33 Lecture - PHY101

Important Subjective

What are electromagnetic waves?

Answer: Electromagnetic waves are transverse waves consisting of electric and magnetic fields that propagate through space at the speed of light.

What is the relationship between electric and magnetic fields in electromagnetic waves?

Answer: In electromagnetic waves, the electric and magnetic fields are perpendicular to each other and to the direction of wave propagation.

What is the electromagnetic spectrum?

Answer: The electromagnetic spectrum is the range of all possible frequencies of electromagnetic radiation.

How are the different types of electromagnetic waves distinguished from each other?

Answer: The different types of electromagnetic waves are distinguished from each other based on their frequency, wavelength, and energy.

How are electromagnetic waves produced?

Answer: Electromagnetic waves are produced by oscillating charges or currents.

What are some common applications of electromagnetic waves?

Answer: Electromagnetic waves are used in a wide range of applications, including communication (radio, television, and cell phones), medical imaging (MRI), cooking (microwave ovens), and many others.

How do electromagnetic waves travel through a vacuum?

Answer: Electromagnetic waves can travel through a vacuum because they do not require a medium for propagation.

What is the speed of electromagnetic waves in a vacuum?

Answer: The speed of electromagnetic waves in a vacuum is approximately 3.00 x 10^8 m/s.

What is the relationship between the frequency and energy of an electromagnetic wave?

Answer: The energy of an electromagnetic wave is directly proportional to its frequency.

How do electromagnetic waves interact with matter?

Answer: Electromagnetic waves can be absorbed, reflected, or transmitted by matter, depending on the properties of the material and the frequency of the wave.