



# education

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Department:  
Education  
North West Provincial Government  
**REPUBLIC OF SOUTH AFRICA**

## PROVINCIAL ASSESSMENT

**GRADE 10**

**TECHNICAL MATHEMATICS P1**

**JUNE 2024**

**MARKS: 50**

**TIME: 1 hour**

**This question paper consists of 4 pages.**

**INSTRUCTION AND INFORMATION**

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs, etc. that you used in determining your answer.
4. Answers only will NOT necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers to TWO decimal places, unless stated otherwise.
7. Diagrams are NOT necessarily drawn to scale.
8. Number your answers according to the numbering system used in this question paper.
9. Write neatly and legibly.

**QUESTION 1**

1.1 Given:

$$\sqrt{-16}; \sqrt{16}; \sqrt[3]{-16}$$

From the list above, without the use of a calculator, write down:

1.1.1 A rational number. (1)

1.1.2 A non-real number. (1)

1.1.3 A whole number. (1)

1.2 Between which two integers does  $\sqrt{18}$  lie? (2)

1.3 Subtract  $4x^2 + 3x - 5$  from  $7x^2 - 3x + 2$ . (3)

1.4 Convert 73 to a binary number. Show all calculations. (2)

1.5 Given:  $11111_2 \times 1011_2$

Determine the binary value of the above. Show all calculations. (2)

1.6 The formula:  $C = \frac{Q}{V}$  is given with  $Q = 3 \times 10^{-4}$  and  $V = 300$ volt.

Determine the value of C. (3)

**[15]**

**QUESTION 2**

2.1 Simplify the following:

2.1.1  $(3x - 4)(x + 8)$  (3)

2.1.2  $-5a(3 - 2a)^2$  (3)

2.2 Factorize fully:

2.2.1  $x^4 - 1$  (3)

2.2.2  $4x^2 + 12$  (2)

2.2.3  $\frac{x^2 + x - 12}{x^2 - 9} \times \frac{3x + 9}{2x + 8}$  (5)

**[16]**

**QUESTION 3**

Simplify the following fully, leave your answer in simplest form and positive exponents where applicable.

$$3.1 \quad 2(xy^{-2})^3 \quad (2)$$

$$3.2 \quad -2a^0 \times b \div \frac{1}{b^5} \quad (4)$$

$$3.3 \quad \frac{27n^{-3}m^{-2}}{81n^2m^{-3}} \quad (3)$$

**[9]****QUESTION 4**

4.1 Solve for  $x$  in each of the following:

$$4.1.1 \quad 3.2^x = 96 \quad (3)$$

$$4.1.2 \quad 6 - 24x = 4x + 12 \quad (3)$$

4.2 Represent the following:  $\{x: -2 < x \leq 6; x \in R\}$

4.2.1 On a number line. (2)

4.2.2 In interval notation. (2)

**[10]****TOTAL: 50**