SCORE A

Algebra

With Classified answer book

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5- Negative Indices

1. Simplify the following in the form of positive indices.

a. $5^4 \times 5^{-2}$ =.....

b. $8^{-10} \times 8^7$ =.....

c. 3^{-1} =.....

d. $2^{-3} \times 7^1$ =.....

e. $3^2 \times 5^{-2}$ =.....

f. $6^{-4} \div 6^{-2}$ =.....

g. $z^8 \times (z^4)^{-2}$ =.....

h. $(3^2)^{-8}$ =.....

i) $g^6 \div g^{-6}$ =.....

2. Without using a calculator, simplify the following.
Leave your answers in index form.

a. $(h^{-5})^{-1}$ .....

b. $(-9)^2 \times (-5)^{-3}$ .....

c. $\frac{1}{7} \times 7^{-2}$ .....

d) $17^9 \times \frac{1}{17^3}$ .....

3. Evaluate the following without using a calculator.
Write the answers as fractions.

a) $\frac{12^5}{12^{-5}} \times \frac{1}{12^{-8}}$ ..... b) $\frac{6^{-3} \times 6^{10}}{6^4 \times 6^{-5}}$ .....

c) $\frac{7^4}{7^7 \times 7^{-8} \div 7^{-2}}$ ..... d) $\frac{n^{-4} \times n}{(n^{-3})^6}$ .....

e) $\frac{(3^{-2})^3}{3^8 \times 3^{-8}}$ ..... f) $\frac{m^7 \div m^{-3}}{m^{-2} \div m^9}$ .....

g) $\left(\frac{10^7 \times 10^{-11}}{10^9 \div 10^4}\right)^{-5}$ ..... h) $13^{-4} \div \frac{1}{13^{-11}}$ .....

4. **a)** Write the number 0.001 as:

(i) a fraction of the form $\frac{1}{a}$ .....

(ii) a fraction of the form $\frac{1}{10^m}$ .....

(iii) a power of 10 .....

b) Rewrite the following as powers of 10.

(i) 0.1 ..... **(ii)** 0.000001.....

(iii) 0.001 ..... (iv) 1 .....

5. Each of these identities are incorrect.
Write a corrected version for each one.

$a^5 \times a^3 \equiv a^{15}$ × .....

$\frac{6^7}{6^2} \equiv 1^5$ × .....

$\frac{w^8}{w^4} \equiv w^2$ × .....

6. Match each expression to its simplified form.

$\frac{15bc}{3b}$	$10c$
$\frac{15bc \times 2b}{3b^2}$	$5c^2$
$\frac{15bc^2 \times 2b}{6b^2}$	$5c$

7. Fill in the boxes so that each expression is equivalent to $2b$ when simplified.

$\frac{8b}{\square} \equiv 2b$

$\frac{10b^8}{\square} \equiv 2b$

$5(b+6) - 3(\ \square\ ) \equiv 2b$

$\frac{2b^2 \times \square}{4b^5} \equiv 2b$

8. Fill in the missing indices in these fractions.
The first one has been done for you.

a) $4^{-4} = \frac{1}{4^4}$

b) $5^{-3} = \frac{1}{5^{\square}}$

c) $8^{-5} = \frac{1}{8^{\square}}$

d) $x^{-4} = \frac{1}{x^{\square}}$

e) $y^{-7} = \frac{1}{y^{\square}}$

f) $z^{-1} = \frac{1}{z^{\square}}$