

Question			Answer	Marks	Guidance	Question
1	(i)		1	1 [1]		
1	(ii)		$\frac{3}{5}$ or 0.6	3  [3]	allow <b>B3</b> for $\pm 0.6$ oe;  <b>M1</b> for $\left(\frac{25}{9}\right)^{\frac{1}{2}} = \left(\frac{9}{25}\right)^{\frac{1}{2}}$ soi or $\frac{1}{\left(\frac{25}{9}\right)^{\frac{1}{2}}}$  and <b>M1</b> for at least one of 3 and 5 found	M1 for inversion even if they have done something else first, eg may be earned after 2 <sup>nd</sup> M1 for inversion of their $\frac{5}{3}$

Question			Answer	Marks	Guidance	
2	(i)		1 9	2  [2]	isw conversion to decimal M1 for 9 or for $3^{-2}$ or for $\frac{1}{3}$ Except M0 for 9 from $27/3$ or $\sqrt[3]{27}$	ie M1 for evidence of $(\sqrt[3]{27})^2$ or $1/(\sqrt[3]{27})$ found correctly
2	(ii)		$2a^2c^{-4}$ or $\frac{2a^2}{c^4}$ as final answer	3  [3]	B1 for each element; must be multiplied  if B0, allow SC1 for $64a^6c^3$ obtained from numerator or for all elements correct but added	



4	(i)		25	2	M1 for $\left(\frac{10}{2}\right)^2$ or $\left(\frac{1}{0.2}\right)^2$ oe soi or for $\frac{1}{0.04}$ oe	ie M1 for one of the two powers used correctly  M0 for just $\frac{1}{0.4}$ with no other working
				[2]		
4	(ii)		$8a^9$	3	B2 for 8 or M1 for $16^{\frac{1}{4}} = 2$ soi  and B1 for $a^9$	ignore $\pm$  eg M1 for $2^3$ ; M0 for just 2
				[3]		

Question		Answer	Marks	Guidance
5	(i)	$\frac{9}{25}$ or 0.36 isw	2	M1 for numerator or denominator correct or for squaring correctly or for inverting correctly
			[2]	M1 for eg $\frac{1}{\left(\frac{25}{9}\right)}$ or $\left(\frac{25}{9}\right)^{-1}$ or $\frac{25}{9}$ or  for $\left(\frac{3}{5}\right)^2$ or $\frac{3}{5}$  M0 for just $\frac{1}{\left(\frac{5}{3}\right)^2}$
5	(ii)	27	2	M1 for $81^{\frac{1}{4}} = 3$ soi
			[2]	eg M1 for $3^3$ M0 for $81^3 = 531441$ (true but not helpful)

6	(i)		25	2	M1 for $\frac{1}{\frac{1}{25}}$ or $\left(\frac{1}{25}\right)^{-1}$ or $5^2$ or $\frac{25}{1}$	
				[2]		
6	(ii)		$\frac{4}{9}$	2	M1 for 4 or 9 or $\frac{1}{9}$ or $\frac{2}{3}$ or $\left(\frac{2}{3}\right)^2$ or $\sqrt[3]{\frac{64}{729}}$	0 for just $\left(\frac{64}{729}\right)^{\frac{1}{3}}$
				[2]	seen	

Question		er	Marks	Guidance		
7	(i)		30	3	M1 for $(\sqrt{6})^3 = 6\sqrt{6}$ soi and M1 for $\sqrt{24} = 2\sqrt{6}$ soi  or allow SC2 for final answer of $5(\sqrt{6})^2$ or $5\sqrt{36}$ or $10\sqrt{9}$ etc	M0 for $6000\sqrt{6}$ ie cubing 10 as well  for those using indices: M1 for both $10 \times 6^{3/2}$ and $2 \times 6^{1/2}$ oe then M1 for $5 \times 6$ oe  award SC2 for similar correct answer with no denominator
				[3]		
7	(ii)		$\frac{8}{11}$	2	M1 for common denominator $(4 + \sqrt{5})(4 - \sqrt{5})$ soi - may be in separate fractions or for a final answer with denominator 11, even if worked with only one fraction	condone lack of brackets
				[2]		

8	(i)		$\frac{1}{3}$ as final answer	2  [2]	allow $\pm\frac{1}{3}$ M1 for $\frac{1}{9^{\frac{1}{2}}}$ or for $9^{\frac{1}{2}} = \sqrt{9}$ or 3 soi	eg M1 for $3^{-1}$
8	(ii)		$32x^{10}y^{-3}$ or $\frac{32x^{10}}{y^3}$ oe as final answer	3  [3]	B1 for each element if B0, allow M1 for $(4x^4)^3 = 64x^{12}$	allow $2^5$ instead of 32

9			$6n^2 + 12n + 8$ or $2(3n^2 + 6n + 4)$ oe as final answer	3  [3]	B2 for 2 terms correct in final answer or for $(n + 2)^3 = n^3 + 6n^2 + 12n + 8$ or B1 for 1, 3, 3, 1 soi or SC2 for final answer of $3n^2 + 6n + 4$	B1 for $n^3 + 4n^2 + 4n + 2n^2 + 8n + 8[-n^3]$ , condoning one error
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10	(i) /3 isw	2	condone $\pm 4/3$ ;  <b>M1</b> for numerator or denominator correct or for $\frac{3}{4}$ or $\frac{1}{\left(\frac{3}{4}\right)}$ oe or for $\left(\frac{16}{9}\right)^{\frac{1}{2}}$ soi	<b>M1</b> for just $-4/3$ ;  allow <b>M1</b> for $\sqrt{16} = 4$ and $\sqrt{9} = 3$ soi;  condone missing brackets
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10	(ii) $\frac{2a}{c^5}$ or $2ac^{-5}$	3	<b>B1</b> for each 'term' correct; mark final answer;  if B0, then <b>SC1</b> for $(2ac^2)^3 = 8a^3c^6$ or $72a^5c^7$ seen	condone $a^1$ ; condone multiplication signs but <b>0</b> for addition signs
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11	(i)(A) 1/16	1	isw attempted conversion of 1/16 to decimals	accept 0.0625
11	(i)(B) 1	1		set image 'fit to height' so that in marking this question you also check that there is no working on the back page attached to the image
11	(ii) 256/625	2	<b>M1</b> for num or denom correct or for 4/5 or 0.8	accept 0.4096