Q1

1

Use the index law $(a^m)^n = a^{mn}$ (multiply the powers together)

$m^{-2\times 5}$

m^{-10} [1]

$\frac{1}{m^{10}}$ is also accepted

Q2

2a

Use the index law $a^m \div a^n = a^{m-n}$ (subtract the powers).

m^{5-3}

m^2 [1]

2b

Find the number part

$5 \times 1 = 5$

Use the index law $a^m \times a^n = a^{m+n}$ on the x terms (by adding their powers)

$x^{4+2} = x^6$

Use the index law $a^m \times a^n = a^{m+n}$ on the y terms (by adding their powers)

$y^{3+1} = y^4$

either x term or y term correct [1]

Write the final answer (by multiplying the parts together)

$5x^6y^4$ [1]

Q3

3a

Use the index law $a^m \times a^n = a^{m+n}$ (add the powers)

m^{5+3}

m^8 [1]

3b

Use the index law $a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$ (subtract the powers)

p^{6-2}

p^4 [1]

Q4

4a

Use the index law $a^m \times a^n = a^{m+n}$ (add the powers)

p^{2+5}

p^7 [1]

4b

Use the index law $a^m \div a^n = a^{m-n}$ (subtract the powers)

g^{6-4}

g^2 [1]

4c

Use the index law $(a^m)^n = a^{mn}$ (multiply the powers together)

$k^{3\times2}$

k^6 [1]

Q5-6

5

Use the index law $a^m \div a^n = a^{m-n}$ (subtract the powers)

t^{8-3}

t^5 [1]

6a

Use the index law $(a^m)^n = a^{mn}$ (multiply the powers together)

$t^{3\times2}$

t^6 [1]

6b

Use the index law $a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$ (subtract the powers)

w^{9-4}

w^5 [1]

Q7-10

7

Use the index law "$a^0 = 1$".

$g^0 = 1$ [1]

8

Use the index law $a^m \div a^n = a^{m-n}$ (subtract the powers)

$$e^8 \div e^2 = e^{8-2} = e^6$$

$e^8 \div e^2 = e^6$ [1]

9

Do not be put off by the expression in brackets, this is still "something to the power of 0".
So use the index law "$a^0 = 1$".

$(3x^2y)^0 = 1$ [1]

10

Writing an expression as a fraction can imply division so use the index law $a^m \div a^n = a^{m-n}$ (subtract the powers).

$$x^{9-2}$$

x^7 [1]

Q11-13

11

Use the index law $a^m \times a^n = a^{m+n}$ (add the powers)

$$w^{1+0} = w^1 = w$$

Option 3, w [1]

A common mistake here could be to multiply the powers, as if the question were $(w^1)^0$, which would result in w^0 which is equal to 1

12

Use the rule of indices " $a^m \div a^n = a^{m-n}$ ".

$$y^{18} \div y^6 = y^{18-6}$$
$$= y^{12}$$

Compare this answer with y^k.

$\therefore k = 12$ [1]

13

Use the rule of indices " $a^m \div a^n = a^{m-n}$ ".

$$a^6 \div a^2 = a^{6-2}$$
$$= a^4$$

$a^6 \div a^2 = a^4$ [1]

Q14-15

14

Use the rule of indices " $(a^m)^n = a^{mn}$ ".

$$\begin{aligned}(b^5)^3 &= b^{5\times 3}\\ &= b^{15}\end{aligned}$$

$\mathbf{(b^5)^3 = b^{15}}$ [1]

15

A number only appears on the numerator so there are no numbers to simplify/cancel.
Use the rule of indices " $a^m \div a^n = a^{m-n}$ ".

$$\begin{aligned}\frac{3y^3}{y^{-4}} &= 3(y^3 \div y^{-4})\\ &= 3(y^{3-(-4)})\\ &= 3(y^{3+4})\\ &= 3y^7\end{aligned}$$

$\mathbf{\frac{3y^3}{y^{-4}} = 3y^7}$ [1]