**Indices Rules - Advanced**

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| Name : | Class : | Date : |

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| **1)** Evaluate, giving your answer as a simplified fraction      a)  $12^{-1}$     b)  $7^{-2}$     c)  $5^{-3}$ | [3]   |
| **2)** Give your answer in the form  $\frac{1}{a^{b}}$, where a and b are positive integers        $7^{-4}$ | [1]   |
| **3)** Give your answer in the form  $a^{b}$, where a and b are integers        $\frac{1}{6^{6}}$ | [1]   |
| **4)** Give your answer in the form  $\frac{a}{b^{c}}$, where a,b and c are positive integers        $3×5^{-5}$ | [1]   |
| **5)** Give your answer in the form  $\frac{a}{b^{c}}$, where a,b and c are integers        $-2×5^{-3}$ | [1]   |
| **6)** Evaluate      a)  $49^{\frac{1}{2}}$     b)  $125^{\frac{1}{3}}$     c)  $27^{\frac{2}{3}}$ | [4]   |
|      d)  $25^{\frac{3}{2}}$ |  |
| **7)** Evaluate, giving your answer as an integer or simplified fraction      a)  $4^{-\frac{3}{2}}$     b)  $(\frac{7}{3})^{2}$     c)  $(\frac{1}{3})^{-1}$ | [3]   |
| **8)** Evaluate the following, giving your answer as a simplified fraction      a)  $(\frac{27}{8})^{\frac{2}{3}}$     b)  $(\frac{64}{125})^{-\frac{2}{3}}$ | [2]   |
| **9)** Give the following expression in index form      a)  $\sqrt{7}$     b)  $\sqrt[3]{5}$     c)  $\sqrt[4]{3}$ | [5]   |
|      d)  $(\sqrt[3]{2})^{2}$     e)  $\frac{1}{\sqrt[3]{3}}$ |  |
| **10)** Show the following as a power of 10        $100$ | [1]   |
| **11)** Show the following as a power of 7        $49^{3}$ | [1]   |
| **12)** Show the following as a power of 4        $\sqrt{64}$ | [1]   |

**Solutions for the assessment Indices Rules - Advanced**

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| **1)**  a)  $\frac{1}{12}$ |      b)  $\frac{1}{49}$ |
|      c)  $\frac{1}{125}$ | **2)**  $\frac{1}{7^{4}}$ |
| **3)**  $6^{-6}$ | **4)**  $\frac{3}{5^{5}}$ |
| **5)**  $-\frac{2}{5^{3}}$ |  |
| **6)**  a) 7 |      b) 5 |
|      c) 9 |      d) 125 |
| **7)**  a)  $\frac{1}{8}$ |      b)  $\frac{49}{9}$ |
|      c)  $3$ |  |
| **8)**  a)  $\frac{9}{4}$ |      b)  $\frac{25}{16}$ |
| **9)**  a)  $7^{\frac{1}{2}}$ |      b)  $5^{\frac{1}{3}}$ |
|      c)  $3^{\frac{1}{4}}$ |      d)  $2^{\frac{2}{3}}$ |
|      e)  $\frac{1}{3^{\frac{1}{3}}}or3^{-\frac{1}{3}}$ | **10)**  $10^{2}$ |
| **11)**  $7^{6}$ | **12)**  $4^{\frac{3}{2}}$ |