Chapters/ Sections will be Covered

Book: Fundamentals of Physics by David Halliday, Jearl Walker, and Robert Resnick

Chapter Title: Oscillations

Sections: Simple Harmonic Motion
The Force Law for Simple Harmonic Motion
Energy in Simple Harmonic Motion

Chapter Title: Waves - I

Sections: Types of Waves, Wavelength and Frequency, Amplitude and Phase, Wavelength and Angular Wave Number, Period, Angular Frequency, and Frequency, The Speed of a Traveling Wave, Wave Equation & Principle of Superposition for Waves, Interference of Waves

Sample Quiz Question: Lecture 19

Which of the following objects creates maximum oscillation?
a) Heavy and good strength object
b) Good strength and light object
c) Light and less strength object
d) Less strength and heavy object

How particle's displacement and acceleration related to each other?
a) Constant linear velocity
b) Constant angular velocity
c) Centripetal acceleration
d) Squared angular frequency

Sample Quiz Question: Lecture 19

What would be the acceleration in simple harmonic motion?
a) Constant
b) Proportional to displacement
c) Proportional to velocity
d) Zero

What is the energy of a simple harmonic oscillator?
a) Continuously increasing
b) Constant
c) Zero
d) Only potential energy

Class Activity: Math Problem #1

A block of mass $M = 680g$ attached to a horizontal spring with force constant $k = 65N/m$ is moving in SHM with amplitude $A_1 = 11cm$. As the block passes through its equilibrium position, a lump of putty of mass $m = 250g$ is dropped from a small height and sticks to it.

(a) Find the new amplitude and period of the motion.

(b) Repeat part (a) if the putty is dropped onto the block when it is at one end of its path.

Probable Final Questions: Lecture 21

How does restoring force influence the acceleration of the simple harmonic oscillation?

Evaluate an expression for the angular frequency and period of a linear oscillator (diagram required).

Compare that how do you distinguish the phenomenon of interference, beats and standing wave using superposition principle.