

# 21 Lecture - PHY101

## Important Subjective

**What is the difference between transverse waves and longitudinal waves?**

**Answer:** Transverse waves are characterized by particles moving perpendicular to the direction of wave propagation, while longitudinal waves are characterized by particles moving parallel to the direction of wave propagation.

**What is the formula for calculating the speed of a wave?**

**Answer:** The speed of a wave can be calculated using the formula  $v = f\lambda$ , where  $v$  is the speed,  $f$  is the frequency, and  $\lambda$  is the wavelength.

**What is the electromagnetic spectrum?**

**Answer:** The electromagnetic spectrum is the range of all types of electromagnetic radiation, which is divided into several regions including radio waves, microwaves, infrared radiation, visible light, ultraviolet radiation, X-rays, and gamma rays.

**What is wave interference?**

**Answer:** Wave interference occurs when two or more waves interact with each other, resulting in a change in the amplitude of the resulting wave.

**What is constructive interference?**

**Answer:** Constructive interference occurs when two or more waves combine to produce a wave with a larger amplitude than any of the individual waves.

**What is destructive interference?**

**Answer:** Destructive interference occurs when two or more waves combine to produce a wave with a smaller amplitude than any of the individual waves.

**What are standing waves?**

**Answer:** Standing waves occur when two waves of the same frequency and amplitude are traveling in opposite directions and interfere with each other. This results in a wave pattern that appears to be stationary, with points along the wave that do not move.

**What is the difference between mechanical waves and electromagnetic waves?**

**Answer:** Mechanical waves require a medium to travel through, while electromagnetic waves can travel through a vacuum.

**What is the frequency of a wave?**

**Answer:** The frequency of a wave is the number of waves that pass a point in one second.

**What is the wavelength of a wave?**

**Answer:** The wavelength of a wave is the distance between two consecutive points on a wave that are in phase.