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MATHEMATICS

MARKING GUIDELINE

GRADE 12: CYCLE TEST **FEB 2026** TERM 1

TIME: 1 HOUR **TOTAL MARKS**: 50

NOTE:

- If a candidate answered a question TWICE, mark only the first attempt.
- Consistent accuracy applies in ALL aspects of the marking memorandum.
- Assuming values/answers to solve a problem is unacceptable.

SYMBOL	EXPLANATION
A	Accurate
M	Method
MA	Method with accuracy
CA	Consistent accuracy
C	Conversion
S	Simplification
RT/RG/RD	Reading from graph/ table/diagram/map
SF	Correct substitution in a formula
O	Opinion
J	Justification/reason/deduction
P	Penalty, e.g. for no units, incorrect rounding, etc
Re	Reason
Ro	Rounding

Question 1

1.1.1	$x^2 - 7x + 10 = 0$ $(x-5)(x-2) = 0$ $x = 5 \; or \; x = 2$	✓A factors ✓CA x values	(2)
1.1.2	$\sqrt{2-x} = x - 2$ $(\sqrt{2-x})^2 = (x-2)^2$ $0 = x^2 - 3x + 2$ $0 = (x-2)(x-1)$ $x = 2 \; or \; x = 1$ $\therefore x \neq 1$	✓A squaring ✓CA standard form ✓CA factors ✓CA selecting of x	(4)
			[6]

Question 2

2.1	2 7 14 23 Fifth term is 34	✓A 34	(1)
2.2	$T_n = an^2 + bn + c$ $2a = 2$ $a = 1$ $5 = 3a + b$ $5 = 3(1) + b$ $b = 2$ $2 = a + b + c$ $2 = 1 + 2 + c$ $c = -1$ $T_n = n^2 + 2n - 1$	✓A a=1 ✓CA b=2 ✓CA c= -1 ✓CA answer	(4)

2.3	First difference 5; 7. 9; 11 $T_n = 2n + 3$ $57 = 2n + 3$ $54 = 2n$ $n = 27$ Between T_{27} and T_{28}	 ✓A $2n + 3$ ✓CA equating to 57 ✓CA T_{27} and T_{28}	(3)
			[8]

Question 3

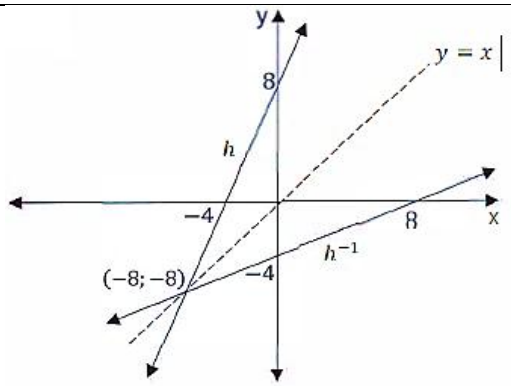
3.1.1	10; a; 24; b; 38; … $a - 10 = 24 - a$ $2a = 34$ $a = 17$ $38 - b = 24 - b$ $62 = 2b$ $b = 31$ OR $a = \frac{24 + 10}{2} = 17$ $b = \frac{24 + 38}{2} = 31$	 ✓A equating ✓A equating OR ✓A answer ✓A answer	(2)
3.1.2	a=10 d=7 $S_{n=}\frac{n}{2}[2a + (n-1)d]$ $S_{67=}\frac{67}{2}[2a + (67-1)7]$ $S_{67=}16\ 147$ OR $S_n = \frac{n}{2}(a + l)$ $S_{67} = \frac{67}{2}(10 + 472)$ $S_{67} = 16\ 147$	 ✓A substitution into correct formula ✓CA answer ✓A substitution into correct formula ✓CA answer	(2)

3.1.3	10; 24; 38; 52; 66; … $a = 10 \quad d = 14 \quad n = 34$ $S_{n=} \frac{n}{2}[2a + (n-1)d]$ $S_{34=} \frac{34}{2}[2(10) + (34-1)14]$ $S_{34=} 8\,194$ OR $S_n = \frac{n}{2}(a + l)$ $S_{34} = \frac{34}{2}(10 + 472)$ $S_{34} = 8\,194$	✓A sequence ✓CA sub into correct formula✓ ✓CA answer OR ✓CA sub into correct formula ✓A 472 ✓CA answer	(3)
3.2	$\sum_{r=2}^{\infty} 3.2^{1-r}$ $a = \frac{3}{2} \quad r = \frac{1}{2}$ $S_\infty = \frac{a}{1-r} = \frac{1.5}{1-1.5} = 3$ $\sum_{r=2}^{12} 3.2^{1-r}$ $a = \frac{3}{2} \quad r = \frac{1}{2} \quad n = 11$ $S_{11} = \frac{1.5(1-1.5^{11})}{1-0.5} = 2,999$ $\therefore 3 + 2.999 = 5,999$	✓A answer ✓A answer ✓CA answer	(3)
			[10]

Question 4

4.1.1	$r = x - 2$	✓A answer	(1)
4.1.2	$-1 < x - 2 < 1$ $1 < x < 3$	✓A substitution ✓CA answer	(2)
4.2	$a + ar + ar^2 + ar^3 = 8400$ $ar^3 = 27a$ $r = 3$ $a + 3a + 9a + 27a = 8400$ $40a = 8400$ $a = 210$ R 210; R 630; R 1 890; R 5 670	✓A forming of equation ✓A $ar^3 = 27a$ ✓CA value of r ✓CA answer	(4)
			[7]

Question 5

5.1	$p = 3$ $q = -1$	✓A $p = 3$ ✓A $q = -1$	(2)
5.2	$g(x) = -x + k$ Sub (-3;-1) $-1 = -(-3) + k$ $-4 = k$	✓A correct substitution in formula ✓CA answer	(2)
5.3	$h(x) = -2(-x - 4)$ $= 2x + 8$ FOR INVERSE $x = 2y + 8$ $x - 8 = 2y$ $\therefore y = \frac{x}{2} - 4$ $h^{-1}(x) = \frac{x}{2} - 4$	✓CA equation of h(x) ✓CA swapping x and y ✓CA equation of h^{-1}	(3)
5.4		✓CA shape ✓CA x and y intercept ✓CA correct point of intercept ✓CA axis of symmetry passes through the correct point of intersection	(4)
			[11]

Question 6

6.1	$f(x) = ax^2$ $2 = a(-1)^2$ $\therefore a = 2$ $g(x) = b^x$ $2 = b^{-1}$ $\therefore b = \frac{1}{2}$	✓A $a = 2$ ✓A $b = \frac{1}{2}$	(2)
6.2	$x \leq 0 \ or \ x \geq 0$	✓A answer (anyone of the two answers)	(1)
6.3	$x \leq -1 \ OR \ x \in (-\infty; -1]$ $OR -\infty < x \leq -1$	✓A correct critical value ✓A correct notation	(2)
6.4.1	$A'(-4; 2)$	✓A both values	(1)
6.4.2	$A''(2; -4)$	✓A x-value ✓A y-value	(2)
			[8]

TOTAL: 50 MARKS

Cycle Test Term 1

Question	Knowledge	Routine Procedure	Complex procedure	Problem Solving	TOTAL
	25%	45%	20%	10%	
1.1	2				2
1.2		4			4
2.1	1				1
2.2			4		4
2.3				3	3
3.1.1		2			2
3.1.2		2			2
3.1.3			3		3
3.2			3		3
4.1.1	1				1
4.1.2		2			2
4.2				4	4
5.1	2				2
5.2		2			2
5.3		3			3
5.4		4			4
6.1	2				2
6.2	1				1
6.3		2			2
6.4.1	1				1
6.4.2	2				2
Total	**12**	**21**	**10**	**7**	**50**
%	**24**	**42**	**20**	**14**	**100**