GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2018

GRADE 10

MATHEMATICS

PAPER 1

MEMORANDUM

6 pages

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

QUESTION 1		
1.1	$25 < 33 < 36$ $\sqrt{25} < \sqrt{33} < \sqrt{36}$. $5 < \sqrt{33} < 6$ $\sqrt{33}$ lies between 5 and 6	✓ $\sqrt{25}$; $\sqrt{36}$ ✓answer (2)
1.2	$x = 0,4545454545$ $100x = 45,45454545$ $x = 0,4545454545$ $99x = 45$ $x = \frac{45}{99}$ $= \frac{5}{11}$	✓ $100x = 45,45454545$ ✓ $99x = 45$ ✓ $x = \frac{5}{11}$ (3)
		[5]

QUESTION 2			
2.1	2.1.1	$\frac{(3x)^2(-2xy)^3}{2x^5y^4}$ $=\frac{9x^2.-8x^3y^3}{2x^5y^4}$ $=\frac{-72x^5y^3}{2x^5y^4}$ $=-36x^{5-5}y^{3-4}$ $=-36y^{-1}$ $=-\frac{36}{y}$	✓ $9x^2.-8x^3y^3$ ✓ $-36y^{-1}$ ✓ $-\frac{36}{y}$ (3)
	2.1.2	$\left(\frac{1}{p}-q\right)\left(\frac{1}{p}+q\right)-\frac{q}{p^2}\left(\frac{1}{q}+qp^2\right)$ $=\left(\frac{1}{p^2}-q^2\right)-\left(\frac{q}{p^2q}+\frac{q^2p^2}{p^2}\right)$ $=\left(\frac{1}{p^2}-q^2\right)-\left(\frac{1}{p^2}+q^2\right)$ $=\frac{1}{p^2}-q^2-\frac{1}{p^2}-q^2$ $=-2q^2$	✓ $=\left(\frac{1}{p^2}-q^2\right)-\left(\frac{q}{p^2q}+\frac{q^2p^2}{p^2}\right)$ ✓ $\frac{1}{p^2}-q^2-\frac{1}{p^2}-q^2$ ✓ $-2q^2$ (3)
2.2	2.2.1	$6p+40-p^2$ $=-(p^2-6p-40)$ $=-(p-10)(p+4)$	✓ $-(p^2-6p-40)$ ✓ $-(p-10)$ ✓ $(p+4)$ (3)
	2.2.2	$-xy-(y-x)b+b^2$ $=-xy-by+bx+b^2$ $=-y(x+b)+b(x+b)$ $=(x+b)(-y+b)$	✓ $-xy-by+bx+b^2$ ✓grouping ✓ $(x+b)$ ✓ $(-y+b)$ (4)
			[13]

QUESTION 3

3.1

$$\frac{x+2}{x^2-3x-4}=\frac{3}{x-4}-\frac{1}{2+2x}$$

$$\frac{x+2}{(x-4)(x+1)}=\frac{3}{x-4}-\frac{1}{2(x+1)}$$

CD: $2(x-4)(x+1)$ Restriction: $x \neq 4;\ x \neq -1$

$2(x+2)=6(x+1)-1(x-4)$

$2x+4=6x+6-x+4$

$2x-5x=10-4$

$-3x=6$

$x=-2$

✓correct factors

✓$2(x+2)$

✓$6(x+1)$

✓$-x+4$

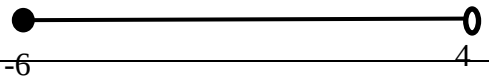
✓answer (5)

3.2

$-2 \leq \frac{x}{2}+1<3$

$-3 \leq \frac{x}{2}<2$

$-6 \leq x<4$



✓$-3 \leq \frac{x}{2}<2$

✓$-6 \leq x<4$

✓number line (3)

[8]

QUESTION 4			
4.1	4.1.1	$T_1 = 3(1) + 2 = 5$ $T_2 = 3(2) + 2 = 8$ $T_3 = 3(3) + 2 = 11$ $T_4 = 3(4) + 2 = 14$ $T_n = 3n + 2$	✓method ✓$3n$ ✓2 (3)
4.2	4.2.1	$3x - 7;\quad 2x;\quad 3x + 1; \ldots.$ $2x - (3x - 7) = 3x + 1 - 2x$ $2x - 3x + 7 = x + 1$ $-2x = -6$ $x = 3$	✓d values ✓equate ✓simplify ✓answer (4)
	4.2.2	2; 6; 10; … $T_n = 4n - 2$ $4n - 2 > 31$ $4n > 33$ $n > 8,25$ $\therefore n = 9$	✓ $4n - 2 > 31$ ✓ $n > 8,25$ ✓conclusion (3)
			[10]

QUESTION 5			
5.1		$q=1$ $y=b^x+1$ $5=b^2+1$ $b^2=4$ $b=2$	✓ $q=1$ ✓substitute coordinate ✓ $b=2$ (3)
5.2	5.2.1	$y=-x+2$.....(1) $y=\frac{-3}{x}$.....(2) Substitute (1) in (2): $-x+2=\frac{-3}{x}$ $-x^2+2x+3=0$ $-(x-3)(x+1)=0$ $x=3 \quad OR \quad x=-1$ $y=-(3)+2 \quad OR \quad y=-(-1)+2$ $y=-1 \qquad\qquad y=3$ $Q(3;-1) \qquad\qquad P(-1;3)$	✓substitute ✓simplification ✓factors ✓x values ✓y values ✓coordinate form (6)
	5.2.2	B(2; 0)	✓2 ✓0 (2)
	5.2.3	$y=-(-6)+2$ $GE=8$ $y=\frac{-3}{-6}$ $EF=\frac{1}{2}$ $\therefore GF=8-\frac{1}{2}$ $=7\frac{1}{2}$	✓ $GE=8$ ✓ $EF=\frac{1}{2}$ ✓ $7\frac{1}{2}$ (3)
			[14]
			TOTAL : 50