Glossary

accuracy The degree to which a measured value represents the true or accepted value of a quantity.

admittance (*Y*) A measure of the ability of a reactive circuit to permit current; the reciprocal of impedance. The unit is siemens (S).

alternator An ac generator that converts energy of motion into electrical energy.

ammeter An electrical instrument used to measure current.

ampere (A) The unit of electrical current.

ampere-hour (Ah) rating A capacity rating for batteries determined by multiplying the current (A) times the length of time (h) a battery can deliver that current to a load.

ampere-turn The current in a single loop (turn) of wire.

amplitude The maximum value of a voltage or current measured from the mean.

angular velocity The rotational rate of a phasor which is related to the frequency of the sine wave that the phasor represents.

anode The terminal of a polarized device that electrons flow from. For a battery that is supplying current, this is the negative terminal; for a diode, it is the positive terminal.

apparent power The phasor combination of resistive power (true power) and reactive power. The unit is volt-ampere (VA).

apparent power rating The method of rating transformers in which the power capability is expressed in volt-amperes (VA).

armature The power-producing coil in an alternator, generator, or motor. In dc generators, the armature is the rotor, but in alternators it can be either the rotor or the stator. In motors, the armature is the rotor.

atom The smallest particle of an element possessing the unique characteristics of that element.

atomic number The number of protons in a nucleus.

attenuation A reduction of the output signal compared to the input signal, resulting in a ratio with a value of less than 1 for the output voltage to the input voltage of a circuit.

autotransformer A transformer in which the primary and secondary are in a single winding.

average value The average of a sine wave over one half-cycle. It is 0.637 times the peak value.

AWG American wire gauge; a standardization based on wire diameter.

back emf (electromotive force) A voltage developed across a spinning armature that opposes the original applied voltage.

balun A type of transformer used to convert a balanced line (such as twisted pair wiring) to an unbalanced line (such as coaxial cable) or vice-versa.

balanced bridge A bridge circuit that is in the balanced state as indicated by 0 V across the output.

balanced load A condition in a three-phase system where all the load currents are equal and the neutral current is zero.

band-pass filter A filter that passes a range of frequencies lying between two critical frequencies and rejects frequencies above and below that range.

band-stop filter A filter that rejects a range of frequencies lying between two critical frequencies and passes frequencies above and below that range.

bandwidth The range of frequencies for which the current (or output voltage) is equal to or greater than 70.7% of its value at the resonant frequency that is considered to be passed by a filter.

baseline The normal level of a pulse waveform; the voltage level in the absence of a pulse.

battery An energy source that uses a chemical reaction to convert chemical energy into electrical energy.

bias The application of a dc voltage to an electronic device to produce a desired mode of operation.

bleeder current The current left after the total load current is subtracted from the total current into the circuit.

Bode plot A frequency response curve for a filter or circuit. The Bode magnitude plot is a graph of the ratio of V_{out}/V_{in} in dB plotted against frequency, which is plotted on a logarithmic scale. The Bode phase plot is the ratio of the output phase to the input phase expressed in angular units (typically degrees) plotted against frequency.

branch (1) A current path in a parallel circuit (2) A current path that connects two nodes.

branch current The actual current in a branch.

branch current method An analysis method that relies on Ohm's law and Kirchhoff's laws to find unknown currents in a circuit.

capacitance The ability of a capacitor to store electrical charge.

capacitive reactance The opposition of a capacitor to sinusoidal current. The unit is ohm (Ω).

capacitive susceptance (B_C) The ability of a capacitor to permit current; the reciprocal of capacitive reactance. The unit is siemens (S).

capacitor An electrical device consisting of two conductive plates separated by an insulating material and possessing the property of capacitance.

cathode The terminal of a polarized device that electrons flow to. For a battery that is supplying current, this is the positive terminal; for a diode, it is the negative terminal.

center frequency (f_0) The resonant frequency of a bandpass or band-stop filter.

center tap (CT) A connection at the midpoint of a winding in a transformer.

charge An electrical property of matter that exists because of an excess or a deficiency of electrons. Charge can be either positive or negative.

choke A type of inductor used to block or choke off high frequencies.

circuit An interconnection of electrical components designed to produce a desired result. A basic circuit consists of a source, a load, and an interconnecting current path.

circuit breaker A resettable protective device used for interrupting excessive current in an electric circuit.

circular mil (CM) A unit of the cross-sectional area of a wire.

closed circuit A circuit with a complete current path.

coefficient The constant number that appears in front of a variable.

coefficient of coupling (k) A constant associated with transformers that is the ratio of secondary magnetic flux to primary magnetic flux. The ideal value of 1 indicates that all the flux in the primary winding is coupled into the secondary winding.

common Reference ground.

complex conjugates Two complex numbers that have identical real parts and equal magnitude but oppositely signed imaginary parts.

complex plane An area consisting of four quadrants on which a quantity containing both magnitude and direction can be represented.

conductance (G) The ability of a circuit to allow current; the reciprocal of resistance. The unit is siemens (S).

conductor A material in which electric current is easily established. An example is copper.

contactor An electrically controlled switch that functions like a relay but is designed to switch high currents (15 A or more) to a load.

core The physical structure around which the winding of an inductor is formed. The core material influences the electromagnetic characteristics of the inductor. Also, the inner shells of an atom.

coulomb (C) The unit of electrical charge; the total charge possessed by 6.25×10^{18} electrons.

Coulomb's law A law that states a force exists between two charged bodies that is directly proportional to the product of the two charges and inversely proportional to the square of the distance between them.

critical frequency (f_c) The frequency at which a filter's output voltage is 70.7% of the maximum.

current The rate of flow of charge (electrons).

current divider A parallel circuit in which the currents divide inversely proportional to the parallel branch resistances.

current source A device that provides a constant current for a varying load.

cutoff frequency (f_c) The frequency at which the output voltage of a filter is 70.7% of the maximum output voltage; another term for critical frequency.

cycle One repetition of a periodic waveform.

DC component The average value of a pulse waveform.

decade A tenfold change in frequency or other parameter.

decibel A logarithmic measurement of the ratio of one power to another or one voltage to another, which can be used to express the input-to-output relationship of a filter.

degree The unit of angular measure corresponding to 1/360 of a complete revolution.

determinant The solution of a matrix consisting of an array of coefficients and constants for a set of simultaneous equations.

dielectric The insulating material between the plates of a capacitor.

dielectric constant A measure of the ability of a dielectric material to establish an electric field.

dielectric strength A measure of the ability of a dielectric material to withstand voltage without breaking down.

differentiator A circuit producing an output that approaches the mathematical derivative of the input.

digital multimeter An electronic instrument that combines meters for the measurement of voltage, current, and resistance.

DMM Digital multimeter; an electronic instrument that combines meters for measurement of voltage, current, and resistance.

duty cycle A characteristic of a pulse waveform that indicates the percentage of time that a pulse is present during a cycle; the ratio of pulse width to period, expressed as either a fraction or as a percentage.

effective value A measure of the heating effect of a sine wave; also known as the rms (root mean square) value.

efficiency The ratio of the output power delivered to a load to the input power to a circuit, usually expressed as a percentage.

electrical Related to the use of electrical voltage and current to achieve desired results.

electrical isolation The condition in which two circuits have no common conductive path between them.

electrical shock The physical sensation resulting from electrical current through the body.

electromagnetic field A formation of a group of magnetic lines of force surrounding a conductor created by electrical current in the conductor.

electromagnetism The production of a magnetic field by current in a conductor.

electromagnetic induction The phenomenon or process by which a voltage is produced in a conductor when there is relative motion between the conductor and a magnetic or electromagnetic field.

electron A basic particle of electrical charge in matter. The electron possesses negative charge.

electronic Related to the movement and control of free electrons in semiconductors or vacuum devices.

electronic power supply A voltage source that converts the ac voltage from a wall outlet to a constant (dc) voltage at a level suitable for electronic components.

element One of the unique substances that make up the known universe. Each element is characterized by a unique atomic structure.

energy The ability to do work.

engineering notation A system for representing any number as a one-, two-, or three-digit number times a power of ten with an exponent that is a multiple of 3.

equivalent circuit A circuit that produces the same voltage and current to a given load as the original circuit that it replaces.

error The difference between the true or best-accepted value of some quantity and the measured value.

exciter A separate dc generator used to supply current to the field coils of a large generator or alternator. Normally, excitation current is controlled automatically.

exponent The number to which a base number is raised.

falling edge The negative-going transition of a pulse.

fall time (t_f) The time interval required for a pulse to change from 90% to 10% of its amplitude.

farad (F) The unit of capacitance.

Faraday's law A law stating that the voltage induced across a coil of wire equals the number of turns in the coil times the rate of change of the magnetic flux.

ferrite A crystalline compound composed of iron oxide and other materials that is widely used in magnets, transformers, inductors, and other electronic devices.

field winding The winding on the rotor of an ac generator.

filter A type of circuit that passes certain frequencies and rejects all others.

free electron A valence electron that has broken away from its parent atom and is free to move from atom to atom within the atomic structure of a material.

frequency A measure of the rate of change of a periodic function; the number of cycles completed in 1 s. The unit of frequency is hertz.

frequency response In electric circuits, the variation in the output voltage (or current) over a specified range of frequencies.

fuel cell A device that converts electrochemical energy into dc voltage directly.

function generator An electronic instrument that produces electrical signals in the form of sine waves, triangular waves, and pulses.

fundamental frequency The repetition rate of a waveform.

fuse A protective device that burns open when there is excessive current in a circuit.

gauss (G) A CGS unit of flux density.

generator An energy source that produces electrical signals.

ground In electric circuits, the common or reference point.

ground plane A conducting surface used as a reference point for circuit returns; a conducting surface used in antenna systems to image a radiating structure.

half-power frequency The frequency at which the output power of a resonant circuit is 50% of the maximum (the output voltage is 70.7% of maximum); another name for critical or cutoff frequency.

half-splitting A troubleshooting procedure where one starts in the middle of a circuit or system and, depending on the first measurement, works toward the output or toward the input to find the fault.

Hall effect A change in current across a conductor or semiconductor when current in the material is perpendicular to a magnetic field. The change in current produces a small transverse voltage in the material, called the Hall voltage.

harmonics The frequencies contained in a composite waveform, which are integer multiples of the repetition frequency (fundamental).

henry (H) The unit of inductance.

hertz (Hz) The unit of frequency. One hertz equals one cycle per second.

high-pass filter A type of filter that passes all frequencies above a critical frequency and rejects all frequencies below that critical frequency.

horsepower A unit of power equivalent to 746 W. It was first used by James Watt to compare the power of horses to the power of steam engines.

hysteresis A characteristic of a magnetic material whereby a change in magnetization lags the application of magnetic field intensity.

imaginary number A number that exists on the vertical axis of the complex plane; it consists of a real number multiplied by the positive square root of –1.

impedance The total opposition to sinusoidal current. Its unit is ohm.

impedance matching A technique used to match a load resistance to a source resistance in order to achieve maximum transfer of power.

induced current (i_{ind}) A current induced in a conductor when the conductor moves through a magnetic field.

induced voltage (v_{ind}) Voltage produced as a result of a changing magnetic field.

inductance The property of an inductor whereby a change in current causes the inductor to produce a voltage that opposes the change in current.

induction motor An ac motor that achieves excitation to the rotor by transformer action.

inductive reactance The opposition of an inductor to sinusoidal current. The unit is ohm (Ω).

inductive susceptance The ability of an inductor to permit current; the reciprocal of inductive reactance. The unit is siemens (S).

inductor An electrical device formed by a coil of wire having the property of inductance; also known as *coil*.

instantaneous power The value of power in a circuit at any given instant of time.

instantaneous value The voltage or current value of a waveform at a given instant in time.

insulator A material that does not allow current under normal conditions.

integrator A circuit producing an output that approaches the mathematical integral of the input.

ion An atom that has a net positive or negative charge.

joule (J) The SI unit of energy.

junction A point at which two or more components are connected.

kilowatt-hour (kWh) A large unit of energy used mainly by utility companies.

Kirchhoff's current law A law stating that the total current into a node equals the total current out of the node. Equivalently, the algebraic sum of all the currents entering and leaving a node is zero.

Kirchhoff's voltage law A law stating that (1) the sum of the voltage drops around a single closed path equals the source voltage in that loop or (2) the algebraic sum of all the voltages around any closed path in a circuit is zero.

lag Refers to a condition of the phase or time relationship of waveforms in which one waveform is behind the other in phase or time.

lead Refers to a condition of the phase or time relationship of waveforms in which one waveform is ahead of the other in phase or time; also, a wire or cable connection to a device or instrument.

leading edge The first step or transition of a pulse.

Lenz's law A law that states when the current through a coil changes, the polarity of the induced voltage created by the changing magnetic field is such that it always opposes the change in current that caused it. The current cannot change instantaneously.

linear Characterized by a straight-line relationship.

line current The current through a line feeding a load.

lines of force Magnetic flux lines in a magnetic field radiating from the north pole to the south pole.

line voltage The voltage between lines feeding a load.

load An element (resistor or other component) connected across the output terminals of a circuit that draws current from the source; an element in a circuit upon which work is done.

load cell A transducer that uses strain gauges to convert mechanical force into an electrical signal.

loop A closed current path in a circuit.

loop current A current assigned to a circuit purely for the purpose of mathematical analysis and not normally representing the actual physical current.

loop current method A systematic method of circuit analysis that applies Kirchhoff's voltage law around closed paths through all components of a circuit. The resulting equations can be solved by various methods to determine the currents.

low-pass filter A type of filter that passes all frequencies below a critical frequency and rejects all frequencies above that critical frequency.

magnetic coupling The magnetic connection between two coils as a result of the changing magnetic flux lines of one coil cutting through the second coil.

magnetic field A force field radiating from the north pole to the south pole of a magnet.

magnetic field intensity The amount of mmf per unit length of magnetic material; also called *magnetizing force*.

magnetic flux The lines of force between the north and south poles of a permanent magnet or an electromagnet.

magnetic flux density The amount of flux per unit area perpendicular to the magnetic field.

magnetohydrodynamic (MHD) generator A device that generates a voltage when a conducting fluid passes through a transverse field of a very strong electromagnet.

magnetomotive force (mmf) The cause of a magnetic field, measured in ampere-turns.

magnitude The value of a quantity, such as the number of volts of voltage or the number of amperes of current.

matrix An array of numbers.

maximum power transfer A transfer of maximum power from a source to a load when the load resistance equals the internal source resistance.

metric prefix An affix that represents a power-of-ten number expressed in engineering notation.

motor starter A device that isolates a motor from the main power source, protects it against short circuits and overloads, and enables progressive startup to avoid high currents at startup.

multimeter An instrument that measures voltage, current, and resistance.

mutual inductance The inductance between two separate coils, such as in a transformer.

neutron An atomic particle having no electrical charge.

node A point in a circuit where two or more components are connected; also known as a *junction*.

Norton's theorem A method for simplifying a two-terminal linear circuit to an equivalent circuit with only a current source in parallel with a resistance or impedance.

nucleus The central part of an atom containing protons and neutrons.

ohm (Ω) The unit of resistance.

ohmmeter An instrument for measuring resistance.

Ohm's law A law stating that current is directly proportional to voltage and inversely proportional to resistance.

open A circuit condition in which there is not a complete current path.

open circuit A circuit in which there is not a complete current path.

operational amplifier A widely used high-gain amplifier that is a basic building block for many analog circuits. It has two inputs that are labeled non-inverting (+) and inverting (−) and a single output.

oscillator An electronic circuit that produces a time-varying signal without an external input signal using positive feedback.

oscilloscope A measurement instrument that traces a graph of a measured electrical signal on its screen.

parallel The relationship between two circuit components that exists when they are connected between the same pair of nodes.

parallel resonance A condition in a parallel *RLC* circuit in which the reactances ideally are equal and the impedance is maximum.

passband The range of frequencies passed by a filter.

peak-to-peak value The voltage or current value of a waveform measured from its minimum to its maximum points.

peak value The voltage or current value of a waveform at its maximum positive or negative points.

period (T) The time interval of one complete cycle of a periodic waveform.

periodic Characterized by a repetition at fixed-time intervals.

permeability The measure of ease with which a magnetic field can be established in a material.

phase The relative angular displacement of a time-varying quantity with respect to a given reference.

phase current (I_0) The current through a generator winding.

phase voltage (V_0) The voltage across a generator winding.

phasor A representation of a sine wave in terms of its magnitude (amplitude) and direction (phase angle).

photoconductive cell A type of variable resistor that is light-sensitive.

photovoltaic effect The process whereby light energy is converted directly into electrical energy.

piezoelectric effect The property of a crystal whereby a changing mechanical stress produces a voltage across the crystal.

polar form One form of a complex number made up of a magnitude and an angle.

potentiometer A three-terminal variable resistor.

power The rate of energy usage. Its unit is the watt.

power factor The relationship between volt-amperes and true power or watts. Volt-amperes multiplied by the power factor equals true power.

power of ten A numerical representation consisting of a base of 10 and an exponent; the number 10 raised to a power.

power rating The maximum amount of power that a resistor can dissipate without being damaged by excessive heat buildup.

power supply An electronic device that converts ac voltage to dc voltage.

primary winding The input winding of a transformer; also called *primary*.

proton A positively charged atomic particle.

pulse A type of waveform that consists of two equal and opposite steps in voltage or current separated by a time interval.

pulse repetition frequency The fundamental frequency of a repetitive pulse waveform; the rate at which the pulses repeat expressed in either hertz or pulses per second.

pulse width (t_W) For a nonideal pulse, the time between the 50% points of the leading and trailing edges; the time interval between the opposite steps of an ideal pulse.

quality factor (*Q*) The ratio of true power to reactive power in a resonant circuit or the ratio of inductive reactance to winding resistance in an inductor.

radian A unit of angular measurement. There are 2π radians in one complete 360° revolution. One radian equals 57.3°.

ramp A type of waveform characterized by a linear increase or decrease in voltage or current.

***RC* lag circuit** A phase shift circuit in which the output voltage, taken across the capacitor, lags the input voltage by a specified angle.

***RC* lead circuit** A phase shift circuit in which the output voltage, taken across the resistor, leads the input voltage by a specified angle.

***RC* time constant** A fixed time interval set by the values of R and C that determines the time response of a series RC circuit. It equals the product of the resistance and the capacitance.

reactive power The rate at which energy is alternately stored and returned to the source by a capacitor or inductor. The unit is VAR.

real number A number that exists on the horizontal axis of the complex plane.

rectangular form One form of a complex number made up of a real part and an imaginary part.

rectifier An electronic circuit that converts ac into pulsating dc; one part of a power supply.

reference ground A method of grounding whereby a large conducive area on a printed circuit board or the metal chassis that houses the assembly is used as the common or reference point.

reflected load The load as it appears to the source in the primary of a transformer.

reflected resistance The resistance in the secondary circuit reflected into the primary circuit.

regulate To constantly sense and automatically adjust an output if it tries to change because of a change in the line voltage of the load.

relay An electromagnetically controlled mechanical device in which electrical contacts are opened or closed by a magnetizing current.

reluctance The opposition to the establishment of a magnetic field in a material.

resistance Opposition to current. Its unit is ohm (Ω).

resistor An electrical component specifically designed to have a certain amount of resistance.

resolution The smallest increment of a quantity that a DMM can measure.

resonance A condition in a series RLC circuit in which the capacitive and inductive reactances are equal in magnitude; thus, they cancel each other and result in a purely resistive impedance.

resonant frequency The frequency at which resonance occurs; also known as *center frequency.*

retentivity The ability of a material, once magnetized, to maintain a magnetized state without the presence of a magnetizing force.

rheostat A two-terminal variable resistor.

ripple voltage The variation in the dc voltage on the output of a filtered rectifier caused by the slight charging and discharging action of the filter capacitor.

rise time (t_r) The time interval required for a pulse to change from 10% to 90% of its amplitude.

rising edge The positive-going transition of a pulse.

***RL* lag circuit** A phase shift circuit in which the output voltage, taken across the resistor, lags the input voltage by a specified angle.

***RL* lead circuit** A phase shift circuit in which the output voltage, taken across the inductor, leads the input voltage by a specified angle.

***RL* time constant** A fixed time interval set by the values of R and L that determines the time response of a circuit and is equal to L/R.

roll-off The rate of decrease of a filter's frequency response.

rms value The value of a sinusoidal voltage that indicates its heating effect, also known as the effective value. It is equal to 0.707 times the peak value. *rms* stands for root mean square.

rotor The rotating assembly in a generator or motor.

sawtooth waveform A type of electrical waveform composed of ramps; a special case of a triangular waveform in which one ramp is much shorter than the other.

schematic A symbolized diagram of an electrical or electronic circuit.

scientific notation A system for representing any number as a number between 1 and 10 times an appropriate power of ten.

secondary winding The output winding of a transformer; also called *secondary.*

Seebeck effect The generation of a voltage at the junction of two different materials that have a temperature difference between them.

selectivity A measure of how effectively a resonant circuit passes certain desired frequencies and rejects all others. Generally, the narrower the bandwidth, the greater the selectivity.

self-excited generator A generator in which the field windings derive their current from the output.

semiconductor A material that has a conductance value between that of a conductor and an insulator. Silicon and germanium are examples.

series In an electric circuit, a relationship of components in which the components are connected such that they provide a single current path between two points.

series resonance A condition in a series RLC circuit in which the reactances ideally cancel and the impedance is minimum.

shell The orbit in which an electron revolves.

short A circuit condition in which there is a zero or abnormally low resistance path between two points; usually an inadvertent condition.

SI Standardized international system of units used for all engineering and scientific work; abbreviation for French *Le Système International d'Unités*.

siemens (S) The unit of conductance.

simultaneous equations A set of n equations containing n unknowns, where n is a number with a value of 2 or more.

sine wave A type of waveform that follows a cyclic sinusoidal pattern defined by the formula $y = A \sin \theta$.

slip The difference between the synchronous speed of the stator field and the rotor speed in an induction motor.

solenoid An electromagnetically controlled device in which the mechanical movement of a shaft or plunger is activated by a magnetizing current.

solenoid valve An electrically controlled valve for control of air, water, steam, oils, refrigerants, and other fluids.

source A device that produces electrical energy.

speaker An electromagnetic device that converts electrical signals to sound waves.

squirrel cage An aluminum frame within the rotor of an induction motor that forms the electrical conductors for a rotating current.

stator The stationary outer part of a generator or motor.

steady state The equilibrium condition of a circuit that occurs after an initial transient time.

step-down transformer A transformer in which the secondary voltage is less than the primary voltage.

step-up transformer A transformer in which the secondary voltage is greater than the primary voltage.

stiff voltage Voltage in which the load resistor is at least 10 times larger than the divider resistors.

strain gauge A type of variable resistor that changes resistance when force is applied.

superposition theorem A method for the analysis of circuits with more than one source.

sweep generator A special type of function generator that produces a constant output sinusoidal wave with a linear varying frequency. It is commonly used to test the frequency response of a circuit.

switch An electrical device for opening and closing a current path.

synchronous motor An ac motor in which the rotor moves at the same rate as the rotating magnetic field of the stator.

tank circuit A parallel resonant circuit.

tapered Nonlinear, such as a tapered potentiometer.

temperature coefficient A constant specifying the amount of change in the value of a quantity for a given change in temperature.

terminal equivalency The concept that when any given load resistance is connected to two sources, the same load voltage and load current are produced by both sources.

tesla (T) The mks SI unit of flux density.

thermistor A type of variable resistor that is temperature-sensitive.

thermocouple A thermoelectric type of voltage source commonly used to sense temperature.

Thevenin's theorem A method for simplifying a two-terminal linear circuit to an equivalent circuit with only a voltage source in series with a resistance or impedance.

time constant A fixed-time interval, set by R and C, or R and L values, that determines the time response of a circuit.

tolerance The limits of variation in the value of a component.

trailing edge The second step or transition of a pulse.

transducer A device that senses a change in a physical parameter and converts that change into an electrical quantity, such as a change in resistance.

transformer An electrical device constructed of two or more coils (windings) that are electromagnetically coupled to each other to provide a transfer of power from one coil to another.

transient time An interval equal to approximately five time constants.

triangular waveform A type of electrical waveform that consists of two ramps.

trigger The activating signal for some electronic devices or instruments.

trimmer A small variable capacitor.

troubleshooting A systematic process of isolating, identifying, and correcting a fault in a circuit or system.

true power The power that is dissipated in a circuit, usually in the form of heat.

turns ratio (n) The ratio of turns in the secondary winding to turns in the primary winding.

unbalanced bridge A bridge circuit that is in the unbalanced state as indicated by a voltage across the bridge that is proportional to the amount of deviation from the balanced state.

valance Related to the outer shell or orbit of an atom.

valence electron An electron that is present in the outermost shell of an atom.

VAR (volt-ampere reactive) The unit of reactive power.

varactor A semiconductor device that exhibits a capacitance characteristic that is varied by changing the voltage across its terminals.

volt The unit of voltage or electromotive force.

voltage The amount of energy per charge available to move electrons from one point to another in an electric circuit.

voltage divider A circuit consisting of series resistors across which one or more output voltages are taken.

voltage drop The decrease in voltage across a resistor due to a loss of energy.

voltage source A device that provides a constant voltage for a varying load.

voltmeter An instrument used to measure voltage.

Watt (W) The unit of power. One watt is the power when 1 J of energy is used in 1 s.

Watt's law A law that states the relationships of power to current, voltage, and resistance.

wave trap A resonant circuit designed to pass certain frequencies and block others. They are commonly used in communication systems to block interference. Wave traps are also used by electric utilities to allow power lines to double as communication lines between substations.

waveform The pattern of variations of a voltage or current showing how the quantity changes with time.

weber The SI unit of magnetic flux, which represents 10^8 lines.

Wheatstone bridge A 4-legged type of bridge circuit with which an unknown resistance can be accurately measured using the balanced state of the bridge. Deviations in resistance can be measured using the unbalanced state.

winding The loops or turns of wire in an inductor.

wiper The sliding contact in a potentiometer.