

**Edexcel GCE
Core Mathematics C2
Bronze Level B1
(Mark Scheme)**

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Question Number	Scheme	Marks
1. (a)	Uses $360 \times \left(\frac{7}{8}\right)^{19}$, to obtain 28.5	M1, A1 (2)
(b)	Uses $S = \frac{360(1 - (\frac{7}{8})^{20})}{1 - \frac{7}{8}}$, or $S = \frac{360((\frac{7}{8})^{20} - 1)}{\frac{7}{8} - 1}$ to obtain 2680	M1, A1 (2)
(c)	Uses $S = \frac{360}{1 - \frac{7}{8}}$, to obtain 2880	M1, A1 cao (2) [6]
2. (a)	$f(1) = a + b - 4 - 3 = 0$ or $a + b - 7 = 0$ $a + b = 7$ *	M1 A1 (2)
(b)	$f(-2) = a(-2)^3 + b(-2)^2 - 4(-2) - 3 = 9$ $-8a + 4b + 8 - 3 = 9$ $(-8a + 4b = 4)$ Solves the given equation from part (a) and their equation in a and b from part (b) as far as $a = \dots$ or $b = \dots$ $a = 2$ and $b = 5$	M1 A1 M1 A1 (4) [6]
3. (a)	3.84, 4.14, 4.58	B1 B1 (2)
(b)	$\frac{1}{2} \times 0.4, \{(3 + 4.58) + 2(3.47 + 3.84 + 4.14 + 4.39)\}$ $= 7.852$ (awrt 7.9)	B1, M1 A1ft A1 (4) [6]

Question Number	Scheme	Marks																
<p>4. (a)</p> <p>(b)</p>	<p>Seeing -1 and 5.</p> <p>$(x+1)(x-5) = x^2 - 4x - 5$ or $x^2 - 5x + x - 5$</p> $\int (x^2 - 4x - 5) dx = \frac{x^3}{3} - \frac{4x^2}{2} - 5x \{+c\}$ $\left[\frac{x^3}{3} - \frac{4x^2}{2} - 5x \right]_{-1}^5 = (\dots) - (\dots)$ $\left\{ \left(\frac{125}{3} - \frac{100}{2} - 25 \right) - \left(-\frac{1}{3} - 2 + 5 \right) \right\}$ $\left\{ = \left(-\frac{100}{3} \right) - \left(\frac{8}{3} \right) = -36 \right\}$ <p>Hence, Area = 36</p>	<p>B1 (1)</p> <p>B1</p> <p>M1 A1ft A1</p> <p>dM1</p> <p>A1 (6) [7]</p>																
<p>5. (a)</p> <p>(b)</p>	<p>$f(-2) = -8 + 4a - 2b + 3 = 7$</p> <p>so $2a - b = 6$ *</p> <p>$f(1) = 1 + a + b + 3 = 4$</p> <p>Solve two linear equations to give $a = 2$ and $b = -2$</p>	<p>M1 A1 (2)</p> <p>M1 A1</p> <p>M1 A1 (4) [6]</p>																
<p>6. (a)</p> <p>(b)</p> <p>(c)</p>	<table border="1" data-bbox="352 1205 1267 1350"> <tr> <td>x</td> <td>1</td> <td>1.5</td> <td>2</td> <td>2.5</td> <td>3</td> <td>3.5</td> <td>4</td> </tr> <tr> <td>y</td> <td>16.5</td> <td>7.361</td> <td>4</td> <td>2.31</td> <td>1.278</td> <td>0.556</td> <td>0</td> </tr> </table> <p>$\frac{1}{2} \times 0.5, \{(16.5 + 0) + 2(7.361 + 4 + 2.31 + 1.278 + 0.556)\}$</p> <p>= 11.88</p> $\int_1^4 \frac{16}{x^2} - \frac{x}{2} + 1 dx = \left[-\frac{16}{x} - \frac{x^2}{4} + x \right]_1^4$ $= [-4 - 4 + 4] - [-16 - \frac{1}{4} + 1]$ $= 11\frac{1}{4} \text{ oe}$	x	1	1.5	2	2.5	3	3.5	4	y	16.5	7.361	4	2.31	1.278	0.556	0	<p>B1, B1 (2)</p> <p>B1, M1A1ft A1 (4)</p> <p>M1 A1 A1</p> <p>M1 A1 (5) [11]</p>
x	1	1.5	2	2.5	3	3.5	4											
y	16.5	7.361	4	2.31	1.278	0.556	0											

Question Number	Scheme	Marks
<p>7. (a)</p> <p>(b)</p> <p>(c)</p>	<p>Either solving $0 = x(6 - x)$ and showing $x = 6$ (and $x = 0$) or showing $(6, 0)$ (and $x = 0$) satisfies $y = 6x - x^2$</p> <p>Solving $2x = 6x - x^2$ ($x^2 = 4x$) to $x = \dots$ $x = 4$ (and $x = 0$)</p> <p>Conclusion: when $x = 4, y = 8$ and when $x = 0, y = 0$</p> <p>(Area $\Rightarrow \int_{(0)}^{(4)} (6x - x^2) dx$</p> <p>Correct integration $3x^2 - \frac{x^3}{3} (+c)$</p> <p>Correct use of correct limits on their result above</p> <p>$\left[3x^2 - \frac{x^3}{3} \right]^4 - \left[3x^2 - \frac{x^3}{3} \right]_0$ with limits substituted $\left[= 48 - 21\frac{1}{3} = 26\frac{2}{3} \right]$</p> <p>Area of triangle $= 2 \times 8 = 16$</p> <p>Shaded area $= \pm$ (area under curve $-$ area of triangle) applied correctly</p> <p>$\left(= 26\frac{2}{3} - 16 \right) = 10\frac{2}{3}$ (awrt 10.7)</p>	<p>B1</p> <p>(1)</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>(3)</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>(6)</p> <p>[10]</p>
<p>8. (a)</p> <p>(b)</p>	<p>Curve: $y = -x^2 + 2x + 24$, Line: $y = x + 4$</p> <p>{Curve = Line} $\Rightarrow -x^2 + 2x + 24 = x + 4$</p> <p>$x^2 - x - 20 \{= 0\} \Rightarrow (x - 5)(x + 4) \{= 0\} \Rightarrow x = \dots$</p> <p>So, $x = 5, -4$</p> <p>So corresponding y-values are $y = 9$ and $y = 0$.</p> <p>$\left\{ \int (-x^2 + 2x + 24) dx \right\} = -\frac{x^3}{3} + \frac{2x^2}{2} + 24x \{+ c\}$</p> <p>$\left[-\frac{x^3}{3} + \frac{2x^2}{2} + 24x \right]_{-4}^5 = (\dots) - (\dots)$</p> <p>$\left\{ \left(-\frac{125}{3} + 25 + 120 \right) - \left(\frac{64}{3} + 16 - 96 \right) \right\} = \left(103\frac{1}{3} \right) - \left(-58\frac{2}{3} \right) = 162$</p> <p>Area of $\Delta = \frac{1}{2}(9)(9) = 40.5$</p> <p>So area of R is $162 - 40.5 = 121.5$</p>	<p>B1</p> <p>M1</p> <p>A1</p> <p>B1ft</p> <p>(4)</p> <p>M1A1A1</p> <p>dM1</p> <p>M1</p> <p>M1 A1</p> <p>oe cao</p> <p>(7)</p> <p>[11]</p>

Question Number	Scheme	Marks
9. (a)	$y = 27 - 2x - 9\sqrt{x} - \frac{16}{x^2}$ <p>6.272 , 3.634</p>	B1, B1 (2)
(b)	$\frac{1}{2} \times \frac{1}{2} \text{ or } \frac{1}{4}$ <p>....$\{(0+0) + 2(5.866 + "6.272" + 5.210 + "3.634" + 1.856)\}$</p> $\frac{1}{2} \times 0.5 \{(0+0) + 2(5.866 + "6.272" + 5.210 + "3.634" + 1.856)\}$ $= \frac{1}{4} \times 45.676$ $= 11.42$	B1 M1A1ft A1 cao (4)
(c)	$\int y dx = 27x - x^2 - 6x^{\frac{3}{2}} + 16x^{-1} (+c)$ $\left(27(4) - (4)^2 - 6(4)^{\frac{3}{2}} + 16(4)^{-1} \right)$ $- \left(27(1) - (1)^2 - 6(1)^{\frac{3}{2}} + 16(1)^{-1} \right)$ $= (48 - 36)$ <p>12</p>	M1 A1 A1 A1 dM1 A1 cao (6) [12]

Statistics for C2 Practice Paper Bronze Level B1

Qu	Max score	Modal score	Mean %	Mean score for students achieving grade:							
				ALL	A*	A	B	C	D	E	U
1	6		92	5.54	5.80	5.83	5.73	5.58	5.37	5.24	4.25
2	6		86	5.17	5.92	5.75	5.44	5.09	4.82	4.30	3.34
3	6		81	4.88		5.68	5.24	4.69	4.09	3.60	2.74
4	7		87	6.12	6.93	6.73	6.40	6.09	5.77	5.33	3.90
5	6		89	5.35	5.92	5.86	5.69	5.38	4.91	4.52	3.21
6	11		83	9.09	10.92	10.50	9.70	8.96	8.02	7.05	4.87
7	10		83	8.29		9.84	9.22	8.39	7.50	6.15	3.68
8	11		72	7.97	10.77	10.39	9.63	8.68	7.39	5.70	2.40
9	12		85	10.14	11.85	11.46	10.83	10.14	9.32	8.34	5.88
	75		83	62.55		72.04	67.88	63.00	57.19	50.23	34.27