Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/62**

Paper 6 (Extended) **May/June 2017**

MARK SCHEME

Maximum Mark: 40

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.

Cambridge will not enter into discussions about these mark schemes.

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MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

M Method marks, awarded for a valid method applied to the problem.

A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.

B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation '**dep**' is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

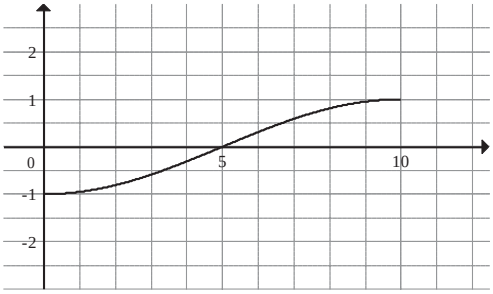
Abbreviations

awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
nfww	not from wrong working
oe	or equivalent
rot	rounded or truncated
SC	Special Case
soi	seen or implied

Question	Answer	Marks	Part Marks
A	**INVESTIGATION NUMBER STEMS**		
1(a)	15 / **6** 48 60 72 84 96 108 120 **3** **6** **9** **3** **6** **9** **3**	**1**	
1(b)(i)	39	**1**	
1(b)(ii)	$9n + 3$ oe	**2**	**B1** for $9n + a$ oe
1(b)(iii)	786	**1**	**FT** *their* $(9n + 3)$ C opportunity
1(c)(i)	**4** 22 ÷ **9** 2 remainder 4 **8** 35 ÷ 9 **3** remainder **8** 7 ***k*** ÷ 9 ***j*** remainder **7**	**2**	**B1** for 5, 6 or 7 correct k is any integer with a number stem of 7 j is the integer part of $\frac{\textit{their } k}{9}$
1(c)(ii)	[They are the] same oe	**1**	
1(c)(iii)	8	**1**	Answer found from division scores 0.
2(a)	38, 47	**1**	
2(b)	$9n + 2$ oe	**1**	C opportunity
2(c)	9992	**2**	**B1FT** for $[n=]1110$[**.** …..] C opportunity
3(a)	$k + 9$, $k + 18$, $k + 27$, $k + 36$ oe	**1**	
3(b)	$9n + k$ oe	**1**	**SC1** for $9n + k - 9$ oe from an answer of k, $k + 9$, $k + 18$, $k + 27$ in part (a)
4(a)	7 ÷ 12 0 remainder 7 15 ÷ 12 1 remainder **3** 23 ÷ 12 **1** remainder **11**	**1**	
4(b)	$12n + f$ oe	**1**	

Question	Answer	Marks	Part Marks
4(c)	$12n + f = f + 10$	**M1**	**FT** *their* $(12n + f) = f + 10$ soi
	$12n = 10$ **and** leading to n is not an integer oe	**A1**	**SC2** $f + 10$ is smaller than any term in the sequence $f + 12$, $f + 24$… or **SC1** if $f + 12$ not explicitly stated
Communication: Seen in two of the following questions		**1**	
1(b)(iii)	*their* $(9 \times 87 + 3)$ seen		
2(b)	At least two differences of 9 seen (may be in Q2 stem or in part(a)) or "The sequence is 1 less than the previous sequence" oe		
2(c)	*their* $(9n + 2) * 10\,000$, where * is = or < or $\leqslant$ or two trials of the form $9 \times n + 2$ with $1000 \leqslant n \leqslant 1200$ substituted and number found. or two trials of the form $999N$, N a single digit, **and** correct number stems calculated.		

Question	Answer	Marks	Part Marks
B	**MODELLING ELEVATORS**		
1(a)(i)	Trial 7: 85, 85, 70, 85, 85, 410 Trial 8: 85, 70, 50, 85, 70, 360 Trial 9: 50, 50, 70, 85, 85, 340 Trial 10: 85, 50, 50, 70, 70, 325	**2**	**B1** for any correct row
1(a)(ii)	$\frac{2}{10}$ oe	**1**	**FT** *their* completed table
1(b)(i)	3	**1**	
1(b)(ii)	0 and 2 oe	**1**	Allow 0 and 1 or ground and first or 1 and 2 or ground and second
1(b)(iii)	5	**1**	C opportunity
2(a)(i)	$\frac{1}{8}$ oe 1 2 6, 7	**1**	
2(a)(ii)	Trial 5: 70, 50, 85, 205 Trial 6: 70, 50, 70, 190 Trial 7: 70, 70, 70, 210 Trial 8: 50, 70, 70, 190	**1**	
2(b)(i)	10	**1**	C opportunity
2(b)(ii)	9	**1**	C opportunity
3(a)	No, and the probability [of less than the maximum] is 0.8 oe or No, and the probability [of more than the maximum] is more than 0.05 oe	**1**	**FT** 1 – *their* $\frac{2}{10}$ in 1(a)(ii)
3(b)	No, and *EasyUp*-3 takes 10 seconds [to move between floors] oe	**1**	**FT** *their* 10 in 2(b)(i) Accept "more than 5" instead of 10. If 0 scored in (a) and (b), **SC1** for both explanations correct.
4	Increase the number of trials oe Increase the number of masses oe	**2**	**B1** for each

Question	Answer	Marks	Part Marks
5(a)(i)	$\frac{1}{m}$ 1 2 $m-3$	**1**	C opportunity
5(a)(ii)	Valid comment	**1**	If m is less than 4 the proportion [with a mass of 85] is 0 [or negative] oe Comment about the number of passengers on its own scores 0.
5(b)(i)	$[y =] -\cos(\textit{their}\ k \times 2t)$	**1**	Expect $y = -\cos 18t$
5(b)(ii)		**1**	**FT** *their* cosine equation if the graph fits on the axes.
5(c)	It moves [between floors] at [an average of] *their* 5 seconds [per floor] oe **and** "Probability [that x is less than the max] > 0.95" oe	**1**	**FT** *their* cosine graph.
Communication: Seen in two of the following questions		**1**	
1(b)(iii)	4 floors in 20 seconds or 0.2 oe floors in 1 second or $\frac{6.3+3.7+4+6}{4}$ or similar values with one decimal place or $\frac{20}{4}$ **but not** if $\frac{6+4+4+6}{4}$ oe seen		
2(b)(i)	seconds in final answer		
2(b)(ii)	40 is 360° or $\frac{360}{40}$ or $\frac{360}{9} = 40$ or 10 is 90° etc. as above or 20 is 180° etc. as above		

Question	Answer	Marks	Part Marks
5(a)(i)	$\frac{m-3}{m}+\frac{2}{m}+?=1$ oe or $\frac{m}{m}-\frac{2}{m}-\frac{m-3}{m}=\frac{m-2-m+3}{m}=\frac{1}{m}$ oe or $m-3+2+1=m$ oe or $\frac{m-3+2}{2}=\frac{m-1}{m}$ or unsimplified form for 1 in the table: $m-2-(m-3)$ oe		