

SAMPLE PAPER 2: PAPER 1

QUESTION 3 (25 MARKS)

Question 3 (a)

$$\text{Mass of sun} = 2.2 \times 10^{30} \text{ kg}$$

$$\text{Mass of earth} = 6 \times 10^{24} \text{ kg}$$

$$\frac{6 \times 10^{24}}{2.2 \times 10^{30}} \times 100\% = 2.73 \times 10^{-4}\%$$

Question 3 (c)

$$\frac{a\sqrt{a} \times (2a)^3}{\sqrt{a^3}} = \frac{a^1 \times a^{\frac{1}{2}} \times 8a^3}{(a^3)^{\frac{1}{2}}}$$

$$= \frac{8a^{\frac{9}{2}}}{a^{\frac{3}{2}}}$$

$$= 8a^{\frac{9}{2} - \frac{3}{2}}$$

$$= 8a^3$$

Question 3 (b)

$$49^{-\frac{1}{2}} = \frac{1}{49^{\frac{1}{2}}} = \frac{1}{\sqrt{49}} = \frac{1}{7}$$

$$64^{\frac{2}{3}} = (64^{\frac{1}{3}})^2 = 4^2 = 16$$

Question 3 (d)

$$25^{x+1} = 5^{x-1}$$

$$(5^2)^{x+1} = 5^{x-1}$$

$$5^{2x+2} = 5^{x-1}$$

$$\therefore 2x+2 = x-1$$

$$2x - x = -1 - 2$$

$$\therefore x = -3$$

FORMULAE AND TABLES BOOK

Indices and logs [page 21]

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

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

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

$$a^0 = 1$$

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

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