UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

4024 MATHEMATICS (SYLLABUS D)

4024/11 Paper 1, maximum raw mark 80

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Abbreviations

cao correct answer only
cso correct solution only
dep dependent
ft follow through after error
isw ignore subsequent working
oe or equivalent
SC Special Case
www without wrong working

Qu	Answers	Mark	Part marks
1	**(a)** 147 oe	1	
	(b) 17	1	
2	**(a)** $\frac{9}{50}$ cao	1	
	(b) π , $\sqrt{10}$, ...	1	
3	**(a)** $\frac{29}{30}$	1	
	(b) $\frac{8}{15}$	1	
4	**(a)** 1 or 25	1	
	(b) 216	1	
5	**(a)** –24	1	
	(b) 102	1	
6	**(a)** 4	1	
	(b) 36	1	
7	**(a)** $A \cup (B \cap C)$ oe	1	
	(b) Correct region shaded	1	
8	**(a)** 63	1	
	(b) 60	1	
9	**(a)** $4ab(3b - 2a)$	1	
	(b) $(2x - 5)(x + 4)$	2	C1 for $(2x \pm a)(x \pm b)$, $a = 4$ or 5, $b = 4$ or 5
10	**(a)** 14 05 or 2 05 pm	2	B1 for $\frac{65}{20}$ or M1 for 10 50 + their $3\frac{1}{4}$
	(b) $\frac{100T}{110}$ oe	1	

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11	**(a)** $-\frac{3}{2}$ oe	1	
	(b) x 1 y 2 $2y$ $9 - 3x$	2	C1 for 2 of these or B1 for x ( ) 1, y ( ) 2 and $2y$ ( ) $9 - 3x$ ( ) may contain =, < etc
12	**(a)** Showing $180 - 36$	1	
	(b) 96	2	B1 for the angle of a regular hexagon or M1 for 360 – (their144 + their 120)
13	**(a)** 31	1	
	(b) 6	1	
	(c) 5	1	
14	**(a)** 12 000	2	B1 for two of 8, 300, 0.2 seen
	(b) 9.575	1	
15	(a =) 8.75 oe (b =) 6 oe	3	C2 for one correct www or B1 for $\frac{4}{7}$ or $\frac{7}{4}$ oe seen
16	**(a)** (x) $\frac{1}{4}$ or 0.25	1	
	(b) (x =) $\frac{2}{3}$ or -3	3	C2 for either www or M2 for $5x(x-1) - 2(x+1) = 8(x+1)(x-1)$ soi or M1 for $\frac{5x(x-1) - 2(x+1)}{(x+1)(x-1)}$ soi
17	**(a)** 38	1	
	(b) 104	1ft	ft $180 - 2 \times$ their **(a)**
	(c) 122	1	
	(d) 84	1ft	ft their **(c)** – 38
18	**(a)** 79 cao	1	
	(b) $n(n+1) + (n+2)^2$ oe	1	
	(c) (A =) 2, (B =) 5, (C =) 4	2	C1 for two of these or M1 for three correct equations or comparison with their **(b)**

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19	**(a)** **(i)** 3.6×10^{-6}	1	
	(ii) 3.6×10^{-3} oe	1ft	ft their **(i)** $\times 10^3$
	(b) 3700	2	M1 for correct removal of brackets or for division by 2×10^3
20	**(a)** 3	1	
	(b) $\frac{3+2x}{x}$ oe	2	M1 for $yx - 2y = 3$ or $xy - 2x = 3$ soi
	(c) 4	2	M1 for $2t - 5 = 3$ soi
21	**(a)** Tree diagram correct	2	C1 for $\frac{1}{3}$ and $\frac{2}{3}$ or $\frac{4}{5}, \frac{1}{5}, \frac{4}{5}$ and $\frac{1}{5}$
	(b) $\frac{4}{15}$	1	
	(c) $\frac{1}{15}$	2	M1 for $1-\left(\frac{2}{3}\times\frac{4}{5}+\frac{2}{3}\times\frac{1}{5}+\frac{1}{3}\times\frac{4}{5}\right)$ or B1 for their $\frac{1}{3}$ and their $\frac{1}{5}$ seen
22	**(a)** $1200 + 450\pi$	2	C1 for one correct term B1 for using πr^2 correctly
	(b) $40 + 10\pi$ oe	3	B1 for using $2\pi r$ correctly and B1 for $20 + 20$
23	**(a)** Correct triangle with sides 8 and 6	2	B1 for correct triangle without arcs or arcs seen but only one correct side or sides reversed
	(b) **(i)** Bisector of ABC	1	
	(ii) Circular arc	1	
	(c) Correct region shaded	1	
24	**(a)** 4 –5	2	C1 for one correct
	(b) 6 correct plots ft and curve	2ft	C1 for at least 4 plots and "curve"
	(c) **(i)** 0 cao 2.4 to 2.5 ft	2	C1 for either
	(ii) ft from graph	1ft	

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