
Introduction to Transducers

Final Assessment

Instructor Guide

Notes to the Instructor

This is the post-assessment or final assessment (FA) for the *Introduction to Transducers Learning Module*.

Introduction to Transducers is a Learning Module consisting of the following units:

- Knowledge Probe (Pre-assessment)
- Introduction to Transducers
- Activity: What are Transducers?
- **Final Assessment**

This companion Instructor Guide (IG) contains both the questions and answers for the assessment questions. The answers to the questions are indicated in **red**.

Introduction

The purpose of this assessment is to determine your understanding of transducers now that you have completed the *Introduction to Transducers Learning Module*.

1. An incandescent light bulb is a device that converts heat energy into electrical energy. A incandescent light bulb is a(n)
 - a. sensor
 - b. transducer**
 - c. actuator
 - d. sensor and transducer
 - e. transducer and actuator
2. Which of the following BEST describes a transducer? A device that
 - a. quantifies a change between an input and output
 - b. converts one form of energy to another form of energy**
 - c. senses a change in its input and produces a readable output
 - d. converts a change on the input into a proportional movement

3. Which of the following devices is both a transducer and an actuator?
 - a. Solar cell
 - b. Thermocouple gauge
 - c. **Electric motor**
 - d. Fuel cell

4. Which of the following BEST describes an electrochemical transducer?
 - a. Converts electrical energy into chemical energy seen either as a change or a reaction.
 - b. Converts motion or convection within a chemical into electrical energy.
 - c. Converts electrical energy into motion or convection within a chemical.
 - d. **Converts the energy from a chemical change or reaction to electrical energy.**

5. Galvanometers and generators are both what type of transducer?
 - a. Electrostatic
 - b. **Electromechanical**
 - c. Thermoelectric
 - d. Electroacoustic

6. Which of the following devices is an electrostatic transducer?
 - a. Cathode ray tube (CRT)
 - b. Incandescent light bulb
 - c. **Comb drive**
 - d. Accelerometer

7. A strain gauge is a transducer that converts
 - a. **mechanical stress or motion into electrical energy**
 - b. electrical energy into motion or mechanical stress
 - c. mechanical stress or motion into heat
 - d. heat into motion or mechanical stress

8. One solution for long-lasting batteries in the micro-scale is to build a battery that consists of a
 - a. two-dimensional array of stacked, paper-thin flat electrodes.
 - b. two-dimensional array of low aspect ratio stacked carbon posts.
 - c. three-dimensional array of low aspect ratio carbon posts.
 - d. **three-dimensional array of high aspect ratio carbon posts.**

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