

ANSWER KEY — Faraday's Electromagnetic Lab II: Pickup Coil, Transformer, and Generator

Answer the following questions on a separate sheet. The sim is available at phet.colorado.edu.

Part A: Pickup Coil

1. Run the PhET sim, "Faraday's Electromagnetic Lab." Maximize the window. Click the Pickup Coil tab. You should see a bar magnet, a compass needle grid, and a coil attached to a light bulb.

2. Describe the most effective way of using the magnet and the coil to light the bulb if
a. the coil cannot be moved.

Move the magnet in and out of the coil.

b. the magnet cannot be moved.

Move the coil over and off the magnet.

3. Rank the arrangements and motions shown below from most effective to least effective in terms of lighting the bulb, allowing for ties. For example, if A were most effective, B were least effective, and C and D were equivalent to one another, the ranking would be $A > C = D > B$.



$C > B > A = D$ [$C > B > D > A$ and $C > B > D > A$ are acceptable]

4. Move the bar magnet through the coil and observe the motion of the electrons in the forward arc of the coil loops. Report the correlations of magnet motion and electron motion.



a. Magnet approaches from the left, north pole first; electrons move downward.

b. Magnet departs to the right, south end last; electrons move upward.



c. Magnet approaches from the right, south pole first; electrons move downward.

d. Magnet departs to the left, north end last; electrons move upward.

Faraday Induction Lab Answer Key

Peipei Pang



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