MATHS + MLII - GR 10

Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

MATHEMATICS

MARCH 2017

MEMORANDUM

NATIONAL SENIOR CERTIFICATE

GRADE 10

MARKS : 50

TIME : 1hour

This memorandum consists of 5 pages.

QUESTION 1

1.1	$(a+3)(a^2-3a+9)$ $=a^3+27$	 ✓✓ answer	(2)
1.2	$\frac{x^3-8y^3}{x^2-4y^2}\times\frac{x^2+4xy+4y^2}{x^2+2xy+4y^2}$ $=\frac{(x-2y)(x^2+2xy+4y^2)}{(x+2y)(x-2y)}\times\frac{(x+2y)(x+2y)}{(x^2+2xy+4y^2)}$ $=x+2y$	✓ $(x-2y)(x^2+2xy+4y^2)$ ✓ $(x+2y)(x-2y)$ ✓ $(x+2y)(x+2y)$ ✓ answer	(4)
1.3	$16p^2-25q^2-4p+5q$ $=(4p+5q)(4p-5q)-(4p-5q)$ $=(4p-5q)(4p+5q-1)$	✓ $(4p+5q)(4p-5q)$ ✓ $-(4p-5q)$ ✓ answer	(3)
1.4	$-\sqrt{16}<-\sqrt{13}<-\sqrt{9}$ $\Rightarrow -4<-\sqrt{13}<-3$	 ✓✓answer	(2)
			[11]

QUESTION 2

2.1.1	$2x^2-x-3=0$ $(2x-3)(x+1)=0$ $x=\frac{3}{2}$ or $x=-1$	✓ factorise ✓ both answers	(2)
2.1.2	$(x+2)(x-3)=x(x+1)$ $x^2-x-6=x^2+x$ $-2x=6$ $x=-3$	✓ multiply out brackets ✓ simplification ✓ $x=-3$	(3)
2.1.3	$\frac{x-p}{x-q}=\frac{q}{p}$ $p(x-p)=q(x-q)$ $xp-p^2=xq-q^2$ $xp-xq=p^2-q^2$ $x(p-q)=(p+q)(p-q)$ $x=\frac{(p+q)(p-q)}{(p-q)}$ $x=p+q$	✓ simplification ✓ rearranging terms ✓ factorising ✓ answer	(4)
2.2	$5\le 2x-11$ $-2x\le -16$ $x\ge 8$	✓ rearranging terms ✓ answer	(2)
2.3.1	$-3\le x<2$	✓ $-3\le x$ ✓ $x<2$	(2)
2.3.2	1	✓ answer	(1)
			[14]

QUESTION 3

3.1.1	$2017^0+\left(\frac{1}{7}\right)^{-2}$ $=1+(7^{-1})^{-2}$ $=1+7^2$ $=1+49$ $=50$	✓ 1 ✓ 7^2 ✓ answer	(3)
3.1.2	$\frac{3^{2m}-2.9^m}{9^{m+1}}$ $=\frac{3^{2m}-2.3^{2m}}{3^{2m+2}}$ $=\frac{3^{2m}(1-2)}{3^{2m}.9}$ $=\frac{-1}{9}$	✓ prime bases ✓ removing common factor ✓ rewriting as product ✓ answer	(4)
3.2.1	$2^{x+1}=16$ $2^{x+1}=2^4$ $x+1=4$ $x=3$	✓ $16=2^4$ ✓ answer	(2)
			[9]

QUESTION 4

4.1	4 ; 7 ; 10 ; ...	✓ answer	(1)
4.2	Figure 4: 13 Figure 5: 16	✓ 13 ✓ 16	(2)
4.3.	$Tn = 3n+1$	✓✓ answer	(2)
4.4	$T_{20} = 3(20)+1$ $T_{20} = 61$	✓ substitution ✓ answer	(2)
4.5	$3n+1 = 550$ $n = 183$	✓ substitution ✓ answer	(2)
			[9]

QUESTION 5

5.1	$4x-5y=14x-20$ $-5y=10x-20$ $y=-2x+4$ $5x+y=9-2y$ $5x+3y=9$ $5x+3(-2x+4)=9$ $5x-6x+12=9$ $-x=-3$ $x=3$ $y=-2(3)+4$ $y=-2$	✓ equating sides ✓ simplification ✓ equation ✓ solving simultaneous equations ✓ answer for x and y	(5)
5.2	Length = $14(3)-20=22$ OR Length = $4(3)-5(-2)=22$ Breadth = $9-2(-2)=13$ OR Breadth = $5(3)-2=13$ Area = $22 \times 13 = 286$	✓ calculating length and breadth ✓ answer	(2)
			[7]

TOTAL MARKS: [50]