# 16 Lecture - PHY101

# **Important Subjective**

#### What is damping in oscillations?

**Answer:** Damping is the process of reducing the amplitude of oscillations over time due to some external factors, such as friction or air resistance.

#### What is the equation that describes damped oscillations?

**Answer:** The equation that describes damped oscillations is the damped harmonic oscillator equation, which takes into account the damping force proportional to the velocity of the oscillator.

#### What happens to the amplitude of damped oscillations over time?

**Answer:** The amplitude of damped oscillations decreases exponentially over time.

What are forced oscillations?

Answer: Forced oscillations occur when a periodic external force is applied to a system, and the behavior of the oscillator is affected by the frequency and amplitude of the external force.

What is resonance in forced oscillations?

Answer: Resonance occurs in forced oscillations when the frequency of the external force is equal to the natural frequency of the oscillator, resulting in a large amplitude of oscillation.

#### What are coupled oscillations?

**Answer:** Coupled oscillations occur when two or more oscillators are connected in some way, such that the motion of one oscillator affects the motion of the other(s).

#### What is beating in coupled oscillations?

**Answer:** Beating occurs in coupled oscillations when two oscillators of slightly different frequencies are connected, and the amplitude of the oscillation varies periodically.

#### What is the equation that describes coupled oscillations?

**Answer:** The behavior of a system of coupled oscillators can be described using a set of coupled differential equations, one for each oscillator.

## What is synchronized behavior in coupled oscillations?

**Answer:** Synchronized behavior occurs in coupled oscillations when the oscillators all oscillate with the same frequency and phase.

## Why is the study of oscillations important in science and engineering?

**Answer:** The study of oscillations is important in science and engineering because it helps us understand the behavior of natural systems and design stable and reliable systems that exhibit oscillatory behavior.