CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

0580 MATHEMATICS

0580/27 **Paper 2**

Due to a security breach we required all candidates in Kuwait who sat the paper for 0580/22 to attend a re-sit examination in June 2014. Candidates outside Kuwait sat only the original paper and were not involved in a re-sit.

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MARK SCHEME for the May/June 2014 series

0580 MATHEMATICS

0580/27 Paper 2 (Extended), maximum raw mark 70

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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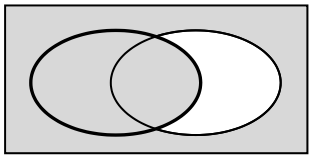
Abbreviations

cao correct answer only
dep dependent
FT follow through after error
isw ignore subsequent working
oe or equivalent
SC Special Case
nfww not from wrong working
soi seen or implied

Question	Answers	Mark	Part Answers
1	– 5	**1**	
2 (a)	$\frac{2}{7}$ **oe**	**1**	ISW cancelling or conversion
(b)	18	**1FT**	**FT** *their* (a) if $0 <$ *their* (a) < 1
3	7.75, 7.85	**2**	**B1 B1** If **0** scored **SC1** for reversed answers
4	648.96	**2**	**M1** for $600\left(1+\frac{4}{100}\right)^2$ oe
5 (a)	609 or 609.4 …	**1**	
(b)	6.09×10^2 ft	**1FT**	**FT** *their* (a)
6 (a)		**1**	
(b)	$R \cap (P \cup Q)'$ or $R \cap P' \cap Q'$	**1**	
7	[±] $8\sqrt{v}$	**2**	**M1** for $w = k\sqrt{v}$ oe Alternative method: **M1** for $\frac{24}{\sqrt{9}} = \frac{w}{\sqrt{v}}$
8	3, – 1	**3**	**M1** for correctly eliminating one variable **A1** for [x =] 3 **A1** for [y =] –1 If zero scored, **SC1** for correct substitution and evaluation to find the other variable
9	7.14 or 7.141…	**3**	**M2** for $\sqrt{10^2 - 7^2}$ or **M1** for $[BC]^2 + 7^2 = 10^2$ oe or $10^2 - 7^2$ oe

10		$\frac{3\times1}{3\times8}$ and $\frac{8\times2}{8\times3}$ oe or better $\times\frac{4}{5}$ oe $\frac{19}{24}\times\frac{4}{5}=\frac{76}{120}$ oe fraction **working must be shown**	**M1** **M1** **A1**	indep.
11	**(a)**	– 32	**1**	
	(b)	$[\pm]\sqrt{p^2-x}$ final answer	**2**	**M1** for correct re-arrangement or **M1** for correct square root for q.
12		2.24 or 2.238 to 2.240	**3**	**M2** for $[r^2]=\frac{21}{\frac{1}{3}\times\pi\times4}$ or better or **M1** for $\frac{1}{3}\pi r^2\times4=21$
13	**(a)**	$81p^{12}$	**2**	**B1** for kp^{12} $(k\neq0)$ or $81p^m$
	(b)	– 3	**1**	
14		57.1 or 57.12 to 57.13	**3**	**M2** for $\frac{\pi\times20}{2}+\frac{\pi\times10}{2}$ oe or better (15π) or **M1** for one of semi-circles
15		$\frac{7}{3}$ oe	**3**	**B2** for $3x = 7$ oe or **M1** for $2(2x – 3) = 1(x + 1)$ oe or better
16		8	**3**	**M2** for $12\times\sqrt{\frac{56}{126}}$, $12\div\sqrt{\frac{126}{56}}$ oe or **M1** for $\sqrt{\frac{56}{126}}$ or $\sqrt{\frac{126}{56}}$ oe
17		2.4	**3**	**M2** for $60\times(0.2)^2$ or $\frac{60\times20\,000^2}{100\,000^2}$ oe or **M1** for $(0.2)^2$ or $\frac{20\,000^2}{100\,000^2}$ oe if **0** scored **SC1** for figs 24 for the answer
18	**(a)**	28	**2**	**B1** for angle *OAB* or angle *OBA* = 28 or **M1** angle *BOC* = *their* angle *OBA*
	(b)	76	**1FT**	**FT** 0.5(180 – *their* (a))
	(c)	14	**1FT**	**FT** 0.5 *their* (a)

19	**(a) (i)**	$(a-b)(a+b)$	**1**	
	(ii)	$(a+b)(2+3y)$	**2**	**B1** for $2(a+b)+3y(a+b)$ or $a(2+3y)+b(2+3y)$
	(b)	$\frac{2+3y}{a-b}$ cao final answer	**1**	
20	**(a)**	$\frac{3}{10}, \frac{1}{8}, \frac{1}{3}$ oe correctly placed	**1**	
	(b)	$\frac{195}{240}$ oe	**3**	**M2** for $\frac{7}{10}\times\frac{7}{8}+$ their $\frac{3}{10}\times\frac{2}{3}$ or **M1** for one product
21	**(a)**	$\begin{pmatrix}7 & 6\\ 18 & 19\end{pmatrix}$	**2**	**B1** for any correct column or row
	(b)	$\frac{1}{5}\begin{pmatrix}4 & -1\\ -3 & 2\end{pmatrix}$ oe	**2**	**B1** for $k\begin{pmatrix}4 & -1\\ -3 & 2\end{pmatrix}$ seen or $\frac{1}{5}\begin{pmatrix}a & b\\ c & d\end{pmatrix}$ seen
22	**(a)**	-23	**2**	**B1** for [g(2)] = 9
	(b)	$21-24x+9x^2$ or $3(7-8x+3x^2)$ final answer	**2**	**M1** for $(4-3x)^2+5$ or **B1** for $[(4-3x)^2=]\ \ 16-12x-12x+9x^2$ or better
	(c)	2	**1**	
23	**(a)**	$\frac{1}{3}$ oe	**2**	**M1** for change in speed ÷ time seen e.g. $\frac{110-74}{5-4.5}$ or better
	(b)	6.47 or 6.466 to 6.467 or $6\frac{7}{15}$	**4**	**M3** for $2\times\frac{1}{2}\times(74+110)\times\frac{0.5}{60}+74\times\frac{4}{60}$ oe or **M2** for total area but with errors in units e.g. $2\times\frac{1}{2}\times(74+110)\times0.5+74\times4$ [= 388] or **M1** for evidence of area = distance