UNIT 4 PHYSICS INDEX

PROPERTIES OF MECHANICAL WAVES

Course Requirements

Notations Used in this Section

Mechanical Waves

Transverse Waves

Longitudinal Waves

Some Important Concepts

Graphs

1, 2 & 3-Dimensional Waves

Rays and Wavefronts

Reflection, Absorption and Transmission

Refraction

Reflection in Strings and Slinkies

Diffraction

Superposition and Interference

Interference Effects

The Doppler Effect

Resonance

Standing Waves

Standing Waves in Strings Fixed at Both Ends

Standing Waves in Strings Fixed at One End

Additional Questions

LIGHT AS A WAVE

Key Knowledge

Huygen's Wave Model

Electromagnetic Radiation: A Further Wave Model for Light Polarisation of Light Objects and Light Colour Refraction Snell's Law Some Consequences of Snell's Law **Total Internal Reflection** Colour Dispersion in Prisms Colour Dispersion in Lenses **Additional Questions HOW ARE LIGHT AND MATTER SIMILAR?** Key Knowledge Models for Light Prior Knowledge **Diffraction and Images** The Photoelectric Effect Findings from the Photoelectric Effect Experiments **Photon Momentum** Wave - Particle Duality **Matter Waves Quantised Atomic Energy Levels Absorption Spectra Electrons as Standing Waves** More Slit Experiments **Quantum Physics** Heisenberg's Uncertainty Principle

Classical versus Quantum

Production of Light