1 **(i)** Express $\frac{81}{\sqrt{3}}$ in the form 3^k. **[2]**

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

2 **(i)** Simplify $(5a^2b)^3 \times 2b^4$. **[2]**

(ii) Evaluate $\left(\frac{1}{16}\right)^{-1}$. **[1]**

(iii) Evaluate $(16)^{\frac{3}{2}}$. **[2]**

3 Make y the subject of the formula $a = \frac{\sqrt{y}-5}{c}$. **[3]**

4 **(i)** Find the value of $144^{-\frac{1}{2}}$. **[2]**

(ii) Simplify $\frac{1}{5+\sqrt{7}} + \frac{4}{5-\sqrt{7}}$. Give your answer in the form $\frac{a+b\sqrt{7}}{c}$. **[3]**

5 Find the value of each of the following.

(i) $5^2 \times 5^{-2}$ **[2]**

(ii) $100^{\frac{3}{2}}$ **[1]**

6 State the value of each of the following.

(i) 2^{-3} **[1]**

(ii) 9^0 **[1]**

7 **(i)** Express $125\sqrt{5}$ in the form 5^k. **[2]**

(ii) Simplify $\left(4a^3b^5\right)^2$. **[2]**

8 **(i)** Find the value of $\left(\frac{1}{25}\right)^{-\frac{1}{2}}$. [2]

(ii) Simplify $\dfrac{(2x^2y^3z)^5}{4y^2z}$. [3]

9 **(i)** Write down the value of $\left(\frac{1}{4}\right)^0$. [1]

(ii) Find the value of $16^{-\frac{3}{2}}$. [3]

10 **(i)** Find a, given that $a^3 = 64x^{12}y^3$. [2]

(ii) Find the value of $\left(\dfrac{1}{2}\right)^{-5}$. [2]

11 Find the value of each of the following, giving each answer as an integer or fraction as appropriate.

(i) $\quad^{\frac{3}{2}}$ [2]

(ii) $\left(\frac{7}{3}\right)^{-2}$ [2]

12 **(i)** Simplify $6\sqrt{2}\times 5\sqrt{3}\quad\sqrt{24}$. [2]

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

13 Simplify the following.

(i) $\dfrac{16^{\frac{1}{2}}}{81^{\frac{3}{4}}}$ [2]

(ii) $\dfrac{12(a^3b^2c)^4}{4a^2c^6}$ [3]