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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/22**

Paper 2 (Extended)

**May/June 2016**

MARK SCHEME

Maximum Mark: 40

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**Published**

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.

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**Abbreviations**

- awrt answers which round to
- 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	Answer	Mark	Part Marks
1	$4\frac{5}{6}$	2	M1 for $4 + \frac{3}{6} + \frac{2}{6}$ or $\frac{9}{6} + \frac{20}{6}$ oe
2	1 [h] 39 [min]	2	M1 for $90 \times 1.1$ oe
3	69	2	M1 for $0.5(180 - 42)$
4	$[\pm] \frac{1}{\sqrt{t}}$ oe	2	M1 for $tp^2 = 1$ or $\sqrt{t} = \frac{1}{p}$ or better
5 (a)	$\frac{42}{60}$ oe	1	
(b)	840	1FT	FT their (a) $\times 1200$
6	$[x = ] 1$ $[y = ] - 2$	1 1	If 0 scored SC1 for correct substitution and evaluation of other variable
7	$1.6 \times 10^{19}$	2	B1 for $1.6 \times 10^n$ or $k \times 10^{19}$ or correct answer not in SF
8	$x < 1$ or $1 > x$	2	M1 for $9 - 2 > x + 6x$ oe or answer of 1 with incorrect inequality
9 (a)	-2	1	
(b) (i)	8	1	
(ii)	2	2	M1 for $8^{\frac{1}{3}}$ or $\frac{1}{\frac{1}{2}}$ oe  If 0 scored then SC1 for answer $\frac{1}{2}$

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Question	Answer	Mark	Part Marks
10	$\begin{pmatrix} 9 \\ 6 \end{pmatrix}$	4	<b>B3</b> for (9, 6) or <b>B1</b> for (0, 12) soi <b>B1</b> for (18, 0) soi <b>M1</b> for (0.5 <i>their</i> 18, 0.5 <i>their</i> 12)
11	$(2p - q)(1 + x)$	2	<b>B1</b> for $2p - q + x(2p - q)$ or $2p(1 + x) - q(1 + x)$
12	$5(\sqrt{2} - 1)$ or $5\sqrt{2} - 5$	2	<b>M1</b> for $\times \frac{\sqrt{2} - 1}{\sqrt{2} - 1}$
13	$8\pi + 16$ oe	3	<b>B1</b> for radius = 8 and <b>M1</b> for $\pi \times$ <i>their</i> radius or <i>their</i> curved length + $2 \times$ <i>their</i> radius  or if 0 scored <b>SC2</b> for final answer $\sqrt{32}(\pi + 2)$ oe
14	32 13	1 1	
15	$\frac{6}{\sqrt{x}}$ oe	2	<b>M1</b> for $y = \frac{k}{\sqrt{x}}$ or <b>M1</b> for $k = 6$ with no correct equation seen
16	12	3	<b>B1</b> for $2\log 3 = \log 9$ or $3\log 2 = \log 8$ and <b>M1</b> for correct use of $\log a + \log b = \log ab$ or $\log a - \log b = \log\left(\frac{a}{b}\right)$
17	Stretch $x$ -axis invariant, factor 3	1 1	