



Education and Sport Development

Department of Education and Sport Development
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NORTH WEST PROVINCE

GRADE 10

TECHNICAL MATHEMATICS PAPER 1

MID YEAR EXAMINATION 2018

MARKS: 75

TIME: 1 hour 30 minutes

This question paper consists of 5 pages



NW/JUNE/TEC-MATH/ EMIS/6*****

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 5 questions, answer ALL the questions.
2. Clearly show ALL calculations
3. An approved scientific calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
4. If necessary, answers should be rounded off to TWO decimal places, unless stated otherwise.
5. Number the answers correctly according to the numbering system used in this question paper.
6. It is in your own interest to write legibly and to present the work neatly.

QUESTION 1

Given the following numbers: $\frac{3}{7}$; $\sqrt{17}$; $\frac{0}{4}$; $0,2\dot{2}$; $-\sqrt{16}$; 0,000584; $\sqrt{-16}$

- 1.1 Write down **from the list above**:
 - 1.1.1 one irrational number (1)
 - 1.1.2 two **integers** (2)
 - 1.1.3 one imaginary number (1)
 - 1.2 Use a calculator to write down the value of $\frac{3}{7}$ rounded off to three decimal places (2)
 - 1.3 Write 0,000584 in scientific notation (2)
 - 1.4 Determine between which two consecutive integers does $\sqrt{17}$ lie? (2)
- [10]**

QUESTION 2

- 2.1 Convert the 58 from decimal to binary (2)
 - 2.2 Convert the binary number 10101 to decimal (2)
 - 2.3 Perform the following operation:
 - $$\begin{array}{r} 1011 \\ \times 11 \\ \hline \end{array}$$

 - 2.4 Simplify:
 - 2.4.1 $\sqrt{-121}$ (2)
 - 2.4.2 i^{39} (2)
- [10]**

QUESTION 3

- 3.1 **Simplify**:
 - 3.1.1 $2(2a - 4b) - (3a - 2b)$ (3)
 - 3.1.2 $(3x + 2)(x - 6)$ (3)
 - 3.1.3 $(x - 5)(x^2 + 5x + 25)$ (3)

3.2 Factorise fully:

3.2.1 $8x^2 - 6x$ (2)

3.2.2 $3x - 6xy - 2y + 1$ (3)

3.2.3 $x^2 - 9x + 20$ (2)

3.2.4 $a^2 - 16b^2$ (2)

[18]

QUESTION 4

4.1 Simplify:

4.1.1 $12b^4c^2 \div 6b^3 - 5bc^2$ (3)

4.1.2 $\frac{25^{x+2}}{5^{2x-1}}$ (4)

4.2 Determine the HCF of: $9ab^2$ and $12a^2b^3$ (2)

4.3 Simplify:

4.3.1 $\frac{(x-3)}{3} - \frac{(x+2)}{4}$ (5)

4.3.2 $\frac{x^2 - 5x - 6}{x^2 - 1} \times \frac{2x - 2}{x^2 - 6x}$ (5)

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QUESTION 5

5.1 Solve for x :

5.1.1 $2^x = 32$ (2)

5.1.2 $2(2x - 1) = x + 1$ (4)

5.1.3 $x^2 - 5x = 14$ (4)

5.2 $F = \frac{9}{5}C + 32$ is a formula that converts temperature in degrees Celsius to degrees Fahrenheit.

5.2.1 Make C the subject of the formula (3)

5.2.2 If the temperature in Cape Town is 50 degree Fahrenheit, convert this to degree Celsius. (2)

5.3 Convert 250m^3 to km^3 (3)

[18]

GRAND TOTAL: 75 marks