LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

VHEMBE WEST DISTRICT

Liberty through knowledge

GRADE 9

MATHEMATICS
EXAMINATION
05 JUNE 2024

MARKS: 75

TIME: $1\frac{1}{2}$ HOURS

This question paper consists of 6 pages including the cover page

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **SECTION A** and **SECTION B**.
   SECTION A: **MULTIPLE CHOICE.**

   QUESTION 1: MULTIPLE CHOICE QUESTIONS.

   SECTION B: **SEVEN QUESTIONS.**

   QUESTION 2: WHOLE NUMBERS

   QUESTION 3: INTEGERS

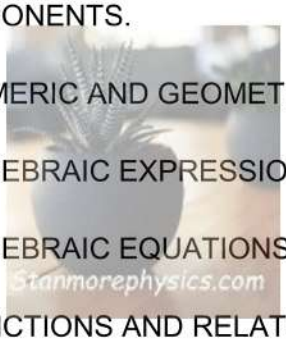
   QUESTION 4: EXPONENTS.

   QUESTION 5: NUMERIC AND GEOMETRIC PATTERNS.

   QUESTION 6: ALGEBRAIC EXPRESSIONS.

   QUESTION 7: ALGEBRAIC EQUATIONS.

   QUESTION 8: FUNCTIONS AND RELATIONSHIPS.



2. Answer ALL questions in both SECTIONS.
3. A non-programmable calculator may be used unless otherwise stated.
4. In **SECTION A** choose the letter with correct answer.
5. In **SECTION B** show all necessary steps in your working unless otherwise stated.
6. When answering questions, candidates must apply their knowledge, skills and insight.
7. Number the answers correctly according to the numbering system used in this question paper.
8. Write neatly and legibly.

SECTION A

Question 1

		Marks
1.1	Which one of the following is not a property of rational number? A. Terminating decimals B. Recurring decimals C. Square root of a perfect square D. Cube root of a prime number	(2)
1.2	Calculate: $-3^2 + 3^2$ A. 18 B. -9 C. 12 D. 0	(2)
1.3	The constant difference in the pattern: $4; 7; 10; 13$ is: A. 2 B. 4 C. 5 D. 3	(2)
1.4	The following expression $\frac{3x+6y}{x+2y}$ is equals to? A. $x + 2y$ B. $x - 2y$ C. 3 D. 6	
1.5	If $(x-1)(x+2) = 0$ then $x = \cdots$ A. $1\ or\ -2$ B. $1\ or\ 0$ C. -2 D. 3	(2)
		[10]

SECTION B

Question 2 (Whole numbers)

2.1	Decrease 300 in the ratio 5: 3	(2)
2.2	Find the HCF of $36\ and\ 68$	(3)
2.3	Emily invests $R12000$ in a saving account at 5% per annum compound interest. Calculate how much there will be in the savings account after 3 years.	(3)
		[8]

Question 3 (Integers)

Simplify the following without using the calculator:

3.1.	$-5 + (-8 + 16)$	(2)
3.2	$-10 \times 2 + \frac{-10}{-2}$	(2)
3.3	$\frac{\sqrt[3]{x^{18}}}{(x^2)^2}$	(2)
3.4	$\frac{-6a^3 \times (-6b^3)}{12a^3b^3}$	(3)
		[9]

Question 4 (Exponents)

	Simplify the following using laws of exponents and leave your answer in exponential form:	
4.1.	$18x^0$	(1)
4.2	$6^2 \times 6 \div 6^2$	(2)
4.3	$(x^{-2}y^2)^4 \times 12x^2$	(2)
4.4	$\frac{5x^4 \times (2x)^3}{20x^4}$	(3)
4.5	$3x^3 \times 2x^3 + 6x^2 \times (-x^2)^2$	(3)
		[11]

Question 5 (Numeric and Geometric patterns)

	Consider the following sequence: $\mathbf{7; 10; 13; 16}$	
5.1	Write down the next two terms.	(2)
5.2	Determine the general rule (n^{th} term).	(2)
5.3	Calculate the 28^{th} term.	(2)
5.4	Which term of the sequence is equal to 304?	(3)
		[9]

Question 6 (Algebraic expression)

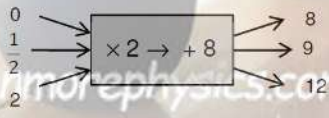
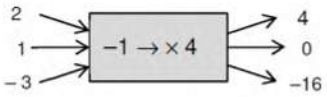
6.1	Given: $\mathbf{10m^4 - 2m^3 + 8m - 6}$	
6.1.1	How many terms does the expressions have?	(1)
6.1.2	What is the constant term?	(1)
6.1.3	Determine the value of the expression if $m = 1$.	(2)
6.2	Add $x^2 + 2x + 7$ and $x^2 - 5x + 3$	(3)
6.3	Expand and simplify: $3(2x + 3)(5x - 5)$	(3)
6.4	Factorise fully:	
6.4.1	$6xy + 12y$	(2)
6.4.2	$x^2 - 3x - 18$	(2)
		[14]

Question 7 (Algebraic equation)

7.1	Solve the following equations:	
7.1.1	$x - 2 = 16$	(2)
7.1.2	$(x - 8)(x + 6)=0$	(2)
7.2	If $y = x^2 - 4x$, calculate the value of of y, if $x = -6$	(2)
7.3	Four times a certain number increased by six is equal to 26. Find the number	(3)
		[9]

Question 8 (Functions and relationships)

8.1 Match the representation of the function in column 1 with the representation of the same function in column 2.

COLUMN 1	COLUMN 2
8.1.1 Subtract 1 from the input and then multiply by 4.	A. $y = 2x^2$
8.1.2 <table><tr><td>x</td><td>−2</td><td>−1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>y</td><td>8</td><td>2</td><td>0</td><td>2</td><td>8</td></tr></table>	B. $y = 2x + 8$
8.1.3 	C. 

(3)

8.2 If the rule for finding the output value (y) in the table below is: $\boldsymbol{y = -9x + 6}$. Determine the value of a and b .

x	-3	b
y	a	-48

(2)

[5]

TOTAL:75