Physics (New Book) - FSC Part 1 Physics Chapter 7 Short Questions Preparation

Q1. Define driven harmonic oscillator and damped oscillations.

Ans 1: Damped Oscillations: TheOscillations in which the amplitude decreases steadily with time are called damped oscillations.

Driven harmonic oscillator: The physical system undergoing forced vibrations is known as driven harmonic oscillator.

Q2. Can we realize an ideal simple pendulum?

Ans 1: No, we can't realize an ideal simple pendulum. Because an ideal simple pendulum should consist of a heavy but small metallic bob suspended from a frictionless rigid support by means of long, weightless and inextensible string.

Q3. What is slinky spring ?

Ans 1: A large and loose spring coil is called slinky-spring. It can be used to demonstrate the effect of the motion of the source in generating waves in a medium.

Q4. What is sharpness of resonance?

Ans 1: The amplitude s well as its sharpness< both depend upon the damping. Smaller the damping, greater will be the amplitude and more sharp will be the resonance.

Q5. What are damped oscillations?Give some of its applications.

Ans 1: The oscillations in which the amplitude decreases steadily with time are called damped oscillations
For example

- The shock absorber of a car
- Motion of any microscopic system

Q6. Define vibratory motion.

Ans 1: The to and fro motion of a body about a fixed point is called the vibratory or oscillatory motion.

Q7. Describe some common phenomena in which resonance plays an important role.

Ans 1:

- A swing is a good example of mechanical resonance.
- Tuning of the radio is the best example of electrical resonance.

- Another good example of resonance is the heating and cooking of food very efficiently and evenly by microwave oven.

Q8. Explain free and forced oscillations.

Ans 1: Free oscillations; A body is said to be executing free vibrations when it oscillates without the interference of an external force.

Forced oscillations: If an oscillating system is subjected to an external periodic force, then forced vibrations will take place.

- The vibrations of a factory floor caused by the running of heavy machinery is an example of forced vibrations.
- The mass of a vibrating pendulum is struck repeatedly, the forced vibration are produced.

Q9. Define (a) resonance (b) damping

Ans 1: Resonance: When the frequency of the applied force is equal to the natural frequency of simple harmonic oscillator, the periodic amplitude of the motion may become extraordinary large. This phenomenon is called resonance.
Damping: The oscillations in which the amplitude decreases steadily with time are called damped oscillations and this phenomenon is called damping

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Q10. What is driven harmonic oscillator? Give example.

Ans 1: A Physical system under going forced vibrations is called driven harmonic oscillator.
An example of forced vibration is loud music produced by sounding wooden boards of strings instruments.
