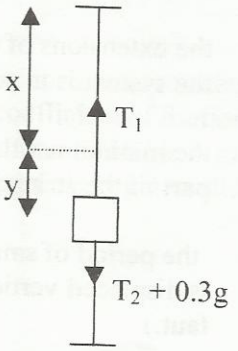
2000

6(b) cont.



(iii) Force in dirn. y inc. $= T_2 + 0.3g - T_1$

$= k(x_2 - y) + 0.3g - k(x_1 + y)$

$= k(x_2 - x_1) + 0.3g - 2ky$

$= k\left(\frac{-0.3g}{k}\right) + 0.3g - 2ky$

$= -2ky$

$\Rightarrow$ acceleration $= \frac{-2k}{0.3}y$

$\therefore$ SHM about $y = 0$ with $\omega = \sqrt{\frac{2k}{0.3}}$

$T = \frac{2\pi}{\omega} = 2\pi\sqrt{\frac{0.3}{2k}}$ or $\pi\sqrt{\frac{0.6}{k}}$

5

5

10