CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/61 Paper 6 (Extended), maximum raw mark 40

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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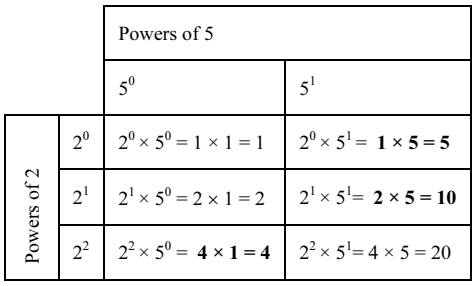
A		**INVESTIGATION COUNTING FACTORS**		
1	**(a) (i)**	2, 4, 8	**1**	
	(ii)	$2^{[1]}$, 2^2, 2^3	**1**	
	(b)	3^0, $3^{[1]}$, 3^2, 3^3	**1**	
2	**(a) (i)**	$p^{[1]}$, p^2, p^3, p^4, p^5	**1**	
	(ii)	$n + 1$	**1**	
	(b)	8	**1**	**C** opportunity
3	**(a)**		**1**	
	(b)	multiply oe	**1**	must not be part of incorrect statement
	(c)	24	**1**	**C** opportunity
4	**(a) (i)**	6 soi	**1**	
	(ii)	49	**1FT**	**FT** *their* $(6 + 1)^2$, *their* $6 \neq 0, 1$ **C** opportunity
	(b)	29	**1**	**C** opportunity
5		1323 1701 3087 50421	**3**	**B2** for 3 numbers seen or for 4 numbers seen with extras or **B1** for 2 or 1 numbers seen if 0 scored then **SC2** for $3^{[1]} \times 7^5$, $3^2 \times 7^3$, $3^3 \times 7^2$ and $3^5 \times 7^{[1]}$ and no extras or **SC1** for $3^{[1]} \times 7^5$, $3^2 \times 7^3$, $3^3 \times 7^2$ and $3^5 \times 7^{[1]}$ with extras **C** opportunity

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6 **(a)**	$2^4 \times 3^{[1]} \times 7^{[1]}$ isw	**1**	
(b)	20	**1FT**	**FT** only if indices are three positive integers soi **C** opportunity
7	60 90 150	**2**	**B1** for 2 or 1 correct numbers If 0 scored **M1** for $2^2 \times 3 \times 5$, $2 \times 3^2 \times 5$, $2 \times 3 \times 5^2$ **C** opportunity
Communication seen in 3 of the following: **2(b), 3(c), 4(a)(ii), 4(b), 5, 6(b), 7**		**1**	

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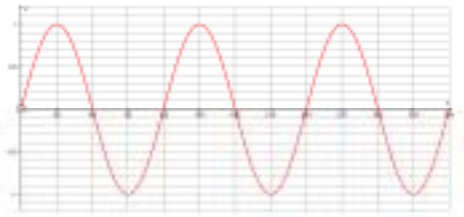
B			**MODELLING TIDES**		
1	**(a)**	**(i)**		**2**	**B1** correct maximum and minimum **B1** correct period over their domain
		(ii)	120	**1**	
	(b)		36	**1**	
	(c)		$\frac{360}{b}$ or $360 : b$	**1**	
2	**(a)**		12 [hours]	**1**	
	(b)		amplitude or maximum = 1.2 soi $\frac{360}{12}$ soi or $\frac{360}{30} = 12$ soi	**2**	**B1** for each
	(c)		$1.2\sin(30t)° + 2$ isw	**1**	
	(d)	**(i)**	[0]7 53 or 07 54 10 07 or 10 06	**2**	**B1** for each or **M1** for 7.8 to 8[.0] and 10[.0] to 10.2 seen if 0 scored then **SC1** for 473 and 607 minutes as final answer
		(ii)	19 53 22 07	**1FT**	**C** opportunity **FT** *their* times + 12
3	**(a)**		Any two valid comments about the **difference** in height over a **range** of time	**1 + 1**	For example: [more] close between 4 and 11 oe not close before 4 and after 11 oe **SC1** for a comment such as H is higher than D until about 11 when they are the same and then D is higher than H
	(b)		$0.022t^3 - 0.403t^2 + 1.9t + 0.4$	**1**	

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4	$1.2\sin(29t)° + 2$	**2FT**	**FT** from **2(c)** **M1** for $\frac{360}{12\frac{5}{12}}$ oe or $\frac{360}{12.4[...]}$ oe or $\frac{360}{b} = 12.4[...]$ oe **SC1** $1.2\sin(29.4t)° + 2$ **C** opportunity
5	$1.2\sin(their29(t - \frac{5}{6}))° + 2$ or $1.2\sin(their29t - 24.2)° + 2$ isw	**2FT**	**FT** from **4** **B1** for $\frac{5}{6}$ or 0.83 oe seen If 0 scored then **SC1** if inside brackets missing or **SC1** for $t - \frac{5}{12}$ or $t - 0.416$ or $t - 0.8[\ldots]$ in the full expression.
Communication seen in one of the following questions: **2 (d), 4**		**1**	

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