



**Surds Exam Questions (from OCR 4721)**

*Note: It is likely that these questions will appear as a “show that”. You should therefore practice these without the use of a calculator in order to obtain full marks.*

**Q1, (OCR Jan 2007, Q1)**

Express  $\frac{5}{2 - \sqrt{3}}$  in the form  $a + b\sqrt{3}$ , where  $a$  and  $b$  are integers. [3]

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**Q2, (Jan 2009, Q1)**

Express  $\sqrt{45} + \frac{20}{\sqrt{5}}$  in the form  $k\sqrt{5}$ , where  $k$  is an integer. [3]

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**Q3, (Jun 2009, Q2)**

Express  $\frac{8 + \sqrt{7}}{2 + \sqrt{7}}$  in the form  $a + b\sqrt{7}$ , where  $a$  and  $b$  are integers. [4]

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**Q4, (Jun 2010, Q3)**

(i) Express  $\frac{12}{3 + \sqrt{5}}$  in the form  $a - b\sqrt{5}$ , where  $a$  and  $b$  are positive integers. [3]

(ii) Express  $\sqrt{18} - \sqrt{2}$  in simplified surd form. [2]

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**Q5, (Jun 2011, Q5)**

(i) Express  $\sqrt{300} - \sqrt{48}$  in the form  $k\sqrt{3}$ , where  $k$  is an integer. [3]

(ii) Express  $\frac{15 + \sqrt{40}}{\sqrt{5}}$  in the form  $a\sqrt{5} + b\sqrt{2}$ , where  $a$  and  $b$  are integers. [3]

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**Q6, (Jan 2012, Q1)**

Express  $\frac{15 + \sqrt{3}}{3 - \sqrt{3}}$  in the form  $a + b\sqrt{3}$ , where  $a$  and  $b$  are integers. [4]

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**Q7, (Jun 2016, Q2)**

Express  $\frac{3 + \sqrt{20}}{3 + \sqrt{5}}$  in the form  $a + b\sqrt{5}$ . [4]

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