

WebAssign
CH15-HW01-FALL2010 (Homework)Yinglai Wang
PHYS 272-FALL 2012, Fall 2012
Instructor: Virendra Saxena**Current Score** : 18 / 18 **Due** : Friday, September 7 2012 11:59 PM EDT**1.** 2/2 points | [Previous Answers](#)

MI3 15.1.X.028

Which statements about a neutral atom are correct? Check all that apply.

- ☒ A neutral atom is composed of both positively and negatively charged particles.
- ☒ Positively charged protons are located in the tiny, massive nucleus.
- ☐ The positively charged particles in the nucleus are positrons.
- ☐ The radius of the electron cloud is twice as large as the radius of the nucleus.
- ☒ The electrons are attracted to the positively charged nucleus.
- ☒ The negatively charged electrons are spread out in a "cloud" around the nucleus.



- [Read the eBook](#)
- [Section 15.1](#)

2. 2/2 points | [Previous Answers](#)

MI3 15.4.X.034

There is a region where an electric field points to the right, due to charged particles somewhere. A neutral carbon atom is placed inside this region. Draw a diagram of the situation. Which of the following statements are correct? Check all that apply.

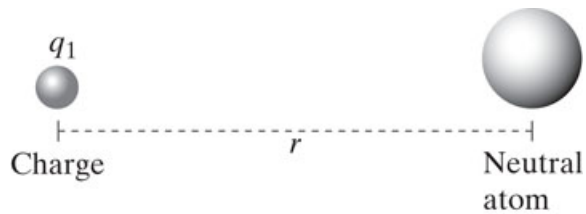
- ☐ The nucleus of the carbon atom shifts to the left.
- ☐ Because the net charge of the carbon atom is zero, it can not be affected by an electric field.
- ☒ The neutral carbon atom polarizes, and becomes a dipole.
- ☒ The electron cloud in the carbon atom shifts to the left.



- [Read the eBook](#)
- [Section 15.4](#)

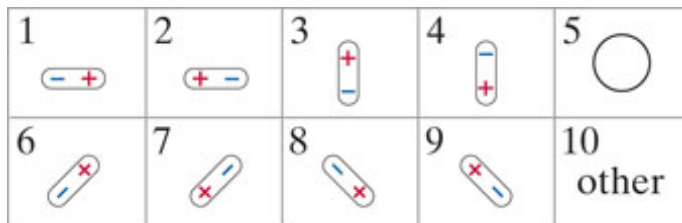
3. 6/6 points | [Previous Answers](#)

MI3 15.4.X.035



A charged particle with charge q_1 is a distance r from a neutral atom, as shown in the diagram.

If q_1 is **positive** which diagram best shows the charge distribution of the neutral atom in this situation?



What is the direction of the electric field at the location of the charged particle, made by the polarized neutral atom?



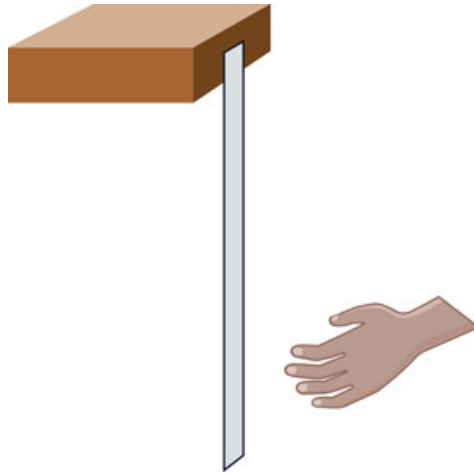
What is the direction of the force on the charged particle, due to the polarized neutral atom?

What is the direction of the force on the polarized neutral atom, due to the charged particle?

- *Read the eBook*
- [Section 15.4](#)

4. 6/6 points | [Previous Answers](#)

MI3 15.4.X.047



A charged tape is brought near your hand, as shown in the diagram above. Your hand is initially neutral.

If the tape is **positively** charged, which diagram best shows the polarization of a neutral molecule in your hand?

1 	2 	3 	4 	5
6 	7 	8 	9 	10 other

What is the direction of the electric field at the location of the tape, due to the large number of polarized molecules in your hand?



What is the direction of the force on the tape, due to the polarized molecules in your hand?

✓

What is the direction of the force on your hand, due to the charged tape?

 ✓

- [Read the eBook](#)
- [Section 15.4](#)

5. 2/2 points | [Previous Answers](#)

MI3 15.3.X.005

A typical atomic polarizability is $1 \times 10^{-40} \text{ (C}\cdot\text{m)/(N/C)}$. If the q in $p = qs$ is equal to the proton charge e , what charge separation s could you produce in a typical atom by applying a large field of $4 \times 10^6 \text{ N/C}$, which is larger than the field required to cause a spark in air?

 ✓ m

- [Read the eBook](#)
- [Section 15.3](#)