UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2010 question paper

for the guidance of teachers

0580 MATHEMATICS

0580/22   Paper 2 (Extended), maximum raw mark 70

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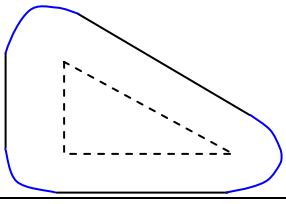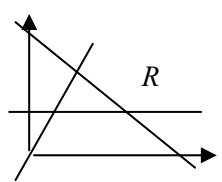
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Abbreviations

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)** 5	1		
	(b) 0	1		
2	10	2	**M1** 33 – 25 or 38 – 30	**M1** 30 – 15 – 5 oe with no further working
3	$m = \dfrac{J}{v-u}$	2	**M1** $m(v - u)$ seen	
4	**(a)** 40	1		
	(b) 65	1		
5	23.6	2	**M1** $\sin R = 20/50$ or $\dfrac{20}{\sin R} = \dfrac{50}{\sin 90}$	
6	**(a)** 6.58×10^{-3}	1	$\times$ and 10 essential	
	(b) 0.00$\underline{66}$ cao	1	Allow 6.6×10^{-3}	
7	$t = 2\dfrac{1}{2}$	2	**M1** **(b)**t = **(b)**$(3t - 5)$	
8	Answer given so only working scores marks	2	**M1** 7/27 + 48/27 or 7/27 + (1)21/27 **M1** completely correct finish	
9	2390 2410	2	**M1** 119.5 and 120.5 or **B1** for one correct answer	
10	60	3	**B1** 540 used **M1** [their 540 – 3 × 140]/2	
11	128	3	**M1** $R = kv^2$ **A1** $k = \dfrac{1}{2}$	
12	$\dfrac{x-7}{(x-1)(x+2)}$	3	**M1** $3(x-1) - 2(x+2)$ seen **B1** denominator correct seen **A1** all correct	

13	245 or 246	3	**M1** $\pi \times 5^2$ **M1** $18^2 - $ their $k\pi$
14		3	**M1** 2 lines correct length **M1** 2 compass arcs correct length **A1** complete accurate drawing with all lines and arcs solid
15	36 cao	3	**M1** 1900/2.448 (= 776.14) **A1** "776.(14…)" – 740 (= 36.14…)
16	(a) $\frac{4}{9}x^8$	2	**B1** $\frac{4}{9}$ **B1** x^8
	(b) $2y^{-1}$	2	**B1** 2 **B1** y^{-1}
17	(a) 		Boys	Girls	Total	 	Asia	62	28	**90**	 	Europe	35	45	**80**	 	Africa	**68**	17	**85**	 	Total	**165**	**90**	255		3	**B1** two or three correct or **B2** four or five correct
	(b) $\frac{3}{17}$ or 0.176(47…)	1	Allow $\frac{45}{255}$, $\frac{15}{85}$, $\frac{9}{51}$
18	(a) $\begin{pmatrix} -14 & 0 \\ 0 & -14 \end{pmatrix}$	2	**B1** two or three correct answers
	(b) –14	1	
	(c) $\begin{pmatrix} -5 & 4 \\ 5 & -4 \end{pmatrix}$	2	**B1** two or three terms correct
19	(a) 14.1	2	**M1** $(BD^2) = 10^2 + 10^2$ or $\sin 45 = 10/CD$
	(b) 3.74 or 3.78	3	**M1** **(a)**/2 **M1** (their **(a)**/2)^2 + PM^2 = 8^2
20	(a)	4	**B1** $y = 2$ **single** line thro **B1** (6, 0) and **B1** (0,6) **B1** $y = 2x$
	(b)	1	Correct R cao

	Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
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21	(a) 2	1	
	(b) 6.7 to 7.3	1	
	(c) 203	3	**M1** intention to find area under the graph
			M1 $\frac{1}{2} \times 7 \times 14 + 9 \times 14 + \frac{1}{2} \times 4 \times 14$ oe
22	(a) (0, 7)	1	
	(b) (i) $y = 2x + 3$	2	**B1** $y = 2x + c$, $c \neq 7$ or **B1** $y = kx + 3$, $k \neq 0$
	(ii) (1, 4)	3	**B1** $y = 5$
			M1 $\left(\frac{0+2}{2}, \frac{3+"5"}{2} \right)$ **A1** (1, ft4)

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