MARK SCHEME for the October/November 2012 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/03   Paper 3 (Core), maximum raw mark 96

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 October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

1	(a)	375	1	
	(b)	15	1	
	(c)	270	2	**M1** for $450 \div 5$ soi
	(d)	54	2	**M1** for $\dfrac{150}{1000} \times 360$ soi
	(e)	$\dfrac{9}{20}$	2	**B1** for $\dfrac{450}{1000}$ soi
2	(a)	(0, 3)	1	
	(b)	(8, 0)	1	
	(c)	$-\dfrac{3}{8}$	2FT	**FT** from *their* $3 \div 8$ **M1** for attempt to use gradient formula
	(d)	(4, 1.5) oe	2FT	**B1, B1 FT** from *their* **(a)** and **(b)**
	(e)	$\begin{pmatrix} 4 \\ 1.5 \end{pmatrix}$	1FT	**FT** from *their* **(d)**
3	(a)	432	2	**B1** for either 288, 144 or 576 seen or **M1** for correct method shown
	(b) (i)	216000	2FT	**FT** *their* **(a)** $\times 500$ **M1** for 500 soi or **M1** for Area $\times$ length
	(ii)	0.216(000)	1FT	**FT** *their* **(b)(i)** $\div 100^3$
	(c)	9450	2	**M1** for $200 \times 5 \times 9.45$
4	(a)	56.25	2	**M1** for $(5.2 - (-2.3))$ soi by 7.5 **or** figs 5625 seen **SC1** for 8.41
	(b)	$x = 2, y = 6$	2	**B1 B1**
	(c)	$6x^8$ final answer	2	**B1** for kx^8 or $6x^k$
	(d)	6	3	**B2** for $3x - 13 = 5$ or better **B1** for $6x - 10$ or $3x + 3$ soi
	(e)	5	2	**B1** for 2×2^4 soi or for $16 + 16$ soi

5	(a)	1	1	
	(b)	2.15	1	
	(c)	2	1	
	(d)	1	1	
	(e)	4	1	
6	(a)	70°	1	
	(b)	$y = 30°$ $z = 60°$	1 2FT	**FT** 90 – *their y* **M1** for angle $TAO = 90$ soi
	(c)	116°	3	**B1** for 720° seen or implied (e.g. by 580) and **M1** for $5w + 140 = $ *their* 720 soi or **B1** for 320° and **M1** for $\dfrac{320}{5}$
7	(a)	24	3	**M2** for $\sqrt{26^2 - 10^2}$ **M1** for $26^2 = 10^2 + x^2$ oe
	(b)	120	2FT	**FT** $10 \times$ *their* $24 \div 2$ **M1** for $0.5 \times 10 \times$ *their* 24
	(c)	22.6 (22.61 to 22.62)	2FT	**FT** their 24 used correctly in trig ratio **M1** for correct use of trig ratio
8	(a)	Correct graph	3	**M1** for quadratic opening upwards **M1** for x-intercepts close to 0 and 4 **M1** for smooth curve **dep** on first M1
	(b)	$(2, -8)$	1	
	(c)	$x = 2$	1	
	(d)	Correct graph	2	**M1** for y-intercept at approximately – 4, or **M1** for straight line with positive gradient
	(e)	$(0.392, -2.825), (5.108, 11.325)$	3	**B1 B1** for correct answers to 2 decimal place accuracy or better **A1** for answers to 3 decimal places

9	(a) (i)	$\frac{5}{9}$ (0.555…, 55.55…%)	1	
	(ii)	$\frac{4}{9}$ (0.444[4], 44.4[4]%)	1	
	(iii)	$\frac{3}{9}$ oe (0.333…, 33.3…%)	1	
	(iv)	$\frac{3}{9}$ oe (0.333…, 33.3…%)	1	
	(v)	$\frac{2}{9}$ (0.222…, 22.2…%)	1	
	(b)	7, 8, 9	1	
10	(a)	500	3	**M2** for $\dfrac{5000 \times 4 \times 2.5}{100}$ **M1** for $5000 \times \dfrac{2.5}{100}$ **SC2** for answer 5500
	(b)	19.06	4FT	**M2** for $5000(1.025)^4$ oe **M1** for $5000(1.025)^n$ oe n integer > 1 **A1** for 5519.06 (5520, 5519, 5519.1, 5519.10, 5519.064…) **B1FT** indep for *their* 5519.06 – 5000 – *their* **(a)** but only if at least **M1** earned

11	(a)	707 (706.5 to 707.0)	2	**M1** for $\pi \times 15^2$ or better
	(b)	118 (117.7 to 117.8…)	1FT	**FT** *their* **(a)** $\div 6$
	(c)	15.7 (15.70 to 15.71)	2	**M1** for $\dfrac{60}{360} \times 2 \times \pi \times 15$ or better soi
	(d)	37.5	4	**M3** for $\dfrac{6 \times 2.75 - 12}{12} \times 100$ or $\dfrac{6 \times 2.75}{12} \times 100 - 100$ oe $\quad$ **M2** for $\dfrac{6 \times 2.75 - 12}{12}[\times 100]$ or $\dfrac{6 \times 2.75}{12} \times 100$ oe or **M1** for *their*16.5 – 12 oe or **B1** for 16.5 seen
12	(a)	$\dfrac{4}{5}$	1	
	(b) (i)	correct tree diagram	2FT	**FT** *their* **(a)** **B1** for one correct pair for plant 2
	(ii)	$\dfrac{1}{25}$ (0.04, 4%) cao	2FT	**FT** $\frac{1}{5} \times$ *their* $\frac{1}{5}$ **M1** for $\frac{1}{5} \times$ *their* $\frac{1}{5}$
	(iii)	$\dfrac{8}{25}$ (0.32, 32%) cao	3FT	**FT** $\frac{1}{5} \times$ *their* $\frac{4}{5} +$ *their* $\frac{4}{5} \times$ *their* $\frac{1}{5}$ **M2** for $\frac{1}{5} \times$ *their* $\frac{4}{5} +$ *their* $\frac{4}{5} \times$ *their* $\frac{1}{5}$ oe **M1** for one of products
13	(a)	Translation only, $\begin{pmatrix} -3 \\ -2 \end{pmatrix}$ oe	2	**B1** for translation **B1** for column vector – can be in words
	(b)	Reflection only, $x = -2$	2	**B1** for reflection, **B1** for equation of line