FOR EDEXCEL

GCE Examinations

Advanced Subsidiary

Core Mathematics C1

Paper D

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 D – Marking Guide

1. $= \sqrt{25\times 2} + 3\sqrt{4\times 2} = 5\sqrt{2} + (3\times 2\sqrt{2})$ M1 A1

$= 11\sqrt{2}$ A1 **(3)**

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2. $= 6x - \frac{1}{2}x^{-\frac{1}{2}} - \frac{1}{2}x^{-2}$ M1 A3 **(4)**

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3. *(a)* 50, 48, 46, 44 B1

(b) AP: $a = 50$, $d = -2$ B1

$S_{20} = \frac{20}{2}[100 + (19\times -2)]$ M1

$= 10 \times 62 = 620$ A1 **(4)**

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4. *(a)* equal roots $\therefore b^2 - 4ac = 0$

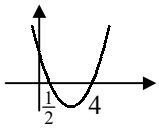
$(-6)^2 - (4\times 1\times k) = 0$ M1

$36 - 4k = 0$

$k = 9$ A1

(b) $(2x-1)(x-4) < 0$ M1

critical values: $\frac{1}{2}$, 4 A1



M1

$\frac{1}{2} < x < 4$ A1 **(6)**

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5. $x + y = 2 \Rightarrow \quad y = 2 - x$ M1

sub. into $3x^2 - 2x + y^2 = 2$

$3x^2 - 2x + (2-x)^2 = 2$ M1

$2x^2 - 3x + 1 = 0$ A1

$(2x-1)(x-1) = 0$ M1

$x = \frac{1}{2}, 1$ A1

$\therefore\ x = \frac{1}{2},\ y = \frac{3}{2}$ or $x = 1,\ y = 1$ M1 A1 **(7)**

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6. $y = \int (3\sqrt{x} - x^2)\ dx$

$y = 2x^{\frac{3}{2}} - \frac{1}{3}x^3 + c$ M1 A2

$x = 1, y = \frac{2}{3} \quad \therefore \quad \frac{2}{3} = 2 - \frac{1}{3} + c$

$c = -1$ M1

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

when $x = 4$, $y = 2(\sqrt{4})^3 - \frac{1}{3}(4^3) - 1$ M1

$y = 16 - 21\frac{1}{3} - 1 = -6\frac{1}{3}$ A1 **(7)**

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7. *(a)* $2p - (12 - p) = (4p - 5) - 2p$ M1

$p = 7$ A1

(b) $a = 12 - 7 = 5$, $a + d = 2\times 7 = 14 \quad \therefore d = 9$ B1

$u_6 = 5 + (5\times 9) = 5 + 45 = 50$ M1 A1

(c) $= \frac{15}{2}[10 + (14\times 9)] = \frac{15}{2}\times 136 = 1020$ M1 A1

(d) $5 + 9(n-1) < 400$ M1

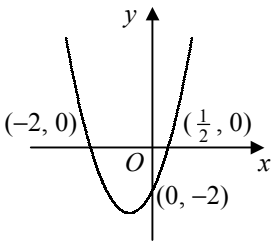
$n < \frac{395}{9} + 1$ M1

$n < 44\frac{8}{9} \quad \therefore$ 44 terms A1 **(10)**

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8. *(a)* $(2x - 1)(x + 2) = 0$ M1
$x = -2,\ \frac{1}{2}$ A1

(b)



B2

(c) (0, –2), B1
(–4, 0), (1, 0) M1 A1

(d) $f(x - 1) = 2(x - 1)^2 + 3(x - 1) - 2$ M1 A1
$= 2x^2 - x - 3$
$\therefore\ a = 2,\ b = -1,\ c = -3$ A1 **(10)**

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9. *(a)* $x(x^2 + 3x - 4) = 0$ M1
$x(x + 4)(x - 1) = 0$ M1
$x = 0$ (at O), -4, 1
$\therefore$ (–4, 0), (1, 0) A1

(b) $\frac{dy}{dx} = 3x^2 + 6x - 4$ M1 A1
grad $= -4$ M1
$\therefore\ y = -4x$ A1

(c) $x^3 + 3x^2 - 4x = -4x$ M1
$x^3 + 3x^2 = 0$
$x^2(x + 3) = 0$ M1
$x = 0$ (at O), -3 A1
$\therefore$ (–3, 12) A1 **(11)**

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10. *(a)* $y = 0\ \therefore x = 7 \quad \Rightarrow \quad A\ (7, 0)$ M1 A1

(b) l_1: $y = 14 - 2x\ \therefore$ grad $= -2$ B1
l_2: $y - 6 = -2(x + 6)$ M1
$y = -2x - 6$ A1

(c) $y = 0\ \therefore x = -3 \quad \Rightarrow \quad C\ (-3, 0)$ B1

(d) grad $CD = \frac{-1}{-2} = \frac{1}{2}$ M1

eqn CD: $y - 0 = \frac{1}{2}(x + 3)$ M1 A1

intersection with l_1: $\frac{1}{2}(x + 3) = 14 - 2x$
$x = 5$ M1
$y = 14 - (2 \times 5) = 4$

$\therefore D\ (5, 4)$ A1

(e) $AC = 7 - (-3) = 10$
area $= \frac{1}{2} \times 10 \times 4 = 20$ M1 A1 **(13)**

Total **(75)**

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Performance Record – C1 Paper D

Question no.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	Total
Topic(s)	surds	diff.	recur. relation	rep. root, inequal.	simul. eqn	integr.	AP	transform.	diff., tangent	straight lines	
Marks	3	4	4	6	7	7	10	10	11	13	75
Student											

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