



1.

[3 marks]

(a) Write $3 \times 3 \times 3 \times 3 \times 3$ as a single power of 3

.....
(1)

(b) Write $\frac{7^5 \times 7^9}{7^6}$ as a single power of 7

.....
(2)

2.

[4 marks]

(a) Write $2^3 \times 2^6$ as a single power of 2

.....
(1)

(b) Write $\frac{3^9}{3^4}$ as a single power of 3

.....
(1)

(c) $\frac{5^n}{5^4 \times 5^6} = 5^3$

Find the value of n .

$n =$
(2)



(a) Write $2^3 \times 2^4$ as a single power of 2

.....
(1)

(b) $280 = 2^n \times 5 \times 7$

Find the value of n .

$n =$
(2)

(a) Simplify, leaving your answers in index form,

(i) $7^5 \times 7^3$

.....

(ii) $5^9 \div 5^3$

.....

(2)

(b) Solve $\frac{2^9 \times 2^4}{2^n} = 2^8$

$n =$

(2)



(a) Simplify, leaving your answers in index form,

(i) $6^5 \times 6^2 \times 6$

.....

(ii) $(9^7)^2$

.....

(2)

(b) $\frac{5^n \times 5^3}{5^6} = 5^4$

Find the value of n .

$n =$

(2)

(a) Simplify, leaving your answer in index form

(i) $2^4 \times 2^3$

.....

(ii) $3^8 \div 3^2$

.....

(2)

(b) $5^x = 1$

Find the value of x .

$x =$

(1)



7.

[3 marks]

Evaluate the following.
Give your answers as fractions.

(a) 2^{-3}

.....
(1)

(b) $\left(\frac{27}{343}\right)^{\frac{1}{3}}$

.....
(1)

(c) $\left(\sqrt{\frac{3}{8}}\right)^4$

.....
(1)

8.

[5 marks]

(a) Find the value of $\left(9^{\frac{1}{2}}\right)^4$

.....
(1)

(b) Express 5^{20} as a power of 25

.....
(2)

(c) Express $\sqrt{8}$ as a power of 2

.....
(2)



(a) Simplify $\left(4h^{\frac{2}{3}}\right)^3$

.....
(2)

$$\frac{a\sqrt{a}}{\sqrt[3]{a^2}} = a^k$$

(b) Work out the value of k .

$k =$
(3)

(a) Express $8^{\frac{1}{2}}$ as a power of 2

.....
(2)

(b) Express $\sqrt{3}$ as a power of 9

.....
(2)

(c) Express $\frac{1}{4\sqrt{2}}$ as a power of 2

.....
(3)



- (a) (i) Write down the value of 10^0 .

.....

- (ii) Write down the value of 10^{-2} .

.....

(2)

- (b) (i) Write 8 as a power of 2

.....

- (ii) Write 2 as a power of 8

.....

- (iii) Write $\frac{1}{4}$ as a power of 2

.....

(3)

- (c) Evaluate $\left(\frac{27}{343}\right)^{\frac{2}{3}}$

.....

(2)



12.

[4 marks]

Solve $3 \times 4^{2k+8} = 24$

Show your working clearly.

$k = \dots\dots\dots$

13.

[3 marks]

$y = 16 \times 10^{8k}$ where k is an integer.

Find an expression, in terms of k , for $y^{\frac{5}{4}}$
Give your answer in standard form.



(a) $(\sqrt{a})^7 = k\sqrt{a}$, where $k = a^n$

Find the value of n .

$$n = \dots\dots\dots (2)$$

(b) Express $\frac{1}{2\sqrt{2}}$ as a power of 2

$$\dots\dots\dots (2)$$

