

Indices & Surds

Question Paper 1

Level	A Level
Subject	Maths
Exam Board	OCR
Topic	Polynomials
Sub Topic	Indices & Surds
Booklet	Question Paper 1

Time Allowed: 59 minutes

Score: /49

Percentage: /100

- 1 Express $\frac{8}{\sqrt{3}-1}$ in the form $a\sqrt{3} + b$, where a and b are integers. [3]
- 2 Express each of the following in the form 5^k .
- (i) 25^4 [1]
- (ii) $\frac{1}{\sqrt[4]{5}}$ [2]
- (iii) $(5\sqrt{5})^3$ [2]
- 3 Express each of the following in the form $k\sqrt{3}$, where k is an integer.
- (i) $\frac{6}{\sqrt{3}}$ [1]
- (ii) $10\sqrt{3} - 6\sqrt{27}$ [2]
- (iii) $3^{\frac{5}{2}}$ [2]
- 4 Express each of the following in the form $a\sqrt{5}$, where a is an integer.
- (i) $4\sqrt{15} \times \sqrt{3}$ [2]
- (ii) $\frac{20}{\sqrt{5}}$ [1]
- (iii) $5^{\frac{3}{2}}$ [1]
- 5 Express each of the following in the form 7^k :
- (i) $\sqrt[4]{7}$, [1]
- (ii) $\frac{1}{7\sqrt{7}}$, [2]
- (iii) $7^4 \times 49^{10}$. [2]

6 Simplify

(i) $\frac{(4x)^2 \times 2x^3}{x}$, [2]

(ii) $(36x^{-2})^{-\frac{1}{2}}$. [3]

7 (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]

8 (i) Evaluate 9^0 . [1]

(ii) Express $9^{-\frac{1}{2}}$ as a fraction. [2]

9 (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]

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

11 Express each of the following in the form 3^n :

(i) $\frac{1}{9}$, [1]

(ii) $\sqrt[3]{3}$, [1]

(iii) $3^{10} \times 9^{15}$. [2]