

P#1

Ch 16 - pg 524

$$d = 2.0 \text{ cm} = .02 \text{ m}$$

$$E = 200 \text{ N/C}$$

$$q = +1.60 \times 10^{-19} \text{ C}$$

$$a) E = \frac{F_e}{q} \text{ so } (200 \text{ N/C}) = \frac{F_e}{(+1.60 \times 10^{-19} \text{ C})}$$

$$F_e = 3.2 \times 10^{-17} \text{ N}$$

$$W = F_e \cdot d$$

$$= (3.2 \times 10^{-17} \text{ N})(.02 \text{ m})$$

$$W = 6.4 \times 10^{-19} \text{ J}$$

$$b) W = 6.4 \times 10^{-19} \text{ J} \text{ (By the field)}$$

$$\Delta PE = -W \text{ (PE is decreasing)}$$

$$\Delta PE = -6.4 \times 10^{-19} \text{ J}$$

$$c) q = +1.6 \times 10^{-19} \text{ C}$$

$$\Delta PE = -6.4 \times 10^{-19} \text{ J}$$

$$\Delta V = \frac{\Delta PE}{q}$$

$$= \frac{-6.4 \times 10^{-19} \text{ J}}{1.6 \times 10^{-19} \text{ C}}$$

$$\Delta V = -4.0 \text{ V}$$