$c = 3\times10^{10}$ cm/sec  $e = 4.8\times10^{-10}$ esu $= 1.6\times10^{-19}$ coul  $m_e = 10^{-27}$ gm

$\hbar = 10^{-27}$ erg-sec  $k = 1.4\times10^{-16}$ erg/deg  $G = \frac{2}{3}\times10^{-7} = 7\times10^{-8}$ erg-cm/gm$^2$

$N_0 = 6\times10^{23}$/mole  $R = 2$ cal/mole-deg  $n_0$ at N.T.P. $= 3\times10^{19}$/cm$^3$

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1 newton $= 10^5$ dynes

1 ft = 30 cm  1 pound = 4.4 newt.

$\mu_0 = 4\pi\times10^{-7}$ newt/amp$^2$  1 ohm$^{-1}$ $= 9\times10^{11}$ cm/sec

$\epsilon_0 = 8.8\times10^{-12}$ coul$^2$/newt-m$^2$  $\sqrt{\mu_0/\epsilon_0} = 377$ ohms

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"classical electron radius"  $r_0 = e^2/m_e c^2 \approx 3\times10^{-13}$ cm

"Compton wavelength"  $\lambda\!\!\!^-_C = \hbar/m_e c \approx 4\times10^{-11}$ cm

"Bohr radius"  $a_0 = \hbar^2/m_e e^2 \approx 5\times10^{-9}$ cm

"Rydberg w'length"  $\lambda\!\!\!^-_R = \hbar^3 c/m_e e^4 \approx 7\times10^{-7}$ cm

$\alpha = e^2/\hbar c = 1/137$

Bohr magneton $e\hbar/2mc = 10^{-20}$ erg/gauss

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1 cal = 4 watt-sec $= 4\times10^7$ erg  1 ev $= 1.6\times10^{-12}$ erg

$m_e c^2 = .5$ Mev  $e^2/a_0 = 26$ ev  vis. photon $\approx 2$ ev

$kT_{room} = .025$ ev  band gap: Si: 1.1 ev  Ge: 0.7 ev

black body radiates $6\times10^{-12}$ watts/deg$^4$/cm$^2$

680 lumens = 1 watt (5550 Å)

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$m_{nucleon} \approx 2000\ m_e$

$m_{kaon} \approx 1000\ m_e$

$m_{pion} \approx 270\ m_e$

$m_{muon} \approx 200\ m_e$

$R_{nucleus} = A^{1/3}\times10^{-13}$ cm

spin precession: e: 3 MHz/gauss; p: 4 kHz/gauss

$g = 10^3$ cm/sec$^2$  $P_{at} = 10^6$ dyne/cm$^2$ $\approx 15$ psi

air density $= 10^{-3}$ gm/cm$^3$  scale height = 8 km

air at 300°K: $v_{sound} \approx v_{molec} \approx 4\times10^4$ cm/sec

mean free path (air, NTP) $\approx 7\times10^{-6}$ cm

$pc$ (ev) $= 300\, B r$ (gauss-cm)

min. ioniz. loss: 2 Mev/gm/cm$^2$

rad. length in air: 36 gm/cm$^2$

1 curie $= 4\times10^{10}$ disint./sec

1 parsec $= 3\times10^{18}$ cm

1 mag = −4 db

$m_{abs} = m_{app}$ at 10 pc

$m_\odot = 5$

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resistivity, usual temperature:

Cu: $2\times10^{-6}$; pure $H_2O$: $2\times10^7$; sea water: 25 ohm-cm

specific heat (solid or liquid) $\approx 0.5$ cal/cm$^3$/deg

linear expansion ( " ) $\gtrsim 2\times10^{-5}$/deg

heat conduction (insulator) $\approx 10^{-2}$ cal/sec-cm-deg

heat cond. (metal) $\approx 1.0\,(\rho_{Cu}/\rho_{metal})$ cal/sec-cm-deg

heat of combustion (food or fuel) $\approx 10^4$ cal/gm

heat of vaporization $\approx 10^4$ cal/mole

elastic moduli (solids) $\approx 10^{11} - 10^{12}$ dyne/cm$^2$

tensile strength (solids) $\approx 10^8 - 10^{10}$ dyne/cm$^2$

surface tension $H_2O \approx 50$ dynes/cm

diffusion: $H_2O$ $10^{-5}$, air 0.2 cm$^2$/s

viscosity: $H_2O$ $10^{-2}$, air $2\times10^{-4}$ dyne-s/cm$^2$

earth field at pole = .5 gauss

$M_e = 6\times10^{27}$ gm  $R_e = 6\times10^8$ cm

$M_\odot = 2\times10^{33}$ gm  $R_\odot = 8\times10^{10}$ cm

$L_\odot = 4\times10^{33}$ erg/sec = 1 kw/m$^2$ at earth

starlight energy density: $10^{-12}$ erg/cm$^3$

primary cosmic rays: 1/cm$^2$/sec

distance to moon: $4\times10^{10}$ cm

distance to sun: $1.5\times10^{13}$ cm

to center of Galaxy: $3\times10^{22}$ cm

mass of Galaxy: $2\times10^{44}$ gm

dist. between galaxies: $10^{25}$ cm

$R_{universe} \approx 3000$ Mpc $\approx 10^{28}$ cm

E.M.P. 1981

Numbers suitable for use on the back of envelopes and in Ph 103...