

# Roots, Powers and Primes

## Mark Scheme

30 marks

- |       |       |  |                                   |   |            |
|-------|-------|--|-----------------------------------|---|------------|
| 1.    | (a)   | 9  |                                   | 1 |            |
|       |       |  | <i>BI for 9</i>                   |   |            |
|       | (b)   | 14   |                                   | 1 |            |
|       |       |  | <i>BI for 14</i>                  |   |            |
|       | (c)   | 8 and 20   |                                   | 1 |            |
|       |       |  | <i>BI for both 8 and 20</i>       |   |            |
|       | (d)   | 23 and 14  |                                   | 1 |            |
|       |       |  | <i>BI for both 14 and 23</i>      |   |            |
|       |       |  |                                   |   | <b>[4]</b> |
| 2.    | (i)   | 6, 12  |                                   | 4 |            |
|       |       |  | <i>BI cao</i>                     |   |            |
|       | (ii)  | 4, 16  |                                   |   |            |
|       |       |  | <i>BI cao</i>                     |   |            |
|       | (iii) | 3, 4, 6 or 3, 4, 6, 12                                       |                                   |   |            |
|       |       |  | <i>BI Condone omission of 12</i>  |   |            |
|       | (iv)  | 8, 27  |                                   |   |            |
|       |       |  | <i>BI cao</i>                     |   |            |
|       |       |  |                                   |   | <b>[4]</b> |
| • Ä3. | (a)   | (i)  | 25                                | 4 |            |
|       |       |  | <i>BI for 25</i>                  |   |            |
|       |       | (ii)   | 28                                |   |            |
|       |       |  | <i>BI for 28</i>                  |   |            |
|       |       | (iii)  | 5 and 20                          |   |            |
|       |       |  | <i>BI for 5 and 20</i>            |   |            |
|       |       | (iv)   | 26 and 33                         |   |            |
|       |       |  | <i>BI for 26 and 33</i>           |   |            |
|       | (b)   | $2^3 = 8$<br>or $2^3 = 2 \times 2 \times 2$ (which is not 6) |                                   | 1 |            |
|       |       |  | <i>BI for valid 'explanation'</i> |   |            |
|       |       |  |                                   |   | <b>[5]</b> |

<b>4.</b>	(a)	18, 69	<i>Bl</i>	1	
	(b)	(i) 18 or 36	<i>Bl</i>	1	
		(ii) 16 or 36	<i>Bl</i>	1	
	(c)	factor	<i>Bl</i>	1	
	(d)	(i) 18	<i>Bl cao</i>	3	
		(ii) 11 or 88	<i>Bl</i>		
		(iii) 69	<i>Bl cao</i>		
					<b>[7]</b>
<b>5.</b>	(i)	43	<i>Bl</i>	4	
	(ii)	35	<i>Bl</i>		
	(iii)	24, 44	<i>Bl</i>		
	(iv)	17	<i>Bl</i>		
					<b>[4]</b>
<b>6.</b>	(a)	$\frac{37}{100}$	<i>Bl</i>	1	
	(b)	1, 3, 7, 21	<i>B2 for 4 correct factors, no extras (Bl for 2 factors)</i>	2	
					<b>[3]</b>
<b>7.</b>	(i)	4	<i>Bl cao</i>	3	
	(ii)	8	<i>Bl cao</i>		
	(iii)	3	<i>Bl cao</i>		
					<b>[3]</b>