CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/42 Paper 4 (Extended), maximum raw mark 120

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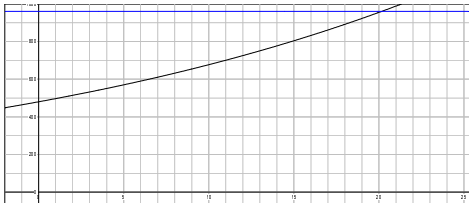
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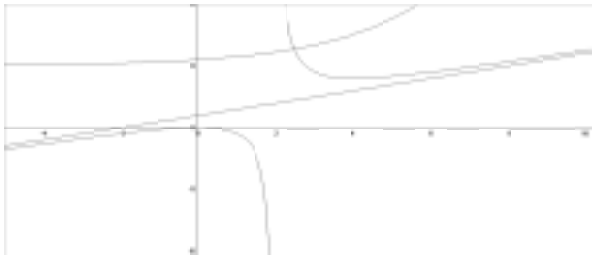
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1	**(a)**	600 ÷ 5 × 4 oe	**M1**	
	(b)	537.60	**4**	**B1** for [principal] =480 soi and **M2** for $their\,480 + \frac{their\,480 \times 4 \times 3}{100}$ oe or **M1** for $\frac{their\,480 \times 4 \times 3}{100}$ oe
	(c) (i)	532.18	**3**	**M2** for $480 \times (1.035)^3$ oe or **M1** for $480 \times (1.035)^k$ oe $k \geqslant 2$
	(ii)	21	**3**	**M2** for $\frac{\log 2}{\log 1.035}$ oe or  or other appropriate graph which can clearly lead to answer or **M1** for $480(1.035)^n = 960$ oe
2	**(a)**	0.3675	**1**	
	(b)	[0]5 37	**1**	
	(c)	87.3 or 87.27…	**2**	**M1** for 1200 ÷ time in hours (13 < time < 14) oe
	(d)	2.55 or 2.545…	**4**	**B1** for 21 min or 0.35 h and **M2** for $\frac{their\ 0.35}{13.75} \times 100$ oe or **M1** for $\frac{\text{any time difference}}{13.75 \text{ or } 13.45} \times 100$ oe
	(e)	420	**3**	**M2** for 441 ÷ 1.05 oe or **M1** for recognising 441 as 105%

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3	**(a) (i)**	10	**1**	
	(ii)	28	**1**	
	(iii)	20	**1**	
	(b) (i)	$\frac{18}{30}$ oe	**1**	
	(ii)	$\frac{19}{30}$	**1**	
	(c)	$\frac{42}{272}$ oe	**3**	**M2** for $\frac{7}{17}\times\frac{6}{16}$ or **M1** for product of fractions over 17 and 16
4	**(a)** **(f) (i)** **(g) (i)**	 Fully correct graph drawn	**2**	**B1** for reasonable shaped and separate branches but lacking reasonable accuracy
	(b) (i)	(0, 0)	**1**	
	(ii)	(4, 8)	**1**	
	(c)	$[f(x)] \leqslant 0$, $[f(x)] \geqslant 8$ o.e.	**2**	**B1 B1**
	(d)	1 or 2 or 3 or 4 or 5 or 6 or 7	**1**	
	(e)	$x = 2$	**1**	
	(f) (i)	Correct line drawn, positive gradient and approximately asymptotic	**1**	
	(ii)	Asymptote	**1**	
	(g) (i)	Correct curve drawn	**2**	**B1** for reasonable shape but lacking reasonable accuracy
	(ii)	$2 < x$ $x < 2.48$ or 2.484 to 2.485 oe	**2**	**B1** **B1**

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5	**(a)**	68	**3**	**B1** for [*ABC*] = 44 or [*XCB*] = 136 **B1** for [*BAC* or *ACB*] = 68 or [*ACD*] = 112
	(b)	36	**4**	**B2** for $x = 10$ or **M1** for $15x + 20 + x = 180$ oe and **M1 FT** for $360 \div$ *their x* **only** if answer is integer
	(c) (i)	30	**1**	
	(ii)	70	**1**	
	(iii)	100	**1**	
6	**(a) (i)**	18.1	**2**	**M1** if at least 2 mid-values soi
	(ii)	Correct histogram drawn	**3**	**B1** for correct widths no gaps **B2** for 4 correct heights or **B1** for 3 correct heights drawn
	(b) (i)	22	**1**	
	(ii)	12	**2**	**B1** for [LQ] = 15 or [UQ] = 27
	(iii)	10	**2**	**B1** for 90 seen

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7 (a)	Correct reduction method to eliminate one variable or correct sketch $x = -2$ $y = 3$	**M1** **B1** **B1**	 **SC1** for correct answers without working
(b)	$\frac{13-21k}{11}$ oe	**4**	**B1** for common denominator of 21 oe **B2** for $3(x+2)-7(2x-1)$ or better or **B1** for $3(x+2)$ or $7(2x-1)$
(c) (i)	$\frac{120}{x}$	**1**	
(ii)	$\frac{90}{x+0.4}$	**1**	
(iii)	0.8[0] oe	**4**	**M1** for *their* **(c)(i)** + *their* **(c)(ii)** = 225 **A2** for sketch of $y=\frac{12}{x}+\frac{90}{x+4}$ and $y = 225$ or other sketch which could lead to correct answer or **A1** for $120(x+0.4)+90x=225x(x+0.4)$ or better e.g. $225x^2-120x-48=0$ and **A1** for $(5x-4)(45x+12)$ or **A2** for $\frac{--120\pm\sqrt{(-120)^2-4(225)(-48)}}{2(225)}$ oe

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8	**(a)**	$240^2 + 200^2 - 2 \times 240 \times 200 \cos 33$	**M1**	
		131 or 130.7 …	**B2**	No further wrong working allowed **B1** for $[BV^2 =]$ 17080 to 17090
	(b)	$\frac{\sin 77}{200} = \frac{\sin 68}{GB}$ oe	**M1**	
		190 or 190.3 …	**B2**	If **B0** then **A1** for $\frac{200 \sin 68}{\sin 77}$
	(c)	240 or 239.6 to 239.9	**5**	**B1** for angle $MBG = 35°$ soi **M1** for correct use of scale and conversion **M2FT** for $\frac{1}{2} \times 24 \times 20 \sin 33 + \frac{1}{2} \times 20 \times \frac{their(b)}{10} \sin(180 - 68 - 77)$ or **M1** for one of the triangles **SC3** for figs 239.6 to 239.9... or 240
	(d) (i)	186	**1**	
	(ii)	265	**1**	
9	**(a)**	14 h 21 or 22 min	**5**	**M2** for $\pi \times 80^2 \times 90 \div 35$ or **M1** for $\pi \times 80^2 \times 90$ **M1 FT** for ÷ 60 ÷ 60 **M1 FT** for decimal part of hours into min
	(b)	440 000	**4FT**	**FT** 2 250 000 – *their* volume in **(a)** if seen **B3** for 440 000 to 441 000 or **M2** for $150 \times 150 \times 100 -$ *their* volume in **(a)** if seen or **M1** for 150 × 150 × 100 If **B0** scored then **B1 FT** for rounding to 2 sf (if answer allows)
	(c)	4.4×10^5	**1FT**	**FT** *their* **(b)**

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10	**(a) (i)**	$\mathbf{r} + \mathbf{t}$	**1**	
	(ii)	$\frac{1}{3}\mathbf{r} - \frac{1}{3}\mathbf{t}$ oe	**2**	**M1** for a correct route.
	(b) (i)	$\frac{1}{3}\mathbf{r}$	**1**	
	(ii)	On *AB* [extended] oe **dependent on part (b)(i)** being $k\mathbf{r}$	**1dep**	
11	**(a)**	11	**2**	**B1** for [f(2) =] 5
	(b) (i)	Curve translated one to left	**2**	**B1** for any other translation parallel to *x*-axis
	(ii)	Translation	**1**	Marks independent
		$\begin{pmatrix} -1 \\ 0 \end{pmatrix}$	**1**	
	(c) (i)	$\sqrt[3]{x}$ or $x^{\frac{1}{3}}$	**1**	
	(ii) (a)	Correct curve	**1**	
	(b)	Reflection $y = x$	**1** **1**	
12	**(a)**	2.4	**3**	**M2** for $\left(\frac{h}{4}\right)^3 = \frac{108}{500}$ oe or better or **M1** for cube or cube root soi
	(b)	250	**2**	**M1** for $\frac{A}{90} = \left(\frac{4}{their\textbf{(a)}}\right)^2$ oe or better or $\frac{A}{90} = \left(\sqrt[3]{\frac{500}{108}}\right)^2$ oe

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