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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/63**

Paper 6 (Extended)

**October/November 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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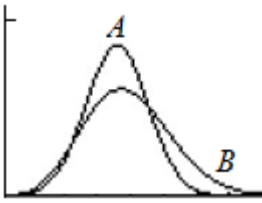
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**Abbreviations**

- 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

A		INVESTIGATION	TRIANGULAR GRIDS				
Question		Answer		Marks	Part Marks		
1	(a)	10		1			
	(b)	36		1			
	(c)	[A =] $2rs$ oe		1			
	(d)	16		1			
	(e)	[A =] $x^2$		1			
	(f)	Diagram ( + area stated )+ reference to $A = x^2$		1			
2	(a)	Shape	Dots inside shape (R)	Dots on perimeter (P)	Area in triangles (A)	2	B1 for 5 or 6 cells correct
		B	0	6	4		
		C	0	5	3		
		D	0	7	5		
		E	0	9	7		
		F	0	4	2		
(b)	No, supported by one correct calculated substitution		2	B1 for clear attempt to substitute figures from the table into Pick's rule			
(c)	$A = P - 2$ oe isw		1				
(d)	$A = P + 2R - 2$ oe		2	B1 for $A = P + 2R + k$ or $A = P + kR - 2$ ( $k \neq 0$ )			
(e)	$R$ and $P$ which satisfy <i>their</i> formula		1	Dependent on B1 in part (d)			

Question	Answer	Marks	Part Marks
3 (a)	True oe and drawing of regular hexagon	1	
(b)	True oe and two points plotted to show statement is true.	1	C opportunity
(c)	False oe and two points plotted to show statement is false	1	C opportunity
(d)	True oe Two points plotted to show statement is true.	1 1	C opportunity
<b>Communication:</b> Seen in one of the following questions		1	
3 (b)	Co-ordinates shown		
3 (c)	Co-ordinates shown		
3 (d)	Co-ordinates shown		

<b>B MODELLING MODELLING WAVES</b>			
Question	Answer	Marks	Part Marks
1 (a)	2.918 to 2.919	1	C opportunity
(b) (i)	Relevant comparison between 5.836 to 5.84 (2H) and 5.20	1	
(ii)	Mean of 6 highest waves = 3.855 to 3.86 Relevant comparison with $1.27 \times 2.92 = 3.708$ to 3.71	2	<b>B1</b> for each C opportunity
2 (a)	 <p>Correctly shaped and labelled sketches</p>	2	<b>B1</b> for each  If zero scored <b>SC1</b> for correct sketch but no, or incorrect, labels
(b)	1.8	1	
(c)	1.86 to 1.862 ...	1	If 0 scored in (b) <b>SC1</b> for correct answers switched between (b) and (c)
(d)	B and two valid reasons	2	<b>B1</b> for B and one valid reason,

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Question	Answer	Marks	Part Marks
3 (a) (i)	$s = 3.2$	1	
(ii)	Speed doesn't change with height	1	
(b) (i)	$s = a\sqrt{d} + c$	1	
(ii)	$a = 2.99$ to 3.24 $c = -0.1$ to 0.11	2	
(c)	1.75 to 2.15	4	<p><b>B1</b> for 170 [m]  <b>B1</b> for <math>s = 4.25</math> to 4.5  or  <b>B1 FT</b> <math>\frac{their170}{their40}</math> equated  <b>M1</b> for substituting <i>their a, c,</i> and <i>s</i> into <i>their</i> model</p>
<b>Communication:</b> Seen in two of the following questions		1	
1 (a)	$\frac{1}{3} = 20$		
1 (a)	All numbers added and $\div$ <i>their</i> 20		
1 (a)	<i>their</i> 58.37 $\div$ <i>their</i> 20		
1 (b) (ii)	10% of 60 = 6		
3 (c)	<i>their</i> m converted to cm e.g. 17cm = 170cm		
3 (c)	$\frac{their170}{their40}$		