SCORE SHEET
Electromagnetic Induction
Lab 8
15 points = 100%
Submitted by:

Primary Concept

(1 Point) What is created within nonconductive space and or nonconductive materials when the magnetic field occupying that same space or material begins to change in intensity?

(1 Point) Regarding this above mentioned created item, how is its magnitude affected by the rate of the change of the intensity of the aforementioned magnetic field?

Lenz's Law

(1 Point) What is generated within a conductive material that forms a conducting path, when the magnetic field (occupying the same space as that path) begins to change in intensity?

(1 Point) How does this aforementioned conductive path respond? Does it fight this magnetic change by creating an opposing magnetic change of its own, or does it not respond to this change altogether?

Transformer & Transformer Law

(1 Point) What two word phrase succinctly describes how an electrical transformer works?

(1 Point) Attach a picture of a telephone pole transformer.

(1 Point) Attach a picture of an electrical substation transformer.

(1 Point) What is the main purpose of an electrical substation transformer? (Look this up).

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(1 Point) The telephone pole transformer on your street, near your house, STEPS DOWN the very high voltage sent out by an electrical substation. Commonly, this step down is from 7200 volts AC RMS to 120 volts AC RMS. So, if your hair dryer is pulling 10 amperes out of the 120 volt AC electrical outlet in your house, what current needs to flow into the 7200 volt side of that telephone pole stepdown transformer to make those 10 amperes available to operate your hair dryer, on the 120 volt side of that transformer? Show your math.

(1 Point) Why not just send the 7200 volts AC RMS directly to the house from the electrical substation and forget about using the telephone pole stepdown transformer?

(1 Point) Why not just send 120 volts AC RMS directly to the house from an electrical substation and forget about using the telephone pole stepdown transformer?

Transformer Computer Simulation

Click the following link to perform an experiment and answer the questions concerning a computer simulated transformer.

https://archive.cnx.org/specials/70b14c10-ae73-11e5-8eb2-b7fbe0c5c7a4/faraday/#sim-transformer

Question 1

In this computer simulation for a TRANSFORMER, select the DC battery as the Electromagnet's Current Source, and also select the Light Bulb Indicator for the Pickup Coil.

a) (1 Point) For this specific simulation setup what must you do to briefly light the Light Bulb Indicator on the Pickup Coil?
b) (1 Point) Why?

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Question 2

In this computer simulation for a TRANSFORMER, select the AC Current Supply as the Electromagnet's Current Source, and also select the Light Bulb Indicator for the Pickup Coil. Adjust the AC Current Supply to 100% amplitude. Move the Pickup coil directly in front of the Electromagnet; close enough to get the Indicator Lamp to light.

a) (1 Point) For this specific simulation setup, which lights up the indicator lamp brighter, a fast changing AC Current Supply or a slow changing AC Current Supply? (Adjust the AC Current Supply's frequency).
b) (1 Point) Why?