OSCILLATIONS

ω = angular frequency, I = moment of inertia

T = time period, ℓ = length of pendulum

1. $\frac{d^2x}{dt^2} + \omega^2 x = 0$

2. $T = \frac{2\pi}{\omega}$

3. Simple pendulum,

$T = 2\pi\sqrt{\ell / g}$, $\omega = \sqrt{g / \ell}$

4. Angular simple harmonic motion,

$T = 2\pi\sqrt{I / k}$, $\omega = \sqrt{\frac{k}{I}}$

5. Physical pendulum

$T = 2\pi\sqrt{\frac{I}{mg\ell}}$, $\omega = \sqrt{\frac{mg\ell}{I}}$

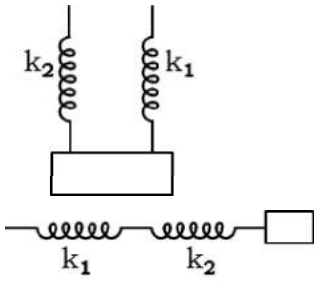
6. Effective spring constant

i) Parallel $K_{eff} = K_1 + K_2$

7. Effective spring constant

i) Parallel

$k_{eff} = k_1 + k_2$



ii) Series

$\frac{1}{k_{eff}} = \frac{1}{k_1} + \frac{1}{k_2}$