CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2014 series

0580 MATHEMATICS

0580/22 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.

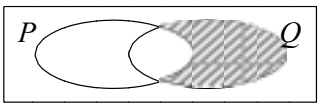
Abbreviations

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

Qu		Answers	Mark	Part Marks
1		1.49 or 1.491…	**1**	
2	**(a)**	570 000	**1**	
	(b)	5.69×10^5	**1**	
3		$[x =]$ 2, $[y =]$ – 3	**2**	**B1 B1** or **SC1** for reversed answers
4		7.06 or 7.063 to 7.064	**2**	**M1** for $\frac{[\ ]}{8} = \cos 28$ or better
5	**(a)**	(0, 5)	**1**	
	(b)	– 1	**1**	
6		101.4, 102.6	**2**	**M1** for 8.45 and 8.55 seen If 0 scored, **SC1** for one correct value in correct position on answer line or for two correct reversed answers
7		$2\frac{1}{2}\%$, 0.2, $\frac{43}{201}$, $\sqrt{0.1}$	**2**	**B1** for 0.3… , 0.21… and 0.025 seen or for three in correct order
8		$\left[\frac{1}{2}\times1\frac{1}{2}=\right]\frac{3}{4}$ oe $\frac{5\times2}{6\times2}$ and $\frac{3\times3}{4\times3}$ oe or better $\frac{1}{12}$ oe **working must be shown**	**B1** **M1FT** **A1**	

9		3.17 or 3.174 to 3.175	**3**	**M2** for $\frac{63-61}{63}\times 100$ oe or $100-\frac{61}{63}\times 100$ oe or **M1** for $\frac{63-61}{63}$ oe or $\frac{61}{63}\times 100$
10	**(a)**	35	**1**	
	(b)	$\frac{3V}{A}$ or $3VA^{-1}$	**2**	**M1** for multiplying by 3 or for dividing by $\frac{1}{3}$ or **M1** for dividing by A
11		460	**3**	**M2** for $\frac{391\times 100}{(100-15)}$ oe or **M1** for recognising 391 as (100 – 15)% soi
12		$-\frac{3}{5}$ oe	**3**	**B2** for $5x + 3 = 0$ oe or **B1** for a numerator of $3(x+1)+2x[=0]$ seen
13		1.6 oe	**3**	**M1** for $w=\frac{k}{\sqrt{x}}$ **A1** for $k = 8$ Alternative method: **M2** for $w\sqrt{25}=4\sqrt{4}$ oe
14	**(a)**	**p** + **r**	**1**	
	(b)	$\frac{3}{2}$ **p** + $\frac{1}{2}$ **r**	**2**	**M1** for correct route from O to M or **M1** for **p** + ½*their*(a)
15	**(a)**	$\begin{pmatrix}22 & 18\\ 27 & 31\end{pmatrix}$	**2**	**B1** for any correct column or row
	(b)	14	**1**	

16	**(a)**	$2pq(2p-3q)$	**2**	**B1** for $pq(4p-6q)$ or $2q(2p^2-3pq)$ or $2p(2pq-3q^2)$
	(b)	$(u+4t)(1+x)$	**2**	**B1** for $1(u+4t)+x(u+4t)$ or $u(1+x)+4t(1+x)$
17	**(a)**	$5t^{25}$	**2**	**B1** for $5t^k$ or mt^{25} $(m \neq 0)$
	(b)	–2	**1**	
	(c)	64	**1**	
18		576	**4**	**M1** for $\frac{1458}{3456}$ or $\frac{3456}{1458}$ **M1 dep** for $\sqrt[3]{\textit{their}\text{ fraction}}$ **M1** for (*their* cube root)^2
19		$\frac{x-1}{3}$ final answer	**4**	**B2** for $(x-1)(x+7)$ or **SC1** for $(x+a)(x+b)$ where $ab = -7$ or $a + b = 6$ **B1** for $3(x+7)$
20	**(a)**	–3	**1**	
	(b)	$39 - 7n$ oe	**2**	**M1** for $-7n$ [+ k]
	(c)	53	**2**	**M1** for *their* (b) = –332 shown provided *their*(b) is linear and their answer for (c) is a positive integer
21	**(a)**	4.47 or 4.472[…]	**3**	**M2** for $\sqrt{6^2-4^2}$ or **M1** for $[PM]^2+4^2=6^2$ or 6^2-4^2
	(b)	48.2 or 48.18 to 48.19	**3**	**M2** for cos[correct angle] $=\frac{4}{6}$ oe or **M1** for recognising a correct angle

22	**(a)**	i, j	**1**	
		i, j, k, m, n	**1**	
		2	**1**	
	(b)	$\frac{2}{3}$	**1**	
	(c)		**1**	
	(d)	$\subset$ or $\subseteq$	**1**	