FOR EDEXCEL

GCE Examinations

Advanced Subsidiary

Core Mathematics C1

Paper B

MARKING GUIDE

This guide is intended to be as helpful as possible to teachers by providing concise solutions and indicating how marks could be awarded. There are obviously alternative methods that would also gain full marks.

Method marks (M) are awarded for knowing and using a method.

Accuracy marks (A) can only be awarded when a correct method has been used.

(B) marks are independent of method marks.



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C1 Paper B – Marking Guide

1. $f(x) = x + 6\sqrt{x} + 9 + 1 - 6\sqrt{x} + 9x$ — M1 A1
$= 10x + 10, \quad a = 10, b = 10$ — A1 **(3)**

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2. quadratic, coeff of $x^2 = 1$, minimum $(-2, 5)$
$\therefore\ y = (x + 2)^2 + 5$ — M1 A1
$= x^2 + 4x + 9, \quad a = 4, b = 9$ — M1 A1 **(4)**

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3. *(a)* $u_1 = 2 + k$
$u_3 = 8 + 3k$ — B1
$u_1 = u_3 \ \therefore 2 + k = 8 + 3k$ — M1
$k = -3$ — A1

(b) $u_5 = 2^5 - 3(5) = 32 - 15 = 17$ — M1 A1 **(5)**

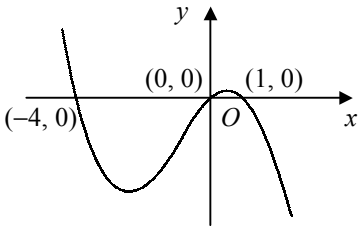
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4. $y = \int (2x^3 + 1)\ dx$
$y = \frac{1}{2}x^4 + x + c$ — M1 A2
$x = 0, y = 3 \ \therefore\ c = 3$ — B1
$y = \frac{1}{2}x^4 + x + 3$
when $x = 2, \quad y = 8 + 2 + 3 = 13$ — M1 A1 **(6)**

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5. *(a)* $= x(4 - 3x - x^2)$ — M1
$= x(1 - x)(4 + x)$ — M1 A1

(b)



B3 **(6)**

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6. $x = 0 \Rightarrow y = -6 \quad \therefore (0, -6)$
$y = 0 \Rightarrow x = 12 \quad \therefore (12, 0)$ — B1
mid-point $= \left(\frac{0+12}{2}, \frac{-6+0}{2}\right) = (6, -3)$ — M1 A1
dist. from $O = \sqrt{6^2 + (-3)^2} = \sqrt{36+9} = \sqrt{45}$ — M1
$= \sqrt{9 \times 5} = 3\sqrt{5}$ — M1 A1 **(6)**

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7. *(a)* *(i)* $2^{x+2} = 2^2 \times 2^x = 4y$ — M1 A1
(ii) $2^{3-x} = \frac{2^3}{2^x} = \frac{8}{y}$ — M1 A1

(b) $2^{x+2} + 2^{3-x} = 33 \Rightarrow 4y + \frac{8}{y} = 33$
$4y^2 + 8 = 33y$ — M1
$4y^2 - 33y + 8 = 0$ — A1

(c) $(4y - 1)(y - 8) = 0$ — M1
$y = \frac{1}{4}, 8$ — A1
$2^x = \frac{1}{4}, 8$
$x = -2, 3$ — A2 **(10)**

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8. *(a)* $\frac{dy}{dx} = 3x^{\frac{1}{2}}$ M1 A1

$\frac{d^2y}{dx^2} = \frac{3}{2}x^{-\frac{1}{2}}$ A1

(b) LHS $= 4x^2(\frac{3}{2}x^{-\frac{1}{2}}) - 3(2x^{\frac{3}{2}} - 1)$

$= 6x^{\frac{3}{2}} - 6x^{\frac{3}{2}} + 3$ M1

$= 3 \quad [k = 3]$ A1

(c) $= \int (2x^{\frac{3}{2}} - 1)^2 \, dx$

$= \int (4x^3 - 4x^{\frac{3}{2}} + 1) \, dx$ M1 A1

$= x^4 - \frac{8}{5}x^{\frac{5}{2}} + x + c$ M1 A3 **(11)**

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9. *(a)* $a + d = 26$

$a + 4d = 41$ A1

subtracting, $3d = 15$ M1

$d = 5$ A1

(b) $a = 21$ B1

$u_{12} = 21 + (11 \times 5) = 76$ M1 A1

(c) $\frac{n}{2}[42 + 5(n - 1)] = \frac{n}{2}[-24 + 7(n - 1)]$ M1 A1

$n(5n + 37) = n(7n - 31)$

$2n(n - 34) = 0$ M1

$n > 0 \ \therefore n = 34$ A1 **(11)**

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10. *(a)* $x^2 - 3x + 5 = 2x + 1$

$x^2 - 5x + 4 = 0$ M1

$(x - 1)(x - 4) = 0$ M1

$x = 1, 4$ A1

when $x = 1, \ y = 2(1) + 1 = 3$

$\therefore \ P(1, 3), Q(4, 9)$ A1

(b) $\frac{dy}{dx} = 2x - 3$ M1

grad $= -1$ A1

$\therefore \ y - 3 = -(x - 1) \quad [y = 4 - x]$ M1 A1

(c) grad $= 5$

$\therefore \ y - 9 = 5(x - 4)$ M1

$y - 9 = 5x - 20$

$y = 5x - 11$ A1

(d) $4 - x = 5x - 11$ M1

$x = \frac{5}{2}$ A1

$\therefore \ (\frac{5}{2}, \frac{3}{2})$ A1 **(13)**

Total **(75)**

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Performance Record – C1 Paper B

Question no.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	Total
Topic(s)	algebra	compl. square	sequence	integr.	curve sketch	straight line	indices	diff., integr.	AP	diff., tangents	
Marks	3	4	5	6	6	6	10	11	11	13	75
Student											

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