is drawn to a scale of 1 : 50 000 . Calculate the length of a road in km which appears 3 cm long on the map.

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(4 marks)

3. Let p and q be statements

p : He is a policeman and q : He carries a gun.

(a) Write in ordinary English language $p \wedge q$

(1mark)

(b) Complete the table below

p	q	$p \wedge q$	$\sim(p \wedge q)$
T	T	T	F
T	F		
F	T	F	
F	F		

Figure 1

(4marks)

4. In figure 2 above, PQRS is a square of side 14cm. The vertices of the square lie on the circumference of the bigger circle. The edges of the square are tangents to the smaller circle. The two circles have a common centre. In this question take $\pi = \frac{22}{7}$

(a) State the radius of the smaller circle

(1mark)

Find

(b) the radius of the bigger circle, leaving your answer as a surd.

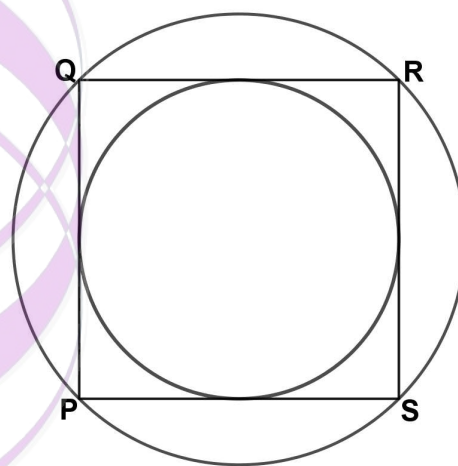


Figure 2

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(3marks)

(c) the area of the bigger circle

(2marks)

5. The n^{th} term, U_n , of a sequence is given by $U_n = 4n - 3$.

(a) Determine the value of the first term of the sequence and determine the type of sequence.

(2marks)

(b) Given that 77 is the last term of the sequence, find how many terms are there in the sequence.

(2marks)

(c) Determine the sum of all the terms of this sequence.

(2marks)

6. Find the sizes of the angles marked x, y and z in figure 3.

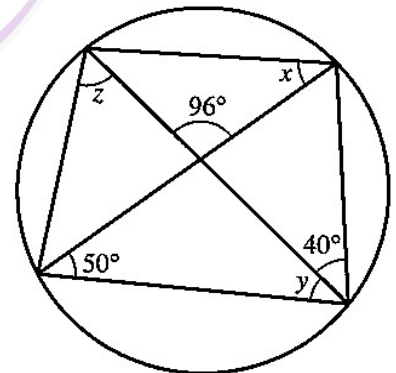


Figure 3

(6 marks)

7. The equations of four lines are given as $l_1 : 3x - 4y = 1$, $l_2 : 3y - 5x = 7$, $l_3 : 5x = 3y - 4$ and $l_4 : 3y = 1 - 4x$. Determine which of these lines are:

(a) parallel.

(b) perpendicular.

(6 marks)

8. From the top of a building, 40m tall, a boy sees two cars packed on the road. Given that the angles of depression of the cars are 17° and 25° , calculate the distance between the two cars.

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(7 marks)

9. Study the network in figure 3 and answer the questions that follow :

(a) How many nodes are there ?

(b) How many arcs does the network have ?

(c) How many regions are in the network above ?

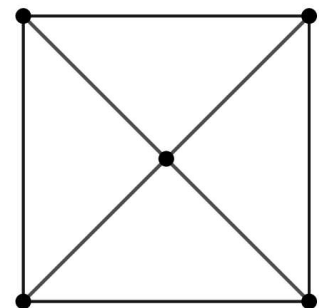


Figure 3

(d) State with reasons whether the network is transversible

(6 marks)

10. The base areas of two similar objects are 40cm^2 and 360cm^2 , respectively.

(a) Find the height of the smaller object, given that the height of the bigger object is 9cm.

(3marks)

(b) If the volume of the smaller object is 20cm^3 , find the volume of the larger one.

(2marks)

11. Solve the following inequality $-\frac{1}{2} \leq \frac{2-3x}{6} < \frac{4}{3}$ and represent your solution on a number line in each case.

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(5marks)

12. The vectors $\mathbf{p}$, $\mathbf{q}$ and $\mathbf{r}$ are such that $\mathbf{p} = 2\mathbf{i} + 3\mathbf{j}$ and $\mathbf{q} = 5\mathbf{i} + 6\mathbf{j}$. Given that $\mathbf{r} = m\mathbf{p} + n\mathbf{q}$, determine the values of the scalars m and n .

(5marks)

13. The matrix $\mathbf{A} = \begin{pmatrix} 2 & 1 \\ 1 & 1 \end{pmatrix}$ and $\mathbf{C} = \begin{pmatrix} 11 \\ 7 \end{pmatrix}$. If $\mathbf{B}$ is a (2×1) matrix such that $\mathbf{AB} = \mathbf{C}$, find the matrix $\mathbf{B}$.

(6 marks)

14. A bag contains 24 tennis balls, some white and some green. If a ball is chosen at random, the probability of getting a green is $\frac{3}{8}$. Find the number of white balls in the bag.

(5 marks)

15. A cylinder has a height of 7cm and a volume of 8.64cm^3 . Obtain the volume of a similar cylinder whose height is 4 cm, giving your answer correct to two decimal places.

(4 marks)

SECTION B

ANSWER ALL FOUR QUESTIONS IN THIS SECTION.
EACH QUESTION CARRIES 15 MARKS

1.

- (i) During the 2021 CHAN football competition in Cameroon 48600 spectators watched the quarter finals match between Cameroon and DRC (Democratic Republic of Congo). $\frac{7}{8}$ of the people supported Cameroon team. 4075 people supported neither teams and the rest supported DRC. Find
 - (a) the number of supporters who supported Cameroon.
 - (b) the percentage of the crowd who supported the Democratic Republic of Congo.
- (ii) The polynomial $g(x) = px^3 + 5x^2 + x + q$, where p and q are constants. Given that $(x+1)$ is a factor of $g(x)$ and that $g(1) = 6$, find
 - (a) The values of p and q .
 - (b) The other factors of $g(x)$.

2.

- (i) The functions f and g are defined on the set R^+ of positive real numbers as follows:

$$f : x \rightarrow \frac{2x-5}{3} \text{ and } g : x \rightarrow x^2 + 3$$

- (a) Evaluate $f(7)$
 - (b) Find the values of x for which $f^{-1}g(x) = 13$.
- (ii) Three students A , B and C are positioned on a playground such that B is $7m$ from A on a bearing of 060° , C is $25m$ from A and on a bearing of 150° from B .
 - (a) Sketch a diagram showing her movement.
 - (b) Calculate correct to the nearest km , the distance AC .
 - (c) Calculate, to the nearest degree, the bearing of A from C .

3.

- (i) Given the function, $-x^2 = -f(x) - 2x - 3$
 - (a) Using a scale of 2 cm for 1 unit on both axes, draw the graph of $y = f(x)$ for $-2 \leq x \leq 4$.
From your graph, Meet us at www.alstug.com
 - (b) State the coordinates of the turning point of the graph of $y = f(x)$.
 - (c) Find the solution of the equation $x^2 - 2x = 3$.
- (ii) Use a ruler, pencil and compass only in this section.
 - (a) Draw a circle with centre O and radius $6cm$.
 - (b) Draw a diameter AOB of the circle
 - (c) At A and B , construct lines making angles of 60° with line AOB . These lines must be inside the same semi-circle. Label the point X and Y where the two respective lines cut the circle. Join XY and name the quadrilateral formed.

4.

- (i) The table below shows the marks out of 50 obtained by students in an entrance examination into a professional school in Cameroon.

Mark (x)	15	16	20	23	25	30	32	35	38	40
No. of students	4	5	6	12	18	7	6	4	5	3

Calculate

- (a) the number of students who wrote the examination.
 (b) the median of the marks.
 (c) state the modal mark.
 (d) the mean mark of the distribution correct to two decimal places.
- (ii) Using graph paper and with a scale of 1 cm to 1 unit on both axes, where $-2 \leq x \leq 14$ and $-6 \leq y \leq 10$,

- (a) plot the points $A(0,1)$, $B(1,2)$, $C(2,2)$ and $D(3,1)$. Name the quadrilateral $ABCD$.

- (b) Transform $ABCD$ using the matrix $M = \begin{pmatrix} 2 & 0 \\ 0 & -2 \end{pmatrix}$. Plot the image.

Describe completely the transformation M .

- (c) Find the image $A''B''C''D''$ of $A'B'C'D'$ under the transformation M .

- (d) Find the ratio $\frac{\text{Area of } A'B'C'D'}{\text{Area of } ABCD}$

END!

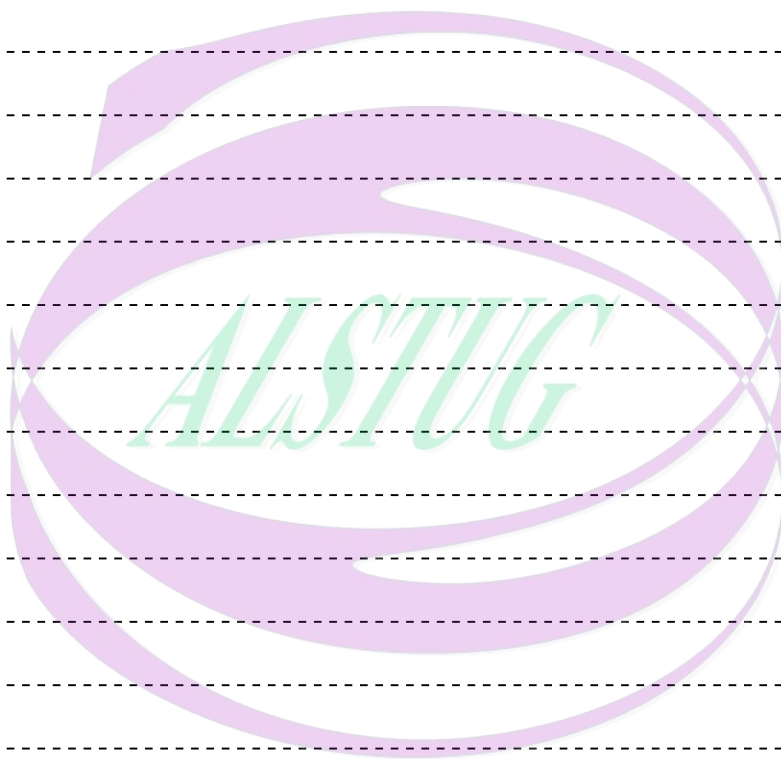
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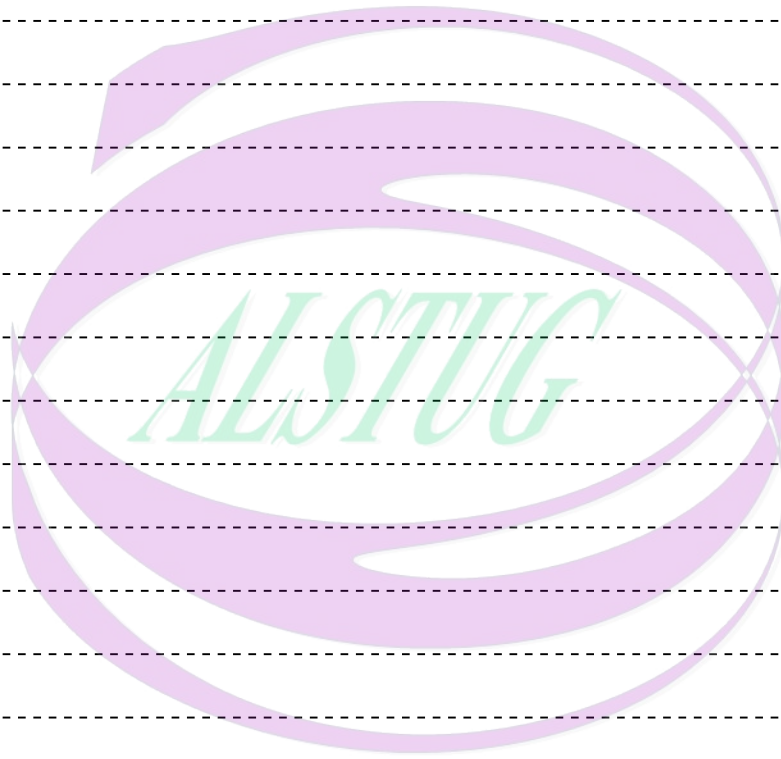


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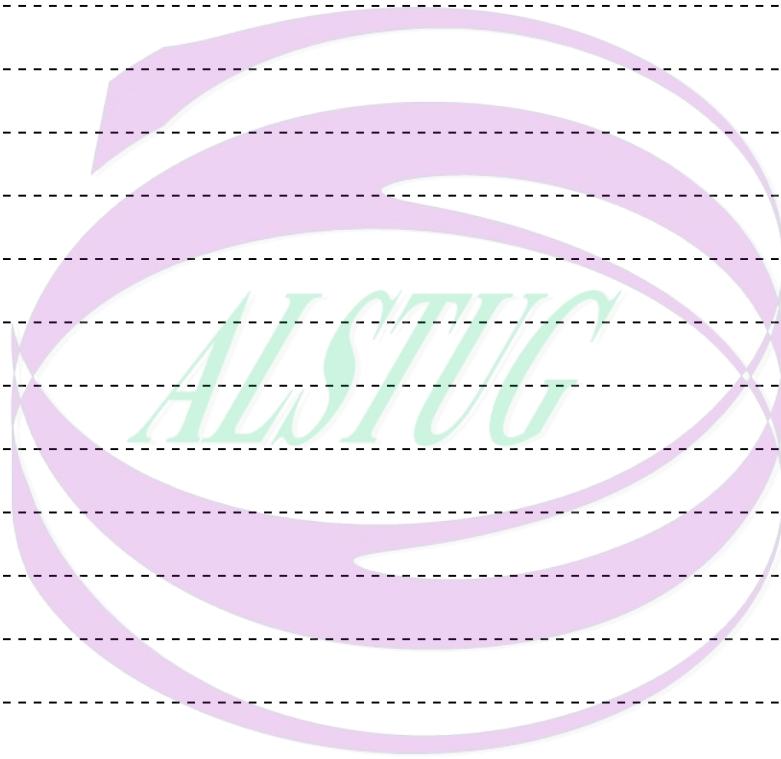
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