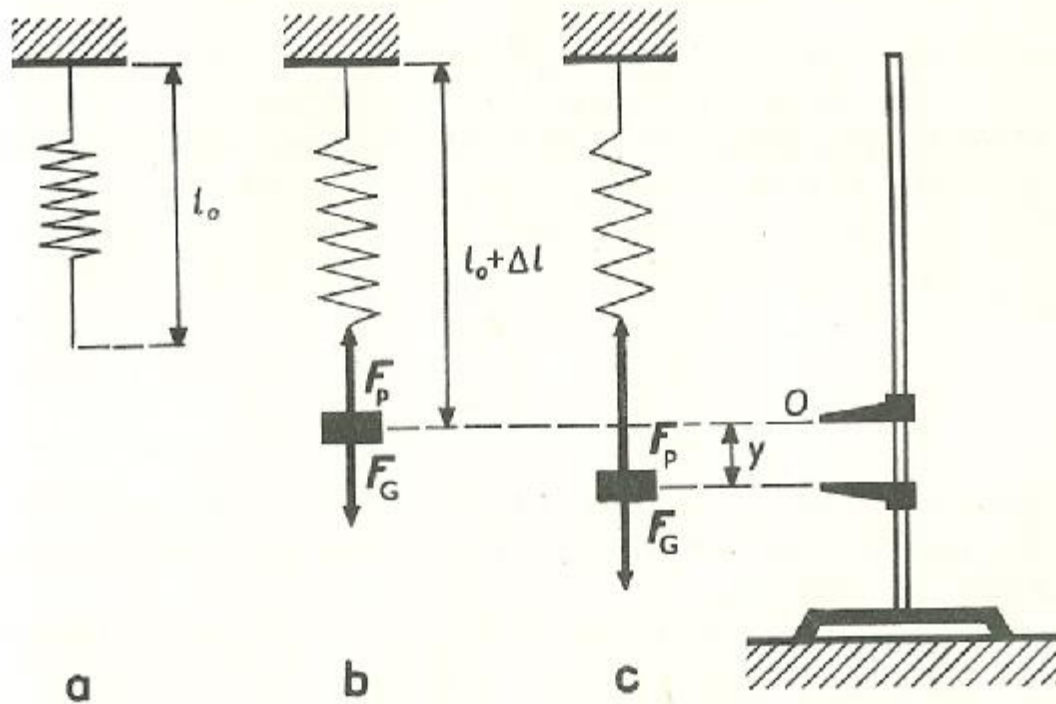


Dynamics of oscillations



3-20

K vysvetleniu vlastného kmitania mechanického oscilátora

$$F = F_G - F_p = m g - k (\Delta l + y) = - k y$$

k – spring constant (N.m^{-1})

2. Newton's law of motion: $F = m a$

Total force acting on a spring: $F = - k y$

$$a = F / m = - k y / m$$

$$a = - \omega_0^2 y$$

$$\omega_0^2 = k / m$$

$$\omega_0 = \sqrt{k / m}$$

Period of an oscillator:

$$T = 2\pi \sqrt{m / k} \text{ (s)}$$

Frequency of an oscillator:

$$f = (1 / 2\pi) \sqrt{k / m} \text{ (Hz)}$$

•There is a body hanging on a spring of a mass of 10 kg, which extension is 15cm. Calculate period of an oscillator.