Edexcel AS Mathematics Surds and indices

Topic assessment

1. Write the following in terms of the simplest possible surd.
   (i) $\sqrt{27}$ (ii) $\sqrt{288}$ (iii) $\sqrt{96}$ [6]

2. Simplify
   (i) $\sqrt{98}-\sqrt{32}$
   (ii) $\sqrt{75}\times\sqrt{10}\times\sqrt{24}$
   (iii) $\left(1+\sqrt{2}\right)\left(3-2\sqrt{2}\right)$ [9]

3. Rationalise the denominators of the following and simplify as far as possible
   (i) $\dfrac{12}{\sqrt{6}}$ (ii) $\dfrac{2-\sqrt{3}}{\sqrt{3}}$ [4]
   (iii) $\dfrac{1}{\sqrt{3}-2}$ (iv) $\dfrac{1+\sqrt{2}}{3-\sqrt{2}}$ [6]

4. Find the values of
   (i) $64^{1/3}$ (ii) 2^{-5} (iii) $\left(\frac{1}{3}\right)^{0}$ [3]
   (iv) $25^{-1/2}$ (v) $9^{3/2}$ [4]

5. Simplify
   (i) $x^3\times x^8\div x^5$ (ii) $\dfrac{(a^3)^5}{(a^2)^{5/2}}$ [6]
   (iii) $3a^2b\times\left(2ab^2\right)^2$ (iv) $\dfrac{2x}{yz}\times\dfrac{y^2x}{6z}\times\dfrac{4z^2}{y}$ [6]

6. Simplify
   (a) $32^{3/2}\times8^5\times2^{-5/2}$
   (b) $10^{-1/3}\times25^{2/3}\div2^{5/3}$ [6]

Total 50 marks