

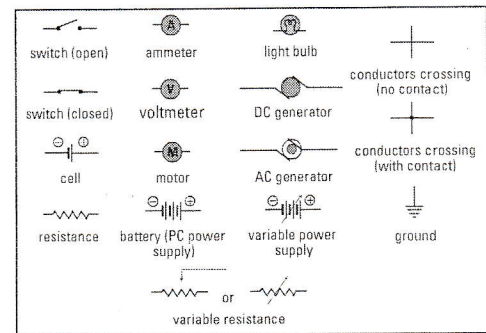
Appendix B

Physical Constants and Data

Fundamental Physical Constants

Quantity	Symbol	Accepted value
speed of light in a vacuum	c	$2.998 \times 10^8 \text{ m/s}$
gravitational constant	G	$6.673 \times 10^{-11} \text{ N} \cdot \text{m}^2/\text{kg}^2$
Coulomb's constant	k	$8.988 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2$
charge on an electron	e	$1.602 \times 10^{-19} \text{ C}$
rest mass of an electron	m_e	$9.109 \times 10^{-31} \text{ kg}$
rest mass of a proton	m_p	$1.673 \times 10^{-27} \text{ kg}$
rest mass of a neutron	m_n	$1.675 \times 10^{-27} \text{ kg}$
Planck's constant	h	$6.626 \times 10^{-34} \text{ J} \cdot \text{s}$

Electric Circuit Symbols



Other Physical Data

Quantity	Symbol	Accepted value
standard atmospheric pressure	P	$1.013 \times 10^5 \text{ Pa}$
speed of sound in air		$343 \text{ m/s (at } 20^\circ\text{C)}$
water: density (4°C)		$1.000 \times 10^3 \text{ kg/m}^3$
latent heat of fusion		$3.34 \times 10^5 \text{ J/kg}$
latent heat of vaporization		$2.26 \times 10^6 \text{ J/kg}$
specific heat capacity (15°C)		$4186 \text{ J/(kg}^\circ\text{C)}$
kilowatt hour	E	$3.6 \times 10^6 \text{ J}$
acceleration due to Earth's gravity	g	$9.81 \text{ m/s}^2 \text{ (standard value; at sea level)}$
mass of Earth	m_E	$5.98 \times 10^{24} \text{ kg}$
mean radius of Earth	r_E	$6.38 \times 10^6 \text{ m}$
mean radius of Earth's orbit	R_E	$1.49 \times 10^{11} \text{ m}$
period of Earth's orbit	T_E	$365.25 \text{ days or } 3.16 \times 10^7 \text{ s}$
mass of Moon	m_M	$7.36 \times 10^{22} \text{ kg}$
mean radius of Moon	r_M	$1.74 \times 10^6 \text{ m}$
mean radius of Moon's orbit	R_M	$3.84 \times 10^8 \text{ m}$
period of Moon's orbit	T_M	$27.3 \text{ days or } 2.36 \times 10^6 \text{ s}$
mass of Sun	m_s	$1.99 \times 10^{30} \text{ kg}$
radius of Sun	r_s	$6.96 \times 10^8 \text{ m}$

Resistor Colour Codes

Colour	Digit represented	Multiplier	Tolerance
black	0	$\times 1$	
brown	1	$\times 1.0 \times 10^1$	
red	2	$\times 1.0 \times 10^2$	
orange	3	$\times 1.0 \times 10^3$	
yellow	4	$\times 1.0 \times 10^4$	
green	5	$\times 1.0 \times 10^5$	
blue	6	$\times 1.0 \times 10^6$	
violet	7	$\times 1.0 \times 10^7$	
gray	8	$\times 1.0 \times 10^8$	
white	9	$\times 1.0 \times 10^9$	
gold		$\times 1.0 \times 10^{-1}$	5%
silver		$\times 1.0 \times 10^{-2}$	10%
no colour			20%

