CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/63 Paper 6 (Extended), maximum raw mark 40

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A INVESTIGATION		THE END RESULT		
1 (a) (i)	$\frac{1}{12}$ oe	1	**C** opportunity
	$\frac{1}{12}$ oe	1	
(ii)	$\frac{2}{15}$ oe	1	**C** opportunity
	$\frac{1}{15}$ oe	1	
(iii)	Any correct pair	1	Any pair of fractions whose denominators are n and $n + 1$ for any integer $n > 0$ Not $\frac{1}{4}$ and $\frac{1}{5}$ Not $\frac{1}{3}$ and $\frac{1}{4}$
(b) (i)	$\frac{b-a}{ab}$ oe	1	
(ii)	$\frac{1}{ab}$ oe	1	
(c)	$\frac{1}{n+1}$	1	

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2 (a) (i)	$\frac{12}{35}$ oe	**1**	**C** opportunity
(ii)	12, 35, 37 oe	**1**	**C** opportunity
(iii)	$\frac{20}{99}$	**1**	**C** opportunity
(iv)	Yes oe and correct reason	**1FT**	**FT** their $\frac{20}{99}$ e.g. $\sqrt{20^2+99^2}=101$
(b) (i)	$\frac{p+q}{pq}$ isw	**1**	
(ii)	$p+q$, pq, $[pq+2]$	**1**	
(iii)	$(pq+2)^2 = their(p+q)^2 + their(pq)^2$ $p^2q^2+4pq+4=p^2+q^2+2pq+p^2q^2$ Correct further step leading to given answer	**1** **1** **1**	 May be unsimplified
(iv)	$q=p+2$ oe $q=p-2$ oe	**1** **1**	
	Communication seen in at least two of **1a(i)**, **1a(ii)**, **2(a)(i)**, **2a(ii)** or **2(a)(iii)**	**1**	

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B	MODELLING	RESCUE MISSION		
1	(a) (i)	Maximums are 10 and 20 and minimum in total is 80	1	
	(ii)	$5x + 7y \geqslant 35$	1	
	(iii)	$3x + 4y < 24$	1	
	(b) (i)	7	1	
	(ii)	5	1	If 0 scored in **(i)** and **(ii)**, **SC1** for 8 and 6
	(c)	$40x + 65y$	1	
2	(a)	Line from (0, 4) to (8, 0)	1	
		Line from (0, 5) to (7, 0)	1FT	
		Line from (0, 6) to (8, 0)	1FT	
		Line $y =$ *their* 5 and line $x =$ *their* 7	1FT	
		Correct region	1	
	(b)	[They are] fractions oe	1	
	(c)	$\frac{6}{305}$ $\frac{1}{}$	2	**B1** for at least 2 correct **C** opportunity
3		$\frac{3}{10}$ $\frac{3}{}$	1	
4		Identify one solution using any valid comparison of time and cost.	1FT	e.g. An extra \$10 000 will reduce the time by one hour

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5	**(a)**	$5x + 7y + 4z \geqslant 35$ $10x + 20y + 8z \geqslant 80$ oe $3x + 4y + 2z < 24$ $0 \leqslant x \leqslant 7$ $0 \leqslant y \leqslant 5$ $0 \leqslant z \leqslant 11$ $40x + 65y + 50z$	**2**	**FT** their x and y from **1(b)** **B1** for any 5 correct
	(b)	e.g. [The graph used in part 2 is] 2 [dimensional; the problem is now] 3 [dimensional]. oe www	**1**	2 not 3 variables All statements must be valid
		Communication in **2(c)**	**1**	

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