Name:

Date:

Final Review: Waves II

Multiple Choice

1. If you triple the frequency of a vibrating object, its period will
   1. be triple the original frequency
   2. be a third of the original frequency
   3. be nine times the original frequency
   4. be one ninth of the original frequency
2. You flick one glass and the glass next to it starts vibrating at the same frequency. This phenomenon is an example of
   1. An echo
   2. Sound refraction
   3. Beats
   4. Resonance
   5. Interference
3. Two tuning forks are played simultaneously. The first tuning fork is of an unknown frequency; the second vibrates at 440 Hz. If you hear 3 beats, you can surmise that frequency of the first tuning fork is
   1. 3 Hz
   2. 437 Hz
   3. 443 Hz
   4. Either 437 Hz, or 443 Hz
4. Mechanical waves cannot travel through
   1. A vacuum
   2. Water
   3. Steel
   4. Sound can travel through all of the above.
5. Which of the following will move the fastest through space?
   1. microwaves
   2. UV light
   3. Gamma rays
   4. They all move at the speed of light through a vacuum
6. Which wave will have the greatest energy?
   1. A gamma ray
   2. Ultraviolet light
   3. Visible light
   4. They all will have the same amount of energy

Free Response

1. Amusing yourself on a family vaca, you shout in a bat cave and listen for the echo. Given that the speed of sound in the cave is 343 m/s, and it takes 2.1 seconds for the sound to return to you. How far away is the wall of the bat cave?
2. A sound wave travels at 1550 m/s in a solid substance. If the frequency of the wave is 900 Hz, what is the wavelength of the wave?
3. The index of refraction for a substance is 1.5 1. What will be the speed of a light ray as it travels through this medium?
4. A wave has a wavelength of 2.1 m. What is the energy of this wave?
5. Compare and Contrast mechanical and electromagnetic waves.