

resonance a phenomenon that occurs when the frequency of a force applied to a system matches the natural frequency of vibration of the system, resulting in a large amplitude of vibration (p. 419)

resultant a vector that represents the sum of two or more vectors (p. 83)

rms current the value of alternating current that gives the same heating effect that the corresponding value of direct current does (p. 724)

rotational kinetic energy the energy of an object that is due to the object's rotational motion (p. 907)

S

scalar a physical quantity that has magnitude but no direction (p. 82)

schematic diagram a representation of a circuit that uses lines to represent wires and different symbols to represent components (p. 640)

series describes two or more components of a circuit that provide a single path for current (p. 647)

significant figures those digits in a measurement that are known with certainty plus the first digit that is uncertain (p. 17)

simple harmonic motion vibration about an equilibrium position in which a restoring force is proportional to the displacement from equilibrium (p. 369)

solenoid a long, helically wound coil of insulated wire (p. 685)

specific heat capacity the quantity of heat required to raise a unit mass of homogeneous material 1 K or 1°C in a specified way given constant pressure and volume (p. 313)

spring constant the energy available for use when a deformed elastic object returns to its original configuration (p. 170)

standing wave a wave pattern that results when two waves of the same frequency, wavelength, and amplitude travel in opposite directions and interfere (p. 393)

static friction the force that resists the initiation of sliding motion between two surfaces that are in contact and at rest (p. 136)

strong force the interaction that binds nucleons together in a nucleus (p. 792)

superconductor a material whose resistance is zero at a certain critical temperature, which varies with each material (p. 928)

system a set of particles or interacting components considered to be a distinct physical entity for the purpose of study (pp. 7, 336)

T

tangential acceleration the acceleration of an object that is tangent to the object's circular path (p. 903)

tangential speed the speed of an object that is tangent to the object's circular path (p. 902)

temperature a measure of the average kinetic energy of the particles in an object (p. 299)

thermal equilibrium the state in which two bodies in physical contact with each other have identical temperatures (p. 300)

timbre the musical quality of a tone resulting from the combination of harmonics present at different intensities (p. 428)

torque a quantity that measures the ability of a force to rotate an object around some axis (p. 255)

total internal reflection the complete reflection that takes place within a substance when the angle of incidence of light striking the surface boundary is less than the critical angle (p. 506)

transformer a device that increases or decreases the emf of alternating current (p. 727)

transistor a semiconductor device that can amplify current and that is used in amplifiers, oscillators, and switches (p. 646)

transverse wave a wave whose particles vibrate perpendicularly to the direction the wave is traveling (p. 384)

trough the lowest point below the equilibrium position (p. 384)

U

ultraviolet catastrophe the failed prediction of classical physics that the energy radiated by a blackbody at extremely short wavelengths is extremely large and that the total energy radiated is infinite (p. 753)

uncertainty principle the principle that states that it is impossible to simultaneously determine a particle's position and momentum with infinite accuracy (p. 775)

V

vector a physical quantity that has both magnitude and a direction (p. 82)

virtual image an image from which light rays appear to diverge, even though they are not actually focused there; a virtual image cannot be projected on a screen (p. 453)