

SAMPLE PAPER 2014 (SET F): PAPER 1

QUESTION 1 (25 MARKS)

Question 1 (a)

$$6^{-2} = \frac{1}{6^2} \leftarrow \text{Move down to turn into a positive power.}$$

$$= \frac{1}{36}$$

$$81^{\frac{1}{2}} = \sqrt{81} \leftarrow \text{Square root is the same as a number to the power of a half}$$

$$= 9$$

Question 1 (b)

$$2^{24} = 1.68 \times 10^7 \leftarrow \text{Input } 2^{24} \text{ into your calculator.}$$

CASIO
 Input 2^{24} .
 Press Shift followed by Mode
 Press 7: Sci
 Press 3 (For 3 significant figures)

Question 1 (c)

$$\frac{(a\sqrt{a})^3}{a^4} \leftarrow \text{Use the power rules to write } a \text{ to its correct power.}$$

$$= \frac{(a^1 \times a^{\frac{1}{2}})^3}{a^4} \leftarrow \text{Add the powers in the bracket.}$$

$$= \frac{(a^{\frac{3}{2}})^3}{a^4} \leftarrow \text{Multiply the powers on top of the fraction.}$$

$$= \frac{a^{\frac{3}{2} \times 3}}{a^4} = \frac{a^{\frac{9}{2}}}{a^4} \leftarrow \text{Subtract powers.}$$

$$= a^{\frac{9}{2} - 4} = a^{\frac{1}{2}} = \sqrt{a}$$

Question 1 (d)

$$49^x = 7^{2+x} \leftarrow \text{Get the same base 7 on both sides.}$$

$$(7^2)^x = 7^{2+x}$$

$$7^{2x} = 7^{2+x} \leftarrow \text{Equate the powers once you have the same base on each side.}$$

$$\therefore 2x = 2 + x$$

$$2x - x = 2$$

$$x = 2$$

FORMULAE AND TABLES BOOK
Indices and logs [page 21]

$$a^p \times a^q = a^{p+q}$$

$$\frac{a^p}{a^q} = a^{p-q}$$

$$(a^p)^q = a^{pq}$$

$$a^0 = 1$$

$$a^{-p} = \frac{1}{a^p}$$

$$a^{\frac{1}{2}} = \sqrt{a}$$

SCIENTIFIC NOTATION

$$a \times 10^n, 1 \leq a < 10, n \in \mathbb{Z}$$

Ex. 2.3×10^{-5}