

Problem 3(c):

$$J = q n \langle v \rangle$$

$$q n = Q = 2.76 * 10^{-6} \text{ C/cm}^2 \quad (\text{from 3(a)})$$

$$\langle v \rangle = v_{\text{sat}} = 10^7 \text{ cm/s}$$

$$J = 2.76 * 10^{-6} \text{ C/cm}^2 * 10^7 \text{ cm/s}$$

$$= 27.6 \text{ A/cm}$$

$$= \frac{27.6 * 10^3 \text{ mA}}{10^4 \mu\text{m}}$$

$$= 2.76 \text{ mA}/\mu\text{m}$$