FINAL

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

# MATHEMATICS PAPER 1

## NOVEMBER 2024

## MARKING GUIDELINE



NATIONAL
SENIOR CERTIFICATE

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**GRADE 10**

**MARKS: 100**

**This marking guideline consists of 7 pages.**

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GRADE 10
Marking Guideline

**QUESTION 1**

| | | | |
|---|---|---|---|
| 1.1 | $\sqrt{64} < \sqrt{70} < \sqrt{81}$<br>$8 < \sqrt{70} < 9$ | ✓A 8<br>✓A 9 | (2) |
| 1.2 | let $0,\dot{2}\dot{3} = k$<br>$23,\dot{2}\dot{3} = 100k$<br>$23 = 99k$<br>$k = \frac{23}{99}$ | ✓A $23,\dot{2}\dot{3} = 100k$<br>✓A answer<br>**Answer only: Full marks** | (2) |
| 1.3.1 | $= 27x^3 + 9x^2y - 9x^2y - 3xy^2 + 3xy^2 + y^3$<br>$= 27x^3 + y^3$ | ✓A $27x^3 + 9x^2y - 9x^2y - 3xy^2 + 3xy^2 + y^3$<br>✓CA answer | (2) |
| 1.3.2 | $= \frac{3}{x-4} + \frac{2}{x+3} - \frac{21}{(x+3)(x-4)}$<br>$= \frac{3(x+3)+2(x-4)-21}{(x-4)(x+3)}$<br>$= \frac{3x+9+2x-8-21}{(x-4)(x+3)}$<br>$= \frac{5x-20}{(x-4)(x+3)}$<br>$= \frac{5}{x+3}$ | ✓A $(x+3)(x-4)$<br>✓CA $\frac{3(x+3)+2(x-4)-21}{(x-4)(x+3)}$<br>✓CA simplification<br>✓CA answer | (4) |
| 1.3.3 | $= \frac{5^{2n}.5^2 - 3.5^{2n}.5}{5^{2n}.4}$<br>$= \frac{5^{2n}(25-15)}{5^{2n}.4}$<br>$= \frac{5}{2}$ | ✓A $\frac{5^{2n}.5^2 - 3.5^{2n}.5}{5^{2n}.4}$<br>✓A $5^{2n}(25-15)$<br>✓CA answer | (3) |
| 1.4.1 | $= (x-6)(x-7)$ | ✓A✓A each factor | (2) |
| 1.4.2 | $= m^2 + 4m + mn + 4n$<br>$= m(m+4) + n(m+4)$<br>$= (m+4)(m+n)$ | ✓A $m^2 + 4m + mn + 4n$<br>✓A $m(m+4) + n(m+4)$<br>✓CA answer | (3) |
| 1.4.3 | $= 2y(1-125y^3)$<br>$= 2y(1-5y)(1+5y+25y^2)$ | ✓A $2y(1-125y^3)$<br>✓CA✓CA answer | (3) |
| | | | **[21]** |

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**QUESTION 2**

| | | | |
|---|---|---|---|
| 2.1.1 | $(3x+1)(2x-1)=0$<br>$x=-\frac{1}{3}$ or $x=\frac{1}{2}$ | ✓A $(3x+1)(2x-1)=0$<br>✓CA✓CA each answer | (3) |
| 2.1.2 | $3^{2x-1}=3^{-5}$<br>$2x-1=-5$<br>$x=-2$ | ✓A $3^{-5}$<br>✓CA $2x-1=-5$<br>✓CA answer | (3) |
| 2.2 | $-2<x+3<10$<br>$-5<x<7$ | ✓A $-2<x+3<10$<br>✓CA $-5<x<7$ | (2) |
| 2.3.1 | $x=4+y$ .....→(1)<br>$5x+3y=84$ .....→(2) | ✓A $x=4+y$<br>✓A $5x+3y=84$ | (2) |
| 2.3.2 | $x=4+y$ .....→(1)<br>$5x+3y=84$ .....→(2)<br>$-5x+5y=-20$ .....→(3)<br>$8y=64$<br>$y=8$<br>$x=12$<br>**OR**<br>$x=4+y$ .....→(1)<br>$5x+3y=84$ .....→(2)<br>Substitute (1) into (2)<br>$5(4+y)+3y=84$<br>$8y=64$<br>$y=8$<br>$x=12$ | ✓CA multiplying (1) by $-5$<br>✓CA $8y=64$<br>✓CA $y-$value<br>✓CA $x-$value<br>**OR**<br>✓CA substitution<br>✓CA $8y=64$<br>✓CA $x-$value<br>✓CA $y-$value | (4) |
| | | | **[14]** |

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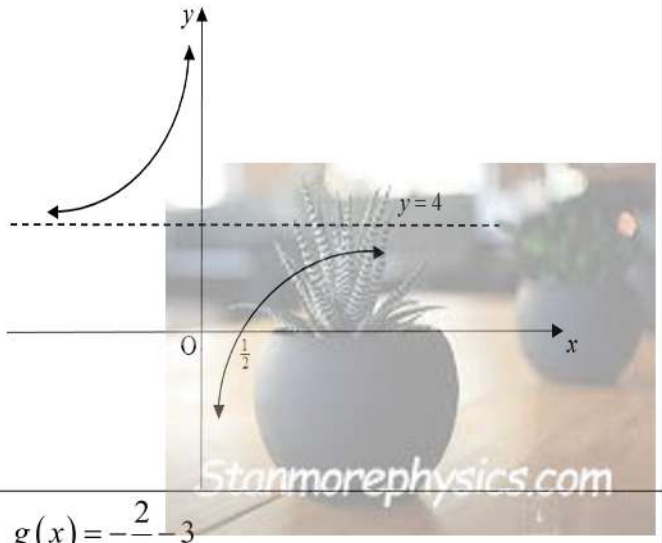
## QUESTION 3

| | | | |
|---|---|---|---|
| 3.1.1 | $T_4 = -7$ | ✓A answer | (1) |
| 3.1.2 | $T_n = -5n + 13$ | ✓A $-5n$<br>✓A $+13$ | (2) |
| 3.1.3 | $T_{25} = -5(25) + 13$<br>$T_{25} = -112$ | ✓A substitution<br>✓CA $T_{25} = -112$<br>**Answer only: Full marks** | (2) |
| 3.1.4 | $-5n + 13 = -527$<br>$n = 108$ | ✓CA $-5n + 13 = -527$<br>✓CA $n = 108$<br>**Answer only: Full marks** | (2) |
| 3.2 | $2x - (3x + 1) = 3x - 7 - (2x)$<br>$-2x = -6$<br>$x = 3$ | ✓A $2x - (3x + 1) = 3x - 7 - (2x)$<br>✓CA $-2x = -6$<br>✓CA answer | (3) |
| 3.3 | $\frac{201}{7} = 28$ remainder is 5<br>$\therefore$ letter number 5 = A | ✓A $\frac{201}{7} = 28$ remainder is 5<br>✓A answer<br>**Answer only: Full marks** | (2) |
| | | | **[12]** |

## QUESTION 4

| | | | |
|---|---|---|---|
| 4.1.1 | $y = 4$ | ✓A answer | (1) |
| 4.1.2 | $-\frac{2}{x} + 4 = 0$<br>$4x = 2$<br>$x = \frac{1}{2}$ | ✓A $-\frac{2}{x} + 4 = 0$<br>✓A answer | (2) |

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| | | | |
|---|---|---|---|
| 4.1.3 | Stanmorephysics.com | ✓A shape<br>✓A asymptote<br>✓CA $x-$intercept | (3) |
| 4.1.4 | $g(x)=-\frac{2}{x}-3$ | ✓A answer | (1) |
| 4.2.1 | $h(0)=2^0-2$<br>$=-1$<br>$A(0;-1)$ | ✓A $x-$value<br>✓A $y-$value | (2) |
| 4.2.2 | $y>-2$<br>**OR**<br>$y\in(-2;\infty)$ | ✓A✓A answer | (2) |
| 4.2.3 | $j(x)=2^{-x}-2$ or $j(x)=\left(\frac{1}{2}\right)^x-2$ | ✓A answer | (1) |
| | | | **[12]** |

**QUESTION 5**

| | | | |
|---|---|---|---|
| 5.1.1a | $P(-4;0)$ | ✓A answer | (1) |
| 5.1.1b | $R(-2;3)$ | ✓A $x-$value<br>✓A $y-$value | (2) |
| 5.1.2 | $g(x)=3$<br>**OR**<br>$m=0$<br>$c=3$<br>$\therefore g(x)=3$ | ✓A✓A **Answer only: full marks**<br>**OR**<br>✓A $m=0$<br>✓A answer | (2) |

| | | | |
|---|---|---|---|
| 5.1.3 | $f(x)=a(x-4)(x+4)$ through $T(2;3)$<br>$3=a(2-4)(2+4)$<br>$a=-\frac{1}{4}$<br>$f(x)=-\frac{1}{4}(x^2-16)$<br>$=-\frac{1}{4}x^2+4$<br>$\therefore q=4$ | ✓A $3=a(2-4)(2+4)$<br>✓CA value of $a$ on condition $a<0$<br>✓CA $f(x)=-\frac{1}{4}x^2+4$<br>✓CA value of $q$ | (4) |
| 5.1.4 | $k>4$ | ✓CA value of q<br>✓A $k>$ | (2) |
| 5.1.5 | $F(2;-3)$ | ✓A $x-$value<br>✓A $y-$value | (2) |
| 5.1.6a | $x\in(-2;2)$ **OR** $-2<x<2$ | ✓CA✓A $-2<x<2$<br>**OR**<br>✓CA✓A $x\in(-2;2)$ | (2) |
| 5.1.6b | $x\leq -4$ or $x\geq 4$ **OR**<br>$x\in(-\infty;-4]$ or $x\in[4;\infty)$ | ✓CA✓A answer | (2) |
| | | | **[17]** |

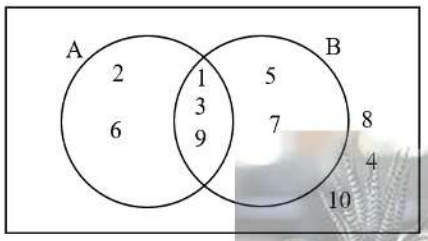
**QUESTION 6**

| | | | |
|---|---|---|---|
| 6.1.1 | Loan $=\frac{80}{100}\times$ R11 500<br>= R9 200<br>**OR**<br>Deposit $=\frac{20}{100}\times$ R11 500<br>= R2 300<br>Loan = R11 500 – R2 300<br>= R9 200 | ✓A✓CA answer<br>**OR**<br>✓A Deposit = R2 300<br>✓CA answer | (2) |
| 6.1.2 | $A=P(1+in)$<br>$A=9\ 200(1+0,11\times 3)$<br>A = R12 236<br>Monthly instalment $=\frac{\text{R12 236}}{36}+$ R60,75<br>=R400,64 | ✓A $A=P(1+in)$<br>✓A substitution<br>✓CA A = R12 236<br>✓CA answer<br>If compound interest formula used max 1 out of 4 for monthly instalment | (4) |

| | | | |
|---|---|---|---|
| 6.2 | In South Africa,<br>price of full tank = R22,30 × 55L = R1 226,50<br>In England,<br>price of full tank = £71,72 = R$x$<br>£1 = R23,23<br>$x$ = R1 666,06<br>∴ England is more expensive | ✓A R1 226,50<br>✓A R1 666,06<br>✓CA conclusion | (3) |
| 6.3 | cost of 100 barrels = \$77,36 × R17,83 ×100<br>= R137 932,88 | ✓A \$77,36 × R17,83 ×100<br>✓CA answer<br>**Answer only: Full marks** | (2) |
| | | | **[11]** |

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**QUESTION 7**

| | | | |
|---|---|---|---|
| 7.1.1 | $P(N)=\frac{1}{11}=0,09$ | ✓A answer | (1) |
| 7.1.2 | $P(O)=\frac{2}{11}=0,18$ | ✓A answer | (1) |
| 7.2.1 | $A=\{1;2;3;6;9\}$ | ✓A answer | (1) |
| 7.2.2 | $B=\{1;3;5;7;9\}$ | ✓A answer | (1) |
| 7.2.3 |  | ✓CA 1;3;9<br>✓CA 4;8;10<br>✓CA 2&6 ; 5&7 | (3) |
| 7.2.4a) | $P(A \text{ and } B)=\frac{3}{10}=0,3$ | ✓CA numerator<br>✓A answer<br>**Answer only: Full marks** | (2) |
| 7.2.4b) | $P(A \text{ or } B)=\frac{2+3+2}{10}=\frac{7}{10}=0,7$ | ✓CA numerator<br>✓A answer<br>**Answer only: Full marks** | (2) |
| 7.2.4c) | $P((\text{not } A) \text{ or } B)=\frac{3+2+3}{10}=\frac{8}{10}=0,8$ | ✓CA numerator<br>✓A answer<br>**Answer only: Full marks** | (2) |
| | | | **[13]** |

**TOTAL: 100**