

# Final Review

## Unit 10 - Electrostatics

- 45) Since B & C repel, **B must be negative**  
Since A & B attract, **A must be positive or neutral**
- 46) Since A & B attract, **A must be positive or neutral**  
Since A & C attract, **C could be anything**
- 47)  $1.2043 \times 10^{16} - 8.97 \times 10^{15} = 3.073 \times 10^{15}$   
mult. by charge per electron  $\times 1.6 \times 10^{-19} = \boxed{4.92 \times 10^{-4} \text{ C}}$
- 48)  $1.4 \div 1.6 \times 10^{-19} = \boxed{8.75 \times 10^{18} \text{ excess protons}}$
- 49)  $F_e = \frac{k q_1 q_2}{d^2} = \frac{9 \times 10^9 (5.6 \times 10^{-3}) (3.7 \times 10^{-2})}{(0.4)^2} = \boxed{11,655,000 \text{ N}}$   
repulsive
- 50)  $F_e = \frac{(9 \times 10^9) (3.3) (5.2)}{(0.05)^2} = \boxed{6.18 \times 10^{13} \text{ N}}$  attractive
- 51) charge tripled  $\rightarrow$  force tripled  $\rightarrow \boxed{7.8 \text{ N}}$
- 52) distance double  $\rightarrow$  force by  $\frac{1}{4} \rightarrow \boxed{2.6 \text{ N}}$