Problem:

A paramagnetic material has a magnetic field intensity of $10^4\ Am^{-1}$.

If the susceptibility of the material at room temp is 2.7×10^{-3}. Calculate magnetisation, flux density.

$H = 10^4\ Am^{-1}$

$\chi = 2.7 \times 10^{-3}$, $I = ?$

$$\chi = \frac{I}{H}$$

$$I = \chi H$$

$$I = 2.7 \times 10^{-3} \times 10^4$$

$$I = 2.7 \times 10$$

$$\boxed{I = 27\ Am^{-1}}$$

$$B = \mu_0 (I + H)$$

$$\mu_0 = 4\pi \times 10^{-7}$$

$$B = 4\pi \times 10^{-7} (27 + 10^4)$$

$$= 40 \times 10^{-7} + 10027$$

$$= 125939.12 \times 10^{-7}$$

$$\boxed{B = 0.01259\ Wb/m^2}$$