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# IoT Fundamental: Connecting Things

**Started on** Saturday, 26 November 2022, 6:42 PM

**State** Finished

**Completed on** Saturday, 26 November 2022, 6:49 PM

**Time taken** 6 mins 47 secs

**Marks** 38.00/38.00

**Grade** 100.00 out of 100.00

## Question 1

Correct

Mark 2.00 out of 2.00

Which tool has the ability to measure the signals that travel from sensors to microcontrollers as a function of time?

Select one:

- ☐ multimeter
- ☐ clamp meter
- ☒ oscilloscope
- ☐ wattmeter



Refer to curriculum topic: 2.1.2

The oscilloscope assists in visualizing and measuring voltage as a function of time in an output of a waveform. The oscilloscope is used to monitor and measure the signals that travel from sensors to microcontrollers and from single board computers back to actuators.

The correct answer is: oscilloscope

## Question 2

Correct

Mark 2.00 out of 2.00

How are electronic sensors used in digitizing the natural world?

Select one:

- ☒ They measure a physical event and translate it into electrical signals.
- ☐ They measure voltage as a function of time and output a graph.
- ☐ They convert digital events into analog representations.
- ☐ They measure electrical signals sent from a specific computer port.



Refer to curriculum topic: 2.1.1

Electronic sensors are used to measure a physical event and translate it into an electrical signal. This digital signal can be received by a computer that is programmed to utilize this input.

The correct answer is: They measure a physical event and translate it into electrical signals.

Question 3

Correct

Mark 2.00 out of 2.00

Match the unit of measurement with the associated electronic concept. (Not all options are used.)

ohm	resistance	✓
volt	voltage	✓
watt	power	✓
ampere	current	✓

Refer to curriculum topic: 2.1.1

The correct answer is: ohm → resistance, volt → voltage, watt → power, ampere → current

Question 4

Correct

Mark 2.00 out of 2.00

What file extension is used when saving sketches written with the Arduino IDE?

Select one:

- ☐ .txt
- ☐ .doc
- ☒ .ino
- ☐ .exe



Refer to curriculum topic: 2.2.2

The file extension .ino is used when saving sketches that are written using the Arduino IDE.

The correct answer is: .ino

Question 5

Correct

Mark 2.00 out of 2.00

Match the definitions with the appropriate steps of the design phase of a printed circuit board.

finding possible vendors and material costs	research	✓
the initial idea	concept	✓
symbolic representations of the circuit and components	circuit design	✓

Refer to curriculum topic: 2.1.3

The correct answer is: finding possible vendors and material costs → research, the initial idea → concept, symbolic representations of the circuit and components → circuit design

## Question 6

Correct

Mark 2.00 out of 2.00

What is a feature of microcontrollers that makes them well-suited for use in the Internet of things?

Select one:

- ☐ large data storage capacity
- ☒ low power requirements
- ☐ multiple processor cores
- ☐ large form factor



Refer to curriculum topic: 2.2.1

Microcontrollers are small form factor, low power computer platforms that are well suited to connect things such as sensors, motors, and LEDs.

The correct answer is: low power requirements

## Question 7

Correct

Mark 2.00 out of 2.00

What type of electrical circuit stops working when a single electronic component is damaged or removed?

Select one:

- ☐ nonlinear
- ☐ parallel
- ☒ series
- ☐ linear



Refer to curriculum topic: 2.1.2

In a series circuit, electricity will only have a single path to follow and must transverse all components. If any of these components fail and block the flow of electricity, the entire circuit stops working.

The correct answer is: series

## Question 8

Correct

Mark 2.00 out of 2.00

Which tool measures the ratio of voltage to current across an object?

Select one:

- ☒ multimeter
- ☐ clamp meter
- ☐ oscilloscope
- ☐ wattmeter



Refer to curriculum topic: 2.1.1

A multimeter can be utilized to measure multiple electrical factors including voltage, current, and resistance. Resistance is the opposition to the flow of charged particles and is a ratio of voltage to current.

The correct answer is: multimeter

## Question 9

Correct

Mark 2.00 out of 2.00

Match the term to its definition.

voltage (V)	electrical potential difference, "electrical pressure"	✓
impedance (Z)	opposition to changes in voltage or current due to electrical and magnetic interactions	✓
resistance (R)	opposition to flow of charged particles	✓
power (P)	electrical energy per unit time generated or dissipated	✓
current (I)	flow of charged particles; often electrons	✓

Refer to curriculum topic: 2.1.1

The correct answer is: voltage (V) → electrical potential difference, "electrical pressure", impedance (Z) → opposition to changes in voltage or current due to electrical and magnetic interactions, resistance (R) → opposition to flow of charged particles, power (P) → electrical energy per unit time generated or dissipated, current (I) → flow of charged particles; often electrons

## Question 10

Correct

Mark 2.00 out of 2.00

What is another term for an electrically controlled mechanical switch?

Select one:

- ☐ microcontroller
- ☐ actuator
- ☐ sensor
- ☒ relay

✓

Refer to curriculum topic: 2.2.4

Another term for an electrically controlled switch is a relay.

The correct answer is: relay

## Question 11

Correct

Mark 2.00 out of 2.00

What type of circuit provides multiple paths for current flow so that the failure of a single component will not affect the operation of the entire circuit?

Select one:

- ☐ series
- ☒ parallel
- ☐ linear
- ☐ nonlinear

✓

Refer to curriculum topic: 2.1.2

A parallel circuit provides connected components with their own share of current.

The correct answer is: parallel

## Question 12

Correct

Mark 2.00 out of 2.00

What functions do sensors perform in the digitized world?

Select one:

- ☐ creating physical movement
- ☒ detecting events in the physical environment
- ☐ performing physical actions
- ☐ reducing current flow through a circuit



Refer to curriculum topic: 2.2.3

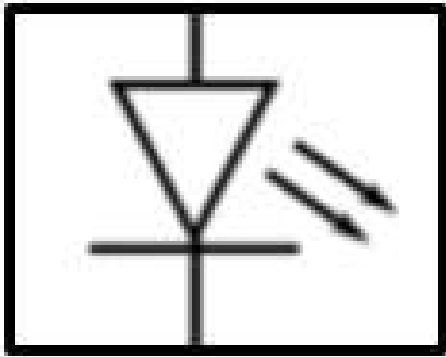
Sensors take the measurement of events in the physical environment as input and transform the measurement into electrical or optical output.

The correct answer is: detecting events in the physical environment

## Question 13

Correct

Mark 2.00 out of 2.00



Refer to the exhibit. What type of component is represented if it appeared on an electronic schematic?

Select one:

- ☐ inductor
- ☐ resistor
- ☐ capacitor
- ☒ LED



Refer to curriculum topic: 2.1.1

A light-emitting diode (LED) is symbolized by a triangle with a line segment on one end and two arrows pointing outward. This is a symbol used in schematic diagrams of electrical circuits

The correct answer is: LED

## Question 14

Correct

Mark 2.00 out of 2.00

What is direct current?

Select one:

- ☐ the type of current that is supplied to the home by power utilities
- ☐ the type of electric current in which the current flow periodically reverses direction
- ☒ the type of current that is produced by batteries, computer power supplies, and solar cells
- ☐ the type of current that is represented by a sine wave



Refer to curriculum topic: 2.1.2

Direct current is the flow of electricity that does not change direction. Direct current is used by computers and other digital devices. It is created by batteries, DC power supplies, and solar panels. Alternating current is the flow of electricity that reverses direction periodically. Because of this, its representation is a sine wave. It is delivered to homes and businesses by power utilities.

The correct answer is: the type of current that is produced by batteries, computer power supplies, and solar cells

## Question 15

Correct

Mark 2.00 out of 2.00

What type of component has no effect on gain or control over voltage or current?

Select one:

- ☐ linear
- ☐ nonlinear
- ☒ passive
- ☐ active



Refer to curriculum topic: 2.1.2

A passive component provides no gain or control over voltage or current. These are two-terminal components that include resistors, capacitors, inductors and memristors.

The correct answer is: passive

## Question 16

Correct

Mark 2.00 out of 2.00

What type of device is able to create physical movement?

Select one:

- ☒ actuator
- ☐ sensor
- ☐ diode
- ☐ resistor



Refer to curriculum topic: 2.2.4

Actuators are a type of device that is used to produce physical movement.

The correct answer is: actuator

## Question 17

Correct

Mark 2.00 out of 2.00



Refer to the exhibit. What is used to limit the amount of current that flows through the circuit?

Select one:

- ☐ inductor
- ☒ resistor
- ☐ capacitor
- ☐ LED



Refer to curriculum topic: 2.1.1

A resistor is placed in a circuit to limit the amount of current that flows through the circuit.

The correct answer is: resistor

## Question 18

Correct

Mark 2.00 out of 2.00

Which three items can serve as inputs to a microcontroller unit such as an Arduino? (Choose three.)

Select one or more:

- ☒ a sensor
- ☐ an LED
- ☒ a pushbutton
- ☒ a Twitter message
- ☐ an actuator
- ☐ a relay



Refer to curriculum topic: 2.2.1

Microcontroller units, such as the Arduino, can be set up to monitor and respond to events. The events serve as inputs to the microcontroller. Examples of these events are a change in the amount of light detected by a light sensor, the press of a pushbutton, or receiving an Internet message, such as a tweet from Twitter.

The correct answers are: a sensor, a pushbutton, a Twitter message

## Question 19

Correct

Mark 2.00 out of 2.00

What software package is commonly used to create programs for the Arduino?

Select one:

- ☒ Arduino IDE
- ☐ Packet Tracer
- ☐ SparkFun
- ☐ RedBoard



Refer to curriculum topic: 2.2.2

The Arduino IDE is a free software package that can be downloaded from the Arduino web site. It includes software and drivers required to interact with the Arduino board.

The correct answer is: Arduino IDE

[◀ Chapter 2 Terms and Concepts Practice](#)[Read Chapter 3: Software is Everywhere ▶](#)

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