

24. (a)  $i = V/R = 35.8 \text{ V}/935 \Omega = 3.83 \times 10^{-2} \text{ A}$ .  
(b)  $J = i/A = (3.83 \times 10^{-2} \text{ A})/(3.50 \times 10^{-4} \text{ m}^2) = 109 \text{ A/m}^2$ .  
(c)  $v_d = J/ne = (109 \text{ A/m}^2)/[(5.33 \times 10^{22}/\text{m}^3)(1.60 \times 10^{-19} \text{ C})] = 1.28 \times 10^{-2} \text{ m/s}$ .  
(d)  $E = V/L = 35.8 \text{ V}/0.158 \text{ m} = 227 \text{ V/m}$ .