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Electricity from sea waves

Worksheet

1. In Activity 1, when the induced electric current passes through the LED, it flashes. Why does this happen?

_____
_____
_____

2. How would you connect two LEDs to the ends of the coil in parallel with each other, so that they:

   A. Light up and turn off simultaneously?

   _____
   _____

   B. Light up and turn off alternately?

   _____
   _____

Construct and test the circuit layouts you suggested.

3. What energy transformations occur during the operation of the device?

Fill in the blanks in the following sentence:

In the experimental setup, the _____energy of water waves is converted into _____ energy of the system (body–metal rod–magnet), which is then converted into _____ energy in the coil.

4. By creating waves in water in Activity 2, charge the capacitor until the potential difference across its plates is V = 4 V. What is the stored potential energy of the capacitor if its capacitance is C = 10 000 μF?

_____
_____

5. Complete the table:

LED	Emission voltage (V)
1. LED (red)	
2. LED (yellow)	
3. LED (green)	
4. LED (white)	
5. LED	
6. LED	

6. During the light emission by the LED, the voltmeter shows a nearly constant voltage across the shared terminals of the capacitor and the LED. When the LED is removed, the voltage reading starts to increase. Can you explain why this happens?

_____
_____
_____
_____
_____
_____
_____