First do the following Wiley-Plus assignment: Assignment #22c

After completing the Wiley-Plus, in your homework notebook, complete the following problems:

CH22 Question # 7

CH22 Problems # None Assigned this assignment

To check your work, the answers to the odd problems are in the back of the book.

The answers to the even problems are:

# None Assigned this assignment

Homework

Then complete the attached worksheets: (Note: the above problems were designed to ensure you have the skills to solve the worksheet problems. It is imperative to your learning of the problem solving technique to do the above problems BEFORE attempting the worksheet problems. You are graded on both! Homework notebooks are graded.)
CH-22-C-1:

For each of the equations below,

1) State what each term is in your own words ...
2) What the units of each term are...
3) What is the general use of that equation in your own words?

A. \( \vec{p} = q \vec{d} \)

B. \( \vec{r}_E = \vec{p} \times \vec{E} \)

C. \( U = -\vec{p} \cdot \vec{E} \)

D. \( \vec{F}_E = q \vec{E} \)
CH-22-C-2:

A uniform electric field with a magnitude of 500N/C makes a 23° with the dipole moment of an electric dipole. The distance between the charges of the dipole is 1nm.

a) If the torque on the dipole is

\[ \vec{\tau} = \left[ 1.00 \times 10^{-17}\hat{i} - 2.00 \times 10^{-17}\hat{j} + 2.27 \times 10^{-17}\hat{k} \right] Nm, \]

then what is the charge of the + side of the dipole?

Show all work

b) What is the potential energy of the dipole?

Show all work
CH-22-C-3:

An electric dipole has a dipole moment of $\vec{p} = (1.0\hat{i} + 2.0\hat{j} + 3.0\hat{k}) C \cdot m$. The dipole is in an electric field $E = \left(2.0\hat{k}\right) \frac{N}{C}$. The torque on the dipole and potential energy of the dipole, respectively, are:

A. $(2.0\hat{i} + 4.0\hat{j} + 6.0\hat{k}) N \cdot m and 0 J.$
B. $(4.0\hat{i} - 2.0\hat{j}) N \cdot m and 6.0 J.$
C. $(4.0\hat{i} + 2.0\hat{j}) N \cdot m and 6.0 J.$
D. $(4.0\hat{i} - 2.0\hat{j}) N \cdot m and -6.0 J.$
E. $(4.0\hat{i} + 2.0\hat{j}) N \cdot m and +6.0 J.$

Show all work:
An electron with a speed of $5.00 \times 10^8$ cm/s enters an electric field of magnitude $1.00 \times 10^3$ N/C, traveling along a field line in the direction that retards its motion.

(a) How far will the electron travel in the field before stopping momentarily?

and

(b) How much time will have elapsed?

Show all work: