<u>PREFLIGHTS</u>   **LESSON 6 – MAXWELL'S EQUATIONS, BOUNDARY
                         CONDITIONS**

LEARNING OBJECTIVE:
Describe and use Maxwell's equations in vacuum and in matter.

1) What are two reasons that Ampère's law had to be modified for non-steady currents?

2) Consider Problem 7.31 in Griffiths. Why do you think that the problem asks specifically about the field at $s < a$? Why is that more interesting and/or illustrative than the field at $s \geq a$?

3) Describe, in words, how you would solve Problem 7.37 in Griffiths.

4) *Note: This is a review question from Physics 361.* A current distribution has a magnetic vector potential given by (in cylindrical coordinates) $\vec{A} = -\frac{\mu_0 I}{2\pi} \ln\left(\frac{s}{R_0}\right) \hat{z}$ where R_0 is a constant. Describe the current distribution that could create this vector potential. (*Hint: Determine the magnetic field, and try to figure out the current distribution from that.*)

5) 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.

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