

## Topic 4 – Indices

1. **Simplify** as far as possible :-

$$(a) \frac{x^5 \times x^4}{x^3} = \frac{x^9}{x^3} = x^6$$

$$(b) \frac{y^9 \times y^{-3}}{y^3 \times y^2} = \frac{y^6}{y^5} = y^1$$

$$(c) \left( \frac{x^3 \times x^5}{x^4} \right)^4 = \left( \frac{x^8}{x^4} \right)^4 = (x^4)^4 = x^{16}$$

2. **Simplify** as far as possible :-

$$(a) \frac{x^3 \times x^4}{x^5}$$

$$(b) \frac{y^7 \times y^{-2}}{y^3 \times y}$$

$$(c) \frac{z^{11} \times z^{-7}}{z^{-8} \times z^6}$$

$$(d) \frac{b^9 \times b^2 \times b^4}{b^4 \times b^3 \times b^2}$$

$$(e) \frac{k^7 \times k^{-2} \times k^{-6}}{k^9 \times k^{-5} \times k^{-3}}$$

$$(f) \left( \frac{z^4 \times z^2}{z^3} \right)^2$$

$$(g) \left( \frac{h^3 \times h^4 \times h^5}{(h^3)^2} \right)^2$$

$$(h) (x^3 \times x^5 \times x^2)^{1.5}$$

$$(i) (2x^3 \times 4x^{-1} \times x^2)^3 \times (5x^3 \times 2x^{-1})^4$$

$$(j) (t \times t^4 \times t^{-2})^x$$