

Build a Shake Flashlight Worksheet

Observations

Draw a diagram of the shake flashlight, labeling the following major components: Capacitor, diodes, LED, magnets, resistor, switch, wire coil.

Discussion Questions

1. Describe the difference in the LED when the flashlight is shaken slowly versus rapidly. Explain in terms of Faraday's law.

2. Why are diodes used in this circuit?

3. What would happen if the capacitor were removed from the circuit and the diodes were connected directly to the LED and the switch?

4. Shaking the flashlight produces _____ energy, which is converted into _____ energy in the coils as the magnet falls through.
 The energy of the current flowing through the wire coils is stored as _____ energy in the capacitor.
 When the switch is closed, the stored energy in the capacitor is converted to _____ energy in the LED.
5. Explain how each of the following changes would affect the flashlight performance
 - a. Adding more coils to the wire:

 - b. Using a stronger magnet:

 - c. Shaking the flashlight faster: