Physics - FSC Part 1 Physics Chapter 7 Short Questions Preparation

Q1. How the phenomenon of resonance is produced?

Ans 1: 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.

1. A swing is a good example of mechanical resonance.
2. Tuning a radio is the example of electrical resonance.

Q2. What is driven harmonic oscillator?

Ans 1: The physical system undergoing forced vibrations is known as driven harmonic oscillator.

Q3. What do you understand by forced vibration? Explain with examples.

Ans 1: If an oscillation system is subjected to an external periodic force, then force vibrations will take place.

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

Q4. Why the amplitude of lead bob is greater than pith ball as the bobs having equal size and length set into vibration?

Ans 1: It is because the mass of lead bob is much greater than the very light pith ball, so lead bob can travel to greater extent in air against the resistive and retarding forces. Lead bob has greater inertia.

Q5. 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.

Q6. Describe free vibrations.

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

Q7. Explain relation between total energy, potential energy and kinetic energy for a body in simple harmonic motion.

Ans 1: When the K.E of the mass is maximum, the p.e of the spring is zero. Conversely, when the P.E of the spring is maximum, the K.E of the mass is zero. The interchange occurs continuously from one form to the other but the total energy remains conserved.

Q8. What is the total distance travelled by an object moving with SHM in a time equal to its period, if its amplitude is A?

Ans 1: The total distance travelled by an object moving with SHM in its time period is 4A, where A is amplitude of vibration.

Q9. How a particular station is tuned in radio?

Ans 1: Tuning of a radio is the best example of electrical resonance. When we turn the knob of a radio, to tune a station , we are changing the natural frequency of electrical circuit of receiver, to make it equal to the transmission frequency of the radio station. When the two frequencies match, energy absorption is maximum and this is the only station we hear .

Q10. 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.