

Algebraic Roots & Indices

Question Paper

Course	Edexcel IGCSE Maths
Section	2. Equations, Formulae & Identities
Topic	Algebraic Roots & Indices
Difficulty	Hard

Time allowed: 50
Score: /36
Percentage: /100

Question 1

$$16^{\frac{1}{5}} \times 2^x = 8^{\frac{3}{4}}$$

Work out the exact value of x .

[3 marks]

Question 2a

$$p^3 \times p^x = p^9$$

Find the value of x .

[1 mark]

Question 2b

$$(7^2)^y = 7^{10}$$

Find the value of y .

[1 mark]

Question 2c

$100^a \times 1000^b$ can be written in the form 10^w

Show that $w = 2a + 3b$

[2 marks]

Question 3a

Simplify fully $(3e)^0$

[1 mark]

Question 3b

Simplify fully $\left(\frac{64x^6}{25y^2}\right)^{-\frac{1}{2}}$

[2 marks]

Question 4

Given that $\frac{7^{206} \times 7^m}{7^{214}} = 7^{-3}$

find the value of m

$m = \dots\dots\dots$

[2 marks]

Question 5

Given that $\left(\sqrt[3]{\frac{1}{x}}\right)^4 = x^m$

find the value of m

$m = \dots\dots\dots$

[1 mark]

Question 6

Given that $\frac{y^5 \times y^n}{y^6} = y^{13}$

work out the value of n .

$n = \dots\dots\dots$

[2 marks]

Question 7

Simplify fully $\left(\frac{9t^4w^9}{18t^6w^{10}}\right)^{-2}$

[1 mark]

Question 8

Given that $4^{k+3} = 16 \times 2^k$

find the value of k .

Show your working clearly.

$k = \dots\dots\dots$

[4 marks]

Question 9

Simplify completely $\left(\frac{16w^8}{y^{20}}\right)^{-\frac{3}{4}}$

[3 marks]

Question 10

Given that $n^{\left(-\frac{4}{5}\right)} = \left(\frac{1}{2}\right)^4$ where $n > 0$

find the value of n .

$n = \dots\dots\dots$

[4 marks]

Question 11

The n th term of a sequence is $4(2^n + 2^{n-1})$

Circle the expression that is equivalent to $4(2^n + 2^{n-1})$

$$2^{n+2} + 2^{n+1}$$

$$2^{2n} + 2^{2(n-1)}$$

$$8^n + 8^{n-1}$$

$$2^{n+2} + 2^{n-1}$$

[1 mark]

Question 12

Simplify fully $\frac{a^3b^2}{cd} \times \frac{c}{ab^5}$

[3 marks]

Question 13

$(ar^b)^4 = 16r^{20}$ where a and b are positive integers.

Work out a and b

$a = \dots\dots\dots$

$b = \dots\dots\dots$

[2 marks]

Question 14

Show that $(a^3)^{-\frac{1}{3}} \times (a^2)^{\frac{1}{2}} = 1$.

[3 marks]