

The following equations will be given for Test 2 on the cover sheet. DO NOT BRING THIS TO THE TEST; it will be provided for you.

There MAY be more equations which I'll add if I think you need them, but the following are a minimum set:

use  $9.00 \times 10^9$  for  $\frac{1}{4\pi\epsilon_0}$   
 MASS OF PROTON =  $1.67 \times 10^{-27}$  kg

MASS OF ELECTRON =  $9.11 \times 10^{-31}$  kg

CHARGE OF ELECTRON =  $-e$

" " PROTON =  $+e$

$e = 1.6 \times 10^{-19}$  C

$1\text{eV} = 1.6 \times 10^{-19}$  J

$q = Q_0 (1 - e^{-t/RC})$

$i = I_0 e^{-t/RC}$

$W_{a \rightarrow b} = U_a - U_b$

$W_{a \rightarrow b} = \int_a^b F \cdot d\mathbf{r}$

$K = \frac{1}{2} m v^2$   $a = \frac{v^2}{r}$

$\epsilon_0 = 8.854 \times 10^{-12}$

$U = \frac{Q^2}{2C} = \frac{1}{2} C V^2 = \frac{1}{2} Q V$

$u = \frac{1}{2} \epsilon_0 E^2$   $E = kE_0$

$E = \rho J$   $R = \frac{\rho L}{A}$

$J = n q v_d$

$J = \frac{I}{A}$

$\tau = RC$