

Lecture 12.

Lecture objectives.

- To understand the definition of a wave: a time-varying disturbance which propagates in space
- To appreciate some basic concepts: transverse and longitudinal waves, plane and spherical waves, polarization etc.
- To learn some basic wave definitions: amplitude, phase, wavelength, frequency, wavenumber (wavevector), angular frequency.
- To have an understanding of *phase velocity* – its definition and derivation.
- To understand the difference between particle velocity and phase velocity.

Post-lecture tasks.

- Read Young chapter 19 (Mechanical waves).
- Carefully follow the worked question “example 19-2”.
- A certain transverse wave is described by;

$$Y(x, t) = (6.50\text{mm})\sin 2\pi\left(\frac{t}{0.0360\text{s}} - \frac{x}{28.0\text{cm}}\right)$$

Determine the wave's; (a) amplitude; (b) wavelength; (c) frequency; (d) phase velocity; (e) direction of propagation.

- Attempt questions 19-31 and 19-32 in Young (Ch.19).