**PREFLIGHTS   LESSON 17 – ELECTROMAGNETIC WAVES IN A VACUUM**

LEARNING OBJECTIVES:
  1. **Determine how Maxwell's equations in vacuum lead to electromagnetic waves.**
  2. **Describe the properties of electromagnetic plane waves.**

1) Equation 9.41 in Griffiths seems to imply that the wave equations for electric and magnetic fields are independent of each other. However, Equation 9.49 shows that the electric and magnetic parts of an electromagnetic wave are closely linked. How is the link between the electric and magnetic parts of an electromagnetic wave determined?

2) On a separate sheet of paper, do Problem 9.9 from Griffiths. What do you get for the Cartesian components of **k** in parts a. and b.?

3) *Note: This is a review question from Chapter 7.* In a popular demonstration of induced emf, a lightbulb is connected across a large inductor in an *RL* circuit, as shown in the picture. When the switch is opened, the bulb flashes brightly and then goes out. Why?
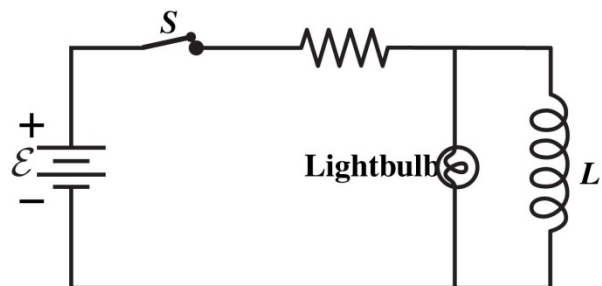
4) What did you find difficult or confusing in the pre-class work? If nothing was difficult or confusing, tell me what you found most interesting. Please be as specific as possible.

5) Document whatever help you received on the preclass work.