UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2011 question paper

for the guidance of teachers

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

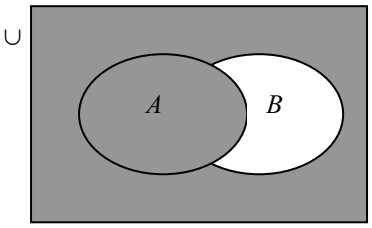
0607/02 Paper 2 (Extended), maximum raw mark 40

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1 (a)	3.75×10^{14}	**1**	
(b)	1.8(0)	**2**	**M1** for 0.75×2.4 or complete equivalent method
(c)	–3, 1	**B1, B1**	If **B0**, **M1** for $x + 1 = \pm 2$
2 (a) (i)	7	**1**	
(ii)	4	**1**	
(b)		**1**	
3	$-\frac{3x}{4} + 3$ o.e.	**2**	**M1** for $4y = 12 - 3x$ or $\frac{3x}{4} + y = \frac{12}{4}$
4	36	**2**	**M1** for $\frac{4}{3}\pi \times 3^3$
5 (a)	$5\sqrt{5}$	**1**	
(b)	$\frac{\sqrt{6}+\sqrt{3}}{3}$ o.e.	**2**	**M1** for intention to $\times \frac{\sqrt{6}+\sqrt{3}}{\sqrt{6}+\sqrt{3}}$
6 (a)	192	**1**	
(b)	768	**1**	
(c)	3×2^n o.e. $6 \times 2^{n-1}$, $2^{n+2} - 2^n$	**2**	**M1** for power of 2 in terms of n in answer and not spoiled

7 (a)	$(x - 6)(x + 4)$	**2**	**SC1** for $(x + a)(x + b)$ where $ab = -24$ or $a + b = -2$
(b)	$x(y - 2z)(y + 2z)$	**2**	**SC1** for $x(y^2 - 4z^2)$ or $(xy - 2xz)(y + 2z)$ or $(y - 2z)(xy + 2xz)$
8 (a)	$-\mathbf{p} + \mathbf{q}$ or $\mathbf{q} - \mathbf{p}$	**1**	
(b)	$\frac{1}{4}\mathbf{p} + \frac{3}{4}\mathbf{q}$ o.e. (in simplest form)	**2**	**M1** for $\overrightarrow{OR} = \overrightarrow{OQ} + \overrightarrow{QR}$ or $\overrightarrow{OP} + \overrightarrow{PR}$ s.o.i.
9	$\frac{4}{27}$ o.e.	**2**	**M1** for $\frac{4}{6} \times \frac{4}{6} \times \frac{2}{6}$ o.e.
10	7	**3**	**M1** for multiplying all three terms by 6 or all over 6 or left hand side over 6 = 9 **A1** for $2(2x + 1) + 3(x + 1) = 54$ or $\frac{7x + 5}{6} = 9$ 7 may be seen correctly embedded – accept
11 (a)	2	**2**	**M1** for $p^3 = 8$
(b)	$q = 2$, $r = 3$	**3**	**M1** for use of $\log ab = \log a + \log b$ or $\log a^b = b \log a$ **M1** dep for log 12 and log 9 in terms of log2 and log3 only, or $\log 2^2 + \log 3^3$ seen, or $108 = 2^q \times 3^r$
12 (a)	$F = 8v^2$	**2**	**M1** for $F = kv^2$ o.e. $k \neq 1$
(b) (i)	32	**1 ft**	ft their **(a)** only if kv^2 $k \neq 1$
(ii)	11	**1 ft**	ft their **(a)** only if kv^2 $k \neq 1$