

Answer on Question #69287-Physics-Other

A shock absorber acts like an elastic spring of constant k . It compresses by 2.5 cm when a mass m is placed on it. When the absorber-mass system is pressed and left, it begins to oscillate. Calculate the frequency of oscillations. Take g : 10 ms⁻²

Solution

$$kx = mg$$

$$k = \frac{mg}{x}$$

The angular frequency of oscillations is

$$\omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{mg}{mx}} = \sqrt{\frac{g}{x}} = \sqrt{\frac{10}{0.025}} = 20 \frac{\text{rad}}{\text{s}}$$

Answer: 20 $\frac{\text{rad}}{\text{s}}$.

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