

TABLE OF INFORMATION FOR 2006 and 2007

CONSTANTS AND CONVERSION FACTORS		UNITS		PREFIXES			
		Name	Symbol	Factor	Prefix	Symbol	
1 unified atomic mass unit,	$1 u = 1.66 \times 10^{-27} \text{ kg}$ $= 931 \text{ MeV}/c^2$	meter	m	10^9	giga	G	
Proton mass,	$m_p = 1.67 \times 10^{-27} \text{ kg}$	kilogram	kg	10^6	mega	M	
Neutron mass,	$m_n = 1.67 \times 10^{-27} \text{ kg}$	second	s	10^3	kilo	k	
Electron mass,	$m_e = 9.11 \times 10^{-31} \text{ kg}$	ampere	A	10^{-2}	centi	c	
Electron charge magnitude,	$e = 1.60 \times 10^{-19} \text{ C}$	kelvin	K	10^{-3}	milli	m	
Avogadro's number,	$N_0 = 6.02 \times 10^{23} \text{ mol}^{-1}$	mole	mol	10^{-6}	micro	μ	
Universal gas constant,	$R = 8.31 \text{ J}/(\text{mol}\cdot\text{K})$	hertz	Hz	10^{-9}	nano	n	
Boltzmann's constant,	$k_B = 1.38 \times 10^{-23} \text{ J/K}$	newton	N	10^{-12}	pico	p	
Speed of light,	$c = 3.00 \times 10^8 \text{ m/s}$	pascal	Pa	VALUES OF TRIGONOMETRIC FUNCTIONS FOR COMMON ANGLES			
Planck's constant,	$h = 6.63 \times 10^{-34} \text{ J}\cdot\text{s}$ $= 4.14 \times 10^{-15} \text{ eV}\cdot\text{s}$ $hc = 1.99 \times 10^{-25} \text{ J}\cdot\text{m}$ $= 1.24 \times 10^3 \text{ eV}\cdot\text{nm}$	joule	J				
Vacuum permittivity,	$\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2/\text{N}\cdot\text{m}^2$	watt	W	0°	0	1	0
Coulomb's law constant,	$k = 1/4\pi\epsilon_0 = 9.0 \times 10^9 \text{ N}\cdot\text{m}^2/\text{C}^2$	coulomb	C	30°	1/2	$\sqrt{3}/2$	$\sqrt{3}/3$
Vacuum permeability,	$\mu_0 = 4\pi \times 10^{-7} (\text{T}\cdot\text{m})/\text{A}$	volt	V	37°	3/5	4/5	3/4
Magnetic constant, $k' = \mu_0/4\pi = 10^{-7} (\text{T}\cdot\text{m})/\text{A}$		ohm	Ω	45°	$\sqrt{2}/2$	$\sqrt{2}/2$	1
Universal gravitational constant,	$G = 6.67 \times 10^{-11} \text{ m}^3/\text{kg}\cdot\text{s}^2$	henry	H	53°	4/5	3/5	4/3
Acceleration due to gravity at Earth's surface,	$g = 9.8 \text{ m/s}^2$	farad	F	60°	$\sqrt{3}/2$	1/2	$\sqrt{3}$
1 atmosphere pressure,	$1 \text{ atm} = 1.0 \times 10^5 \text{ N/m}^2$ $= 1.0 \times 10^5 \text{ Pa}$	tesla	T	90°	1	0	∞
1 electron volt,	$1 \text{ eV} = 1.60 \times 10^{-19} \text{ J}$	degree	$^\circ\text{C}$				
		Celsius	$^\circ\text{C}$				
		electron-volt	eV				

The following conventions are used in this examination.

- I. Unless otherwise stated, the frame of reference of any problem is assumed to be inertial.
- II. The direction of any electric current is the direction of flow of positive charge (conventional current).
- III. For any isolated electric charge, the electric potential is defined as zero at an infinite distance from the charge.
- IV. For mechanics and thermodynamics equations, W represents the work done on a system.