PREFLIGHTS **LESSON 16 – REFLECTION AND TRANSMISSION, POLARIZATION**

LEARNING OBJECTIVES:

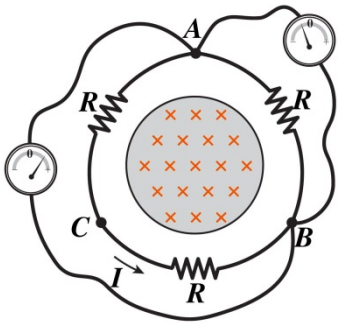
1. **Describe the mechanics of wave reflection and transmission.**
2. **Define the concept of polarization.**

1) On page 372, Griffiths states, without any apparent justification, that the phase angles of incident, reflected, and transmitted waves can only be related in two ways:
$\delta_R = \delta_T = \delta_I$ (if $v_2 > v_1$)
$\delta_R + \pi = \delta_T = \delta_I$ (if $v_2 < v_1$)
Can you think of any reasons why these two relationships are the only ones possible for the phase angles?

2) What is the answer to Problem 9.6a? I know that it's difficult to write math equations into the Preflight text entry field, so do your best to describe the math equation that is the answer to Problem 9.6a. *Hint: Compare Figure 9.6a to Figure 9.2*.

3) Consider a wave propagating down the *z*-axis. What are the possible directions of polarization of the wave if it is (a) a longitudinal wave, (b) transverse wave?

4) ***Note: This is a review question from Chapter 7.*** The figure shows three resistors with resistance *R* surrounding an infinitely long solenoid with a changing magnetic field; the resulting induced electric field drives a current *I* counterclockwise, as shown. Two identical voltmeters are connected to the *same* points *A* and *B*. What does each read in terms of the given variables? Explain any apparent contradiction.



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.