**PREFLIGHTS         LESSON 20 – REFLECTION AND TRANSMISSION AT
                     NORMAL/OBLIQUE INCIDENCE**

**LEARNING OBJECTIVES:**
1. **Describe the process for determining what occurs when a plane wave encounters an interface.**
2. **Solve for the reflected and transmitted waves when a plane wave encounters an interface.**

**1)** A beam of light goes from air ($n = 1.00$) to water ($n = 1.33$), hitting the surface of the water at normal incidence. What will be the phase of the reflected wave relative to the incident? You can assume the permeability $\mu$ is equal to $\mu_0$ for both air and water.

**2)** When a beam of light hits a surface at an oblique angle, the phase of its reflected wave depends on the angle that it hits as well as the indices of refraction of the materials. For light going from air to water, at what angle $\theta$ will the phase of the reflected wave change relative to the incident wave? You can assume the light is polarized parallel to the plane of incidence.

**3)** What is Brewster's angle for light going from air to water? How does that compare to your previous answer?

**4)** How do polarized sunglasses work?

**5)** ***Note: This is a review question from Chapter 8.*** Describe a situation in electromagnetics where Newton's 3rd law does work. Describe a situation where Newton's 3rd law does not work.

**6)** What did you find difficult or confusing in the pre-class work? If nothing was difficult or confusing, tell me what you found most interesting. Please be as specific as possible.

**7)** Document whatever help you received on the preclass work.