Chapter 33, Electromagnetic Waves (sections 33.1 – 33.5)

Properties of Electromagnetic (E/M) waves:

1) E/M waves travel at the speed of light.

2) E/M waves are transverse waves since the electric and magnetic fields are perpendicular to the direction of propagation of the wave and to each other.

3) The ratio of the electric field to the magnetic field in an electromagnetic wave equals the speed of light.

4) E/M waves carry both energy and momentum which can be delivered to a surface.

Examples:

1)What inductance must be connected to a 17 pF capacitor in an LC oscillator capable of generating 550 nm (i.e. visible) E/M waves? [5.01×10^{-21} H]

2) You are 2 meters from an isotropic (equal intensity in all directions) point source of light. If the source power is 200 Watts, what is the amplitude of the E & B Field in the E/M wave.