REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie
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REGION DE L'ADAMAOUA
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DELEGATION REGIONALE DES ENSEIGNEMENTS SECONDAIRES
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INSPECTION REGIONALE DE PEDAGOGIE CHARGEE DE L'ENSEIGNEMENT DES SCIENCES
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AMICALE DES ENSEIGNANTS DE MATHEMATIQUES DE L'ADAMAOUA (AMEMA)

REPUBLIC OF CAMEROON
Peace-Work-Fatherland
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ADAMAWA REGION
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REGIONAL DELEGATION OF SECONDARY EDUCATION
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REGIONAL INSPECTORATE OF PEDAGOGY IN CHARGE OF TEACHING SCIENCES
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ASSOCIATION OF MATHMATICS TEACHERS OF ADAMAWA (AMEMA)

REGIONAL COMPETITION OF MATHEMATICS 2026. FORM 5

INSTRUCTIONS: ANSWER ALL QUESTIONS IN BOTH SECTIONS. ***Duration: 2hours***

SECTION A: Multiple Choice Questions.

Write down the LETTER corresponding to the correct answer. (NOTE: Only 1 answer is correct)

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1) The approximation height of a television antenna is $\mathbf{45}\boldsymbol{m}$**.** If the actual height is $\mathbf{45.35}\boldsymbol{m}$, then the relative error in this approximation is:

A) $\frac{7}{900}$ B) $\frac{900}{907}$ C) $\frac{7}{907}$ D) $\frac{907}{900}$

2) $\frac{3x}{x+2} - 1$ is simplified to

A) $\frac{2x-2}{x+2}$ B) $\frac{3x-4}{x+2}$ C) 2 D) $\frac{x-1}{x+2}$

3) The quadratic equation whose roots are -0.5 and 2 is

A) $2x^2 - x - 2 = 0$ B) $2x^2 - 3x - 2 = 0$ C) $2x^2 - 3x + 2 = 0$ D) $2x^2 - 3x + 1 = 0$

4) Given that $\frac{6}{2-\sqrt{2}} = a + b\sqrt{2}$, the values of a and b are

A) 12 and 6 B) 6 and 2 C) 1 and 3 D) 6 and 3

5) If θ is an obtuse angle, then:

A) $\sin\theta = \sin(180 - \theta)$ B) $\cos\theta = cos(180 - \theta)$ C) $\tan\theta = tan(180 - \theta)$ D) $\sin\theta = -sin(180 - \theta)$

6) Given that $AB = A$ where A and B are 2×2 matrices then B is equal to:

A) A B) A^{-1} C) the identity matrix D) A^T

7) The value of m for which the vectors $(2m + 1)i - 5j \ \ and \ 3i + 4j$ are parallel is

A) 1 B) $\frac{19}{8}$ C) $-\frac{19}{8}$ D) $\frac{23}{6}$

8) The perimeter of a triangle is $37cm$ and the length of its sides are in a GP. If the length of the smallest side is $9cm$, the lengths of the other two sides in cm are

A) $12, 16$ B) $14, 14$ C) $10, 18$ D) $15, 13$

9) The radius of a circle is $4cm$. What is the length of its longest chord?

A) $16cm$ B) $12cm$ C) $8cm$ D) $4cm$

10) Which of the following is NOT a necessary property of a GROUP?

A) Closure B) Commutativity C) Associativity D) Identity Element

SECTION B: SHOW ALL YOUR WORKING

1) Lady Ponce rented a hall for 150000FCFA for her concert. Other expenses amounted to 75000FCFA. The entry fee per person is 500F. The hall has 20 rows of seats. There are 20 seats in the first row, 21 seats in the second row, 22 seats in the third row and so on. Given that all the seats were occupied, determine
   a) The amount collected at the gate
   b) The profit made from the concert

2) Ester lost her cat. After searching, she spots the cat up a tree. When she is standing 30m away from the tree, she sees the cat at an angle of 25^0 to the horizontal. Ester's eye is 1.5m above the ground. How high up the tree is the cat? (Give your answer to one decimal place)

3) A substance is said to be acidic if its pH is less than 7, basic if its pH is greater than 7 and neutral if its pH is 7. The lower the pH, the stronger the acidity.
   The pH, y of a compound is given by: $y = -\log_{10} x$ where x is the concentration of hydrogen or hydroxide ions in the compound. In a chemistry laboratory, a teacher wants to conduct an experiment with a weak acid. He has two containers A and B of acids.
   On container A, it is written: concentration of hydrogen ions=0.001
   On container B, it is written: concentration of hydrogen ions =0.00001
   a) Which container should the teacher use?
   b) Another chemistry teacher intends to use an acid with a pH of 4 in her own experiment. She sees a container written on it: Concentration of hydrogen ions = 0.0001. Should she use the acid in this container?
   c) Water is a neutral compound. Determine the concentration of hydrogen or hydroxide ions found in water expressing your answer in standard form.

4) Given that the polynomial $P(x) = x^3 + 6x^2 + px + q$ leaves a remainder of -12 when divided by $(x + 1)$ and that $(x - 1)$ is a factor of $P(x)$
   a) Find the value of p and q
   b) Express $P(x)$ as a product of three linear factors
   c) Solve the equation $P(x) = 0 \; for \; all \; x \in \mathbb{Z}^+$