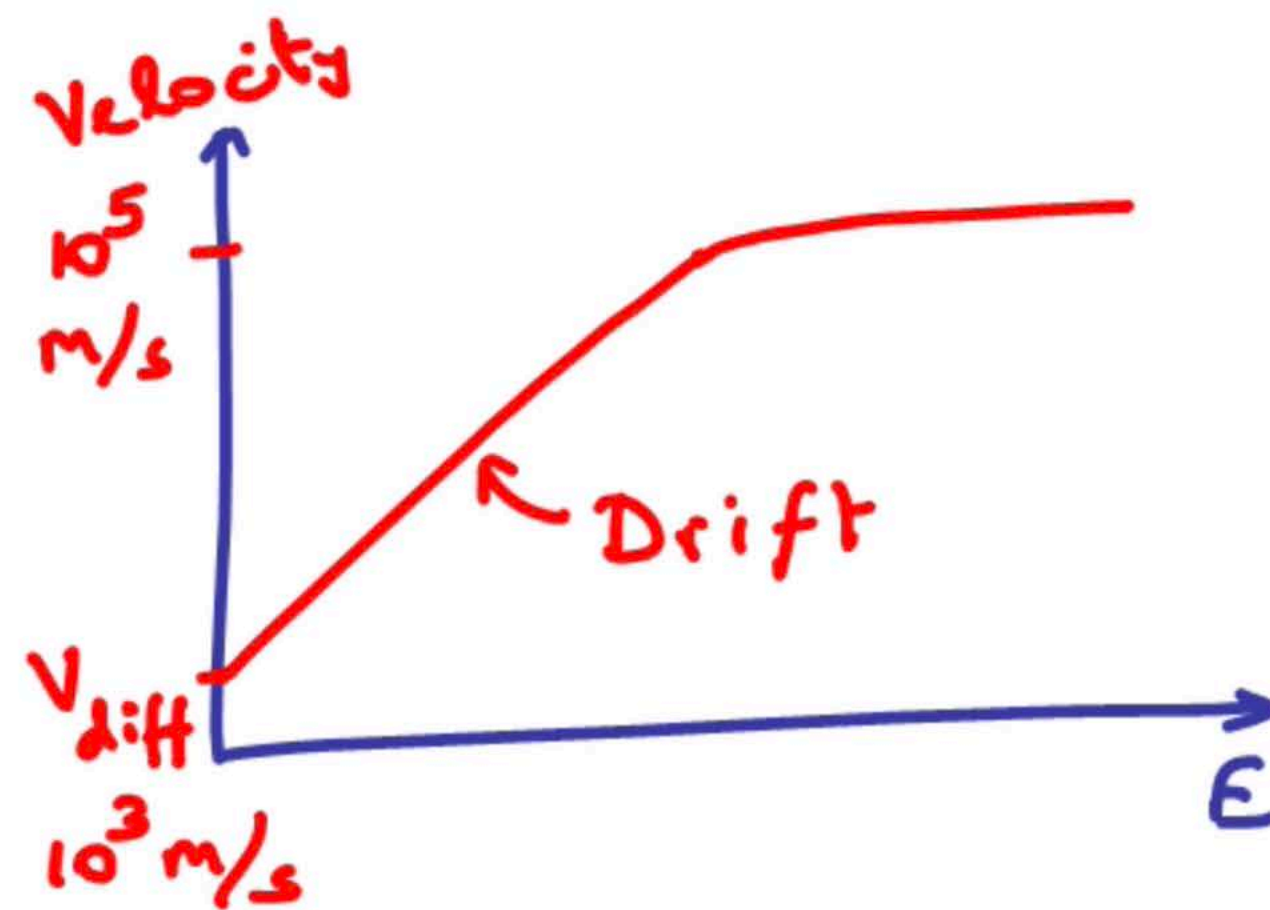
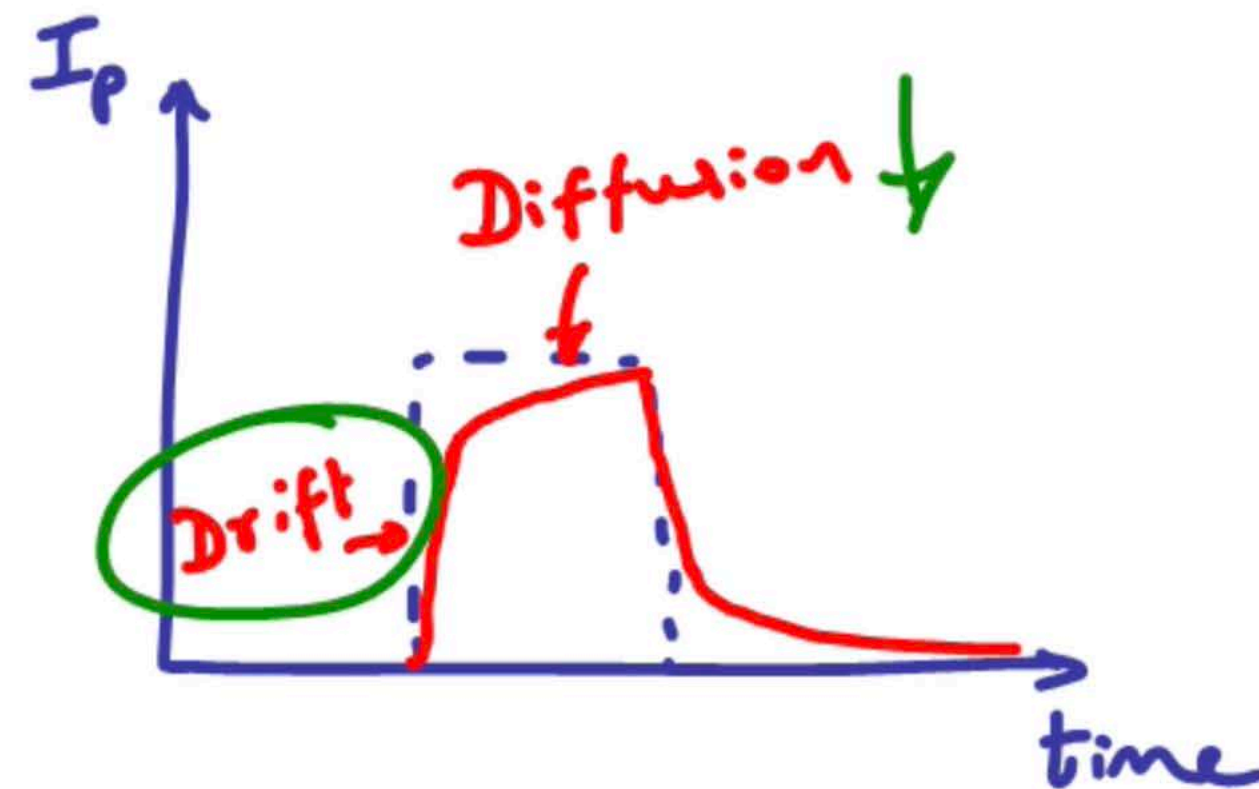
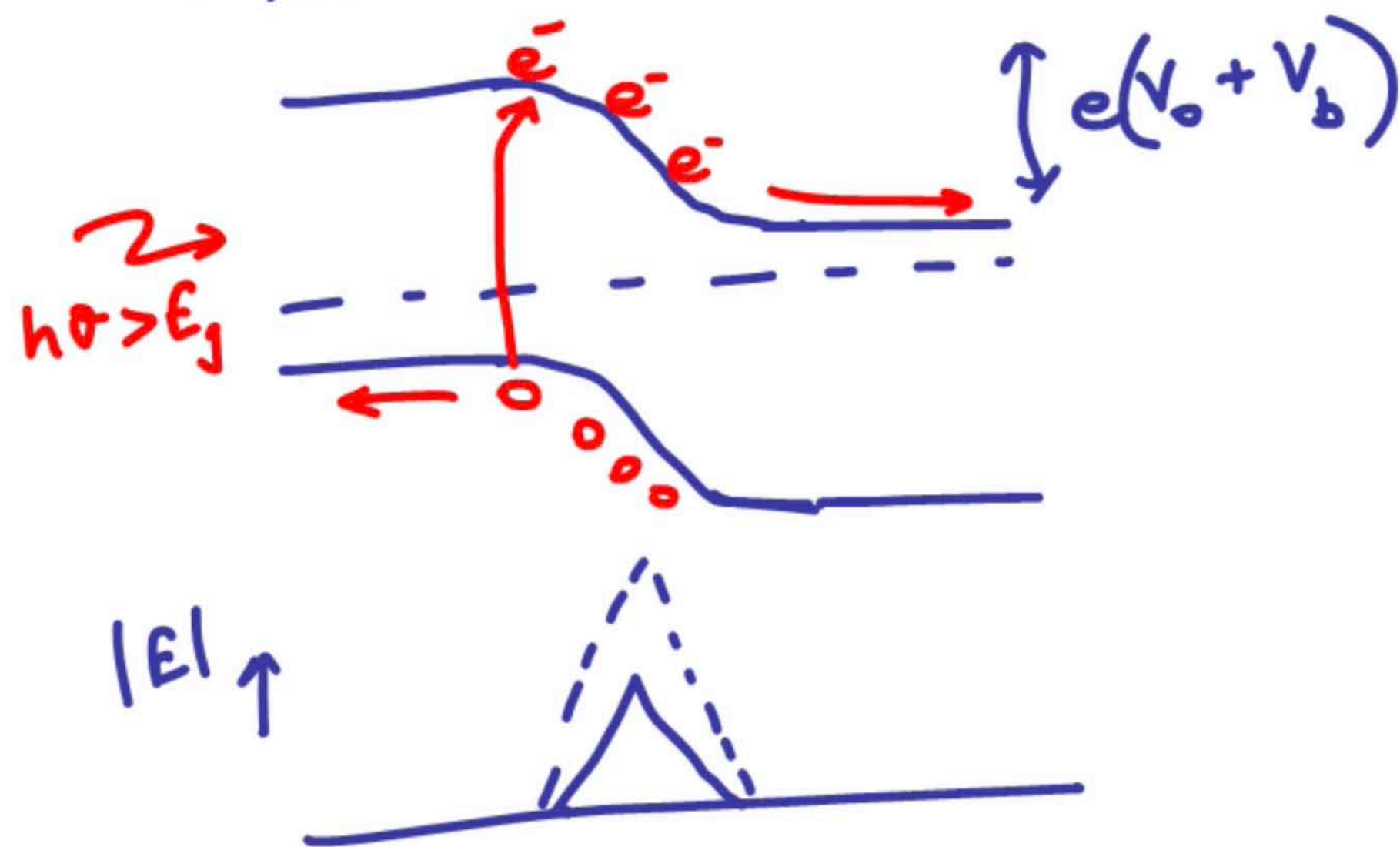
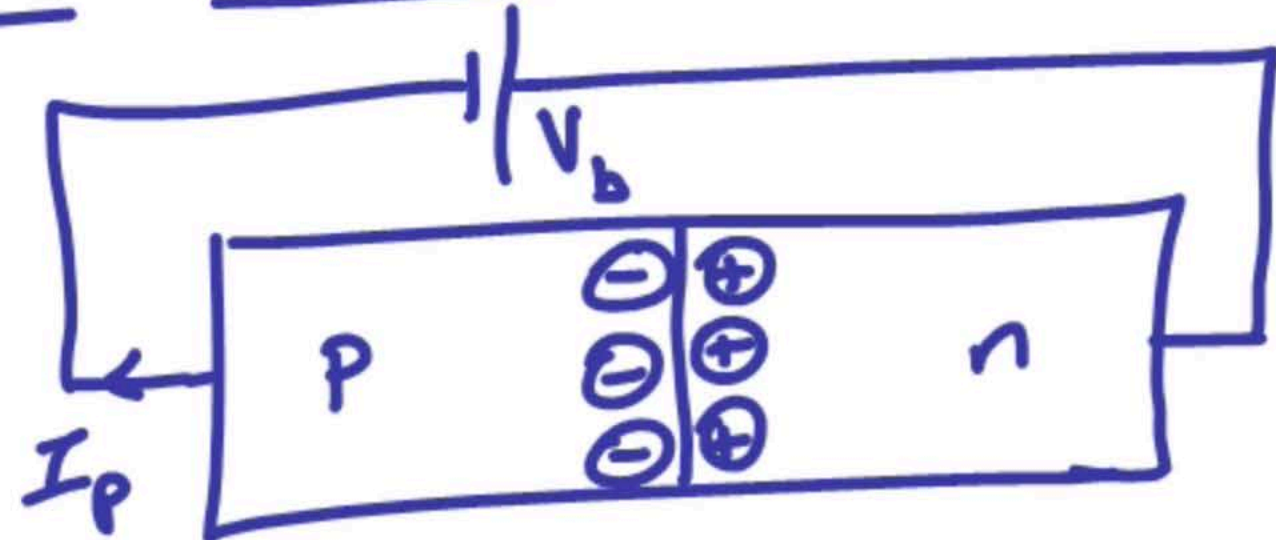
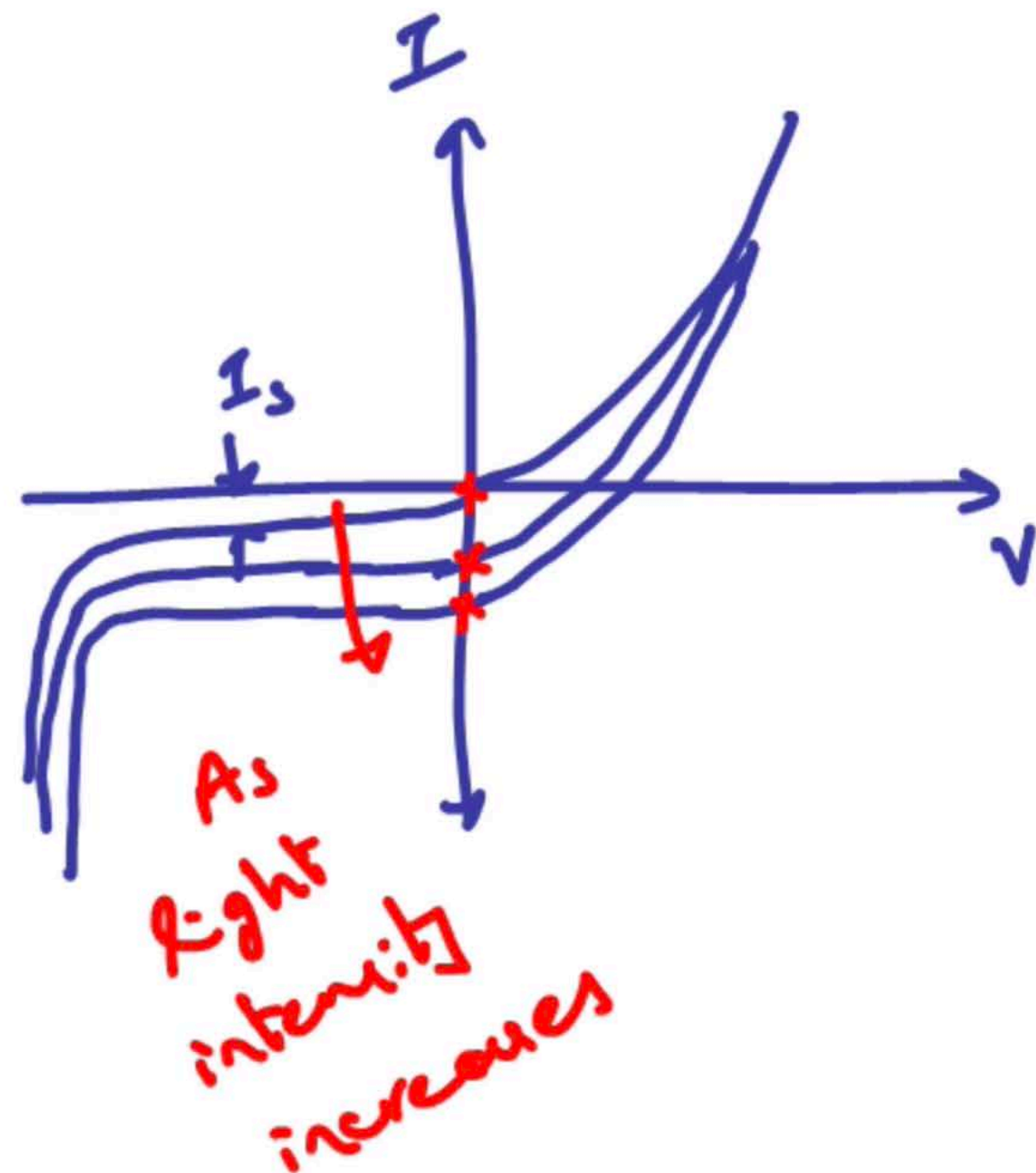
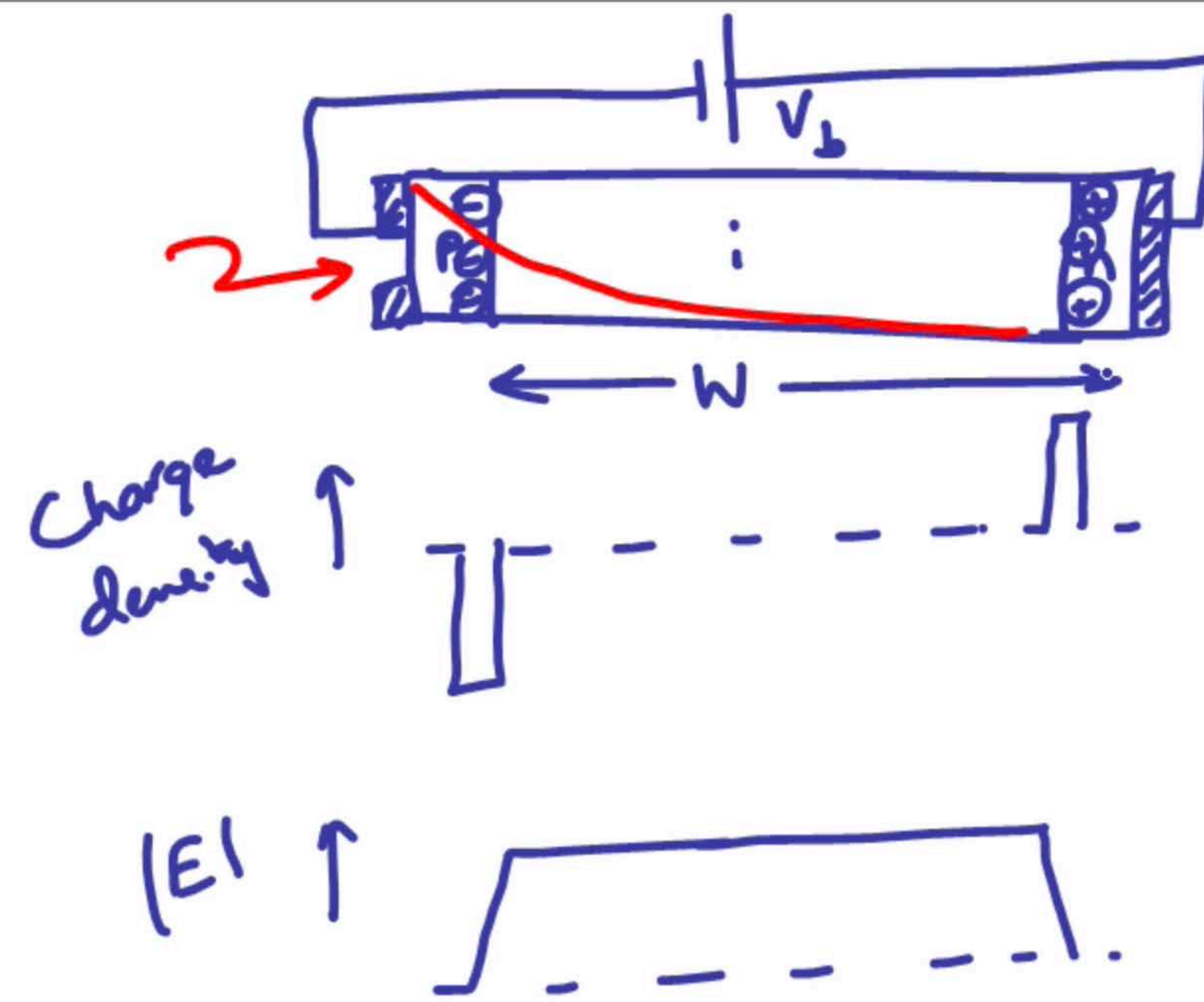


Semiconductor

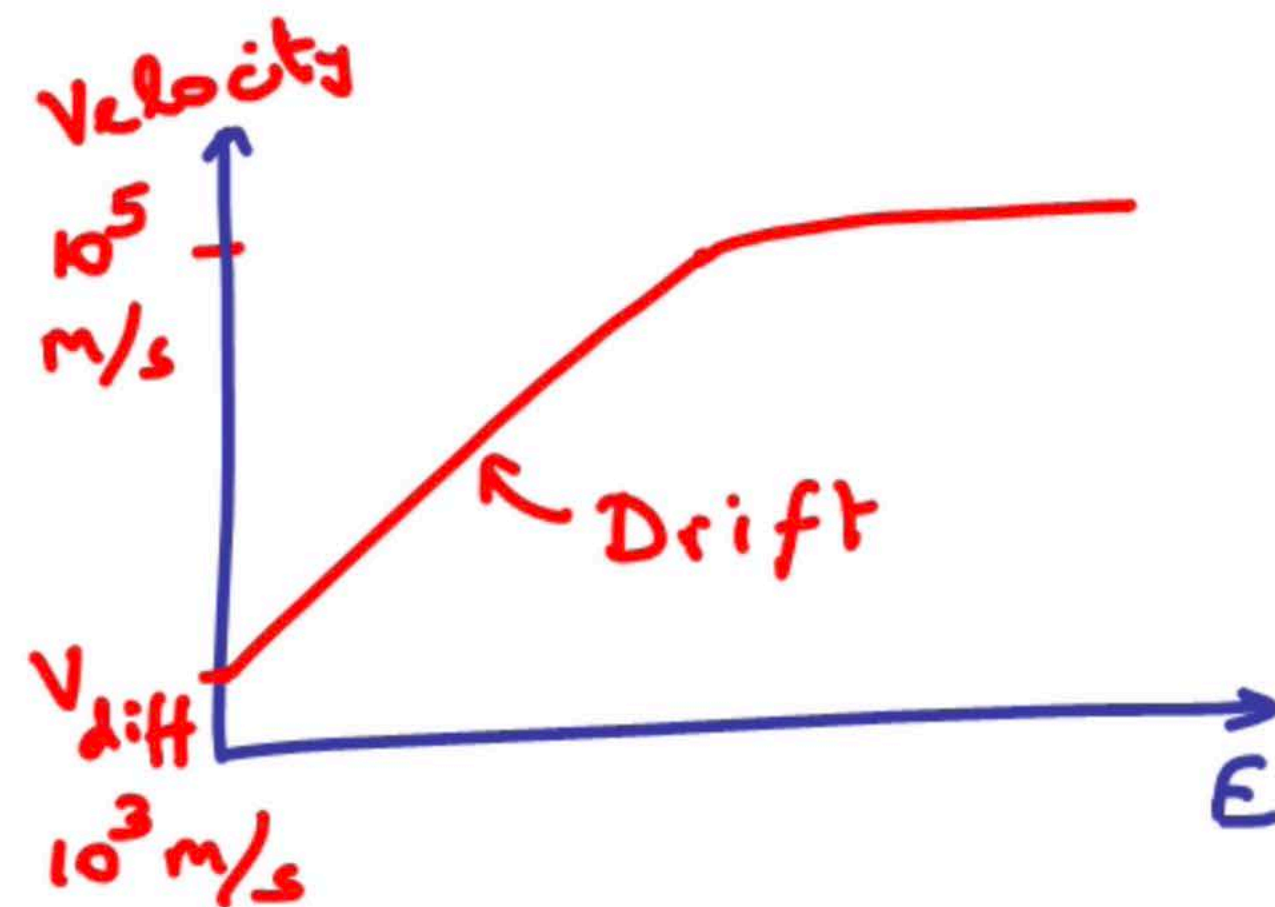
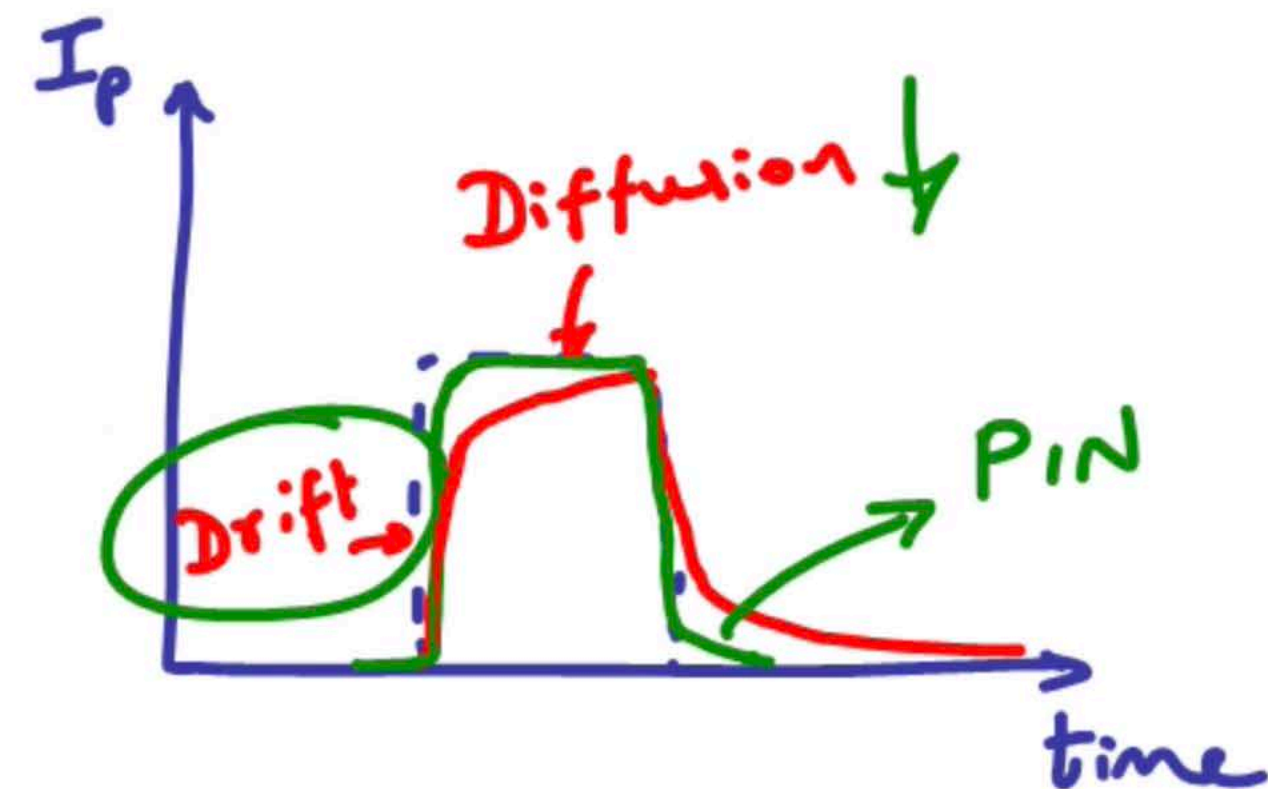
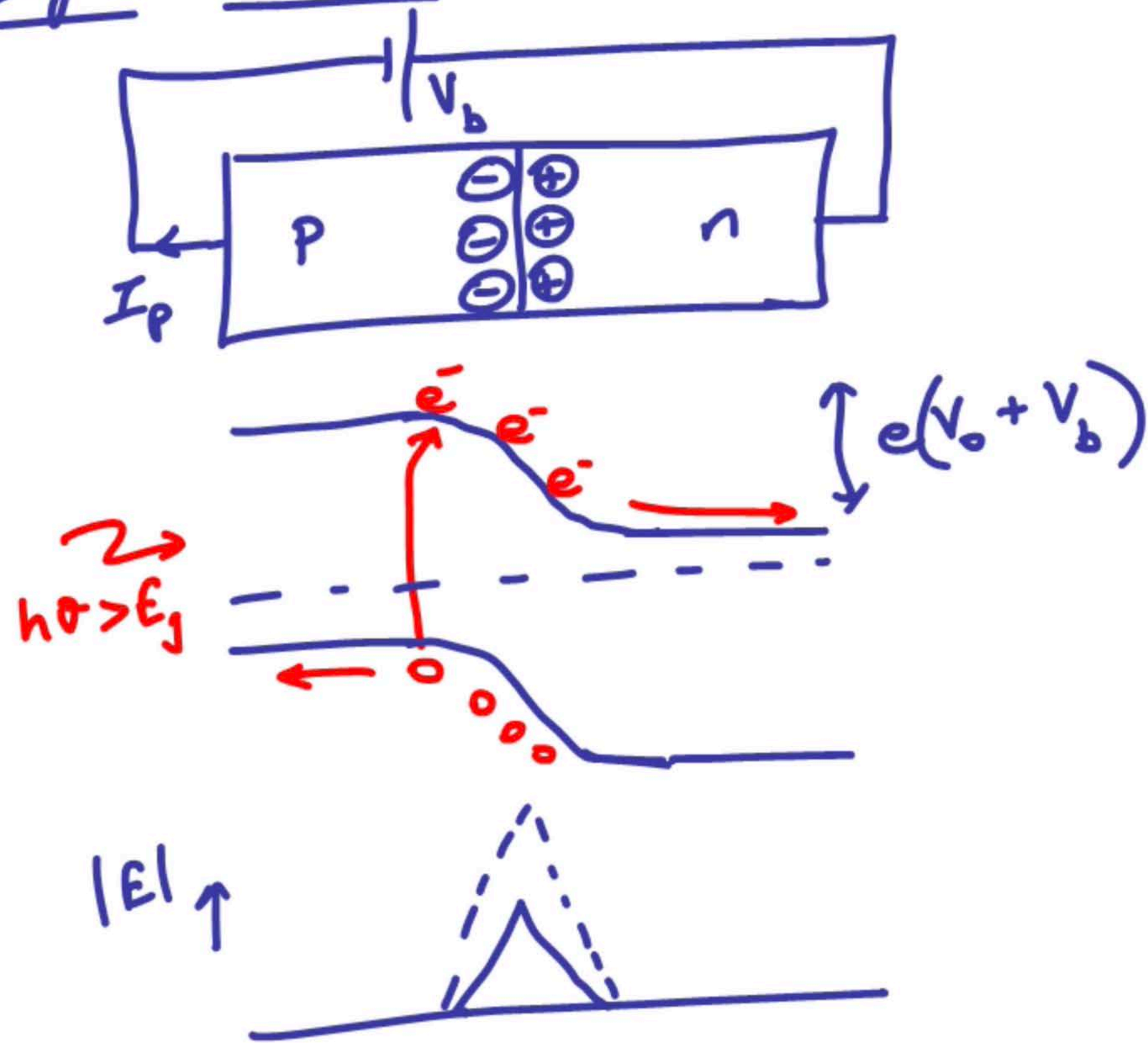
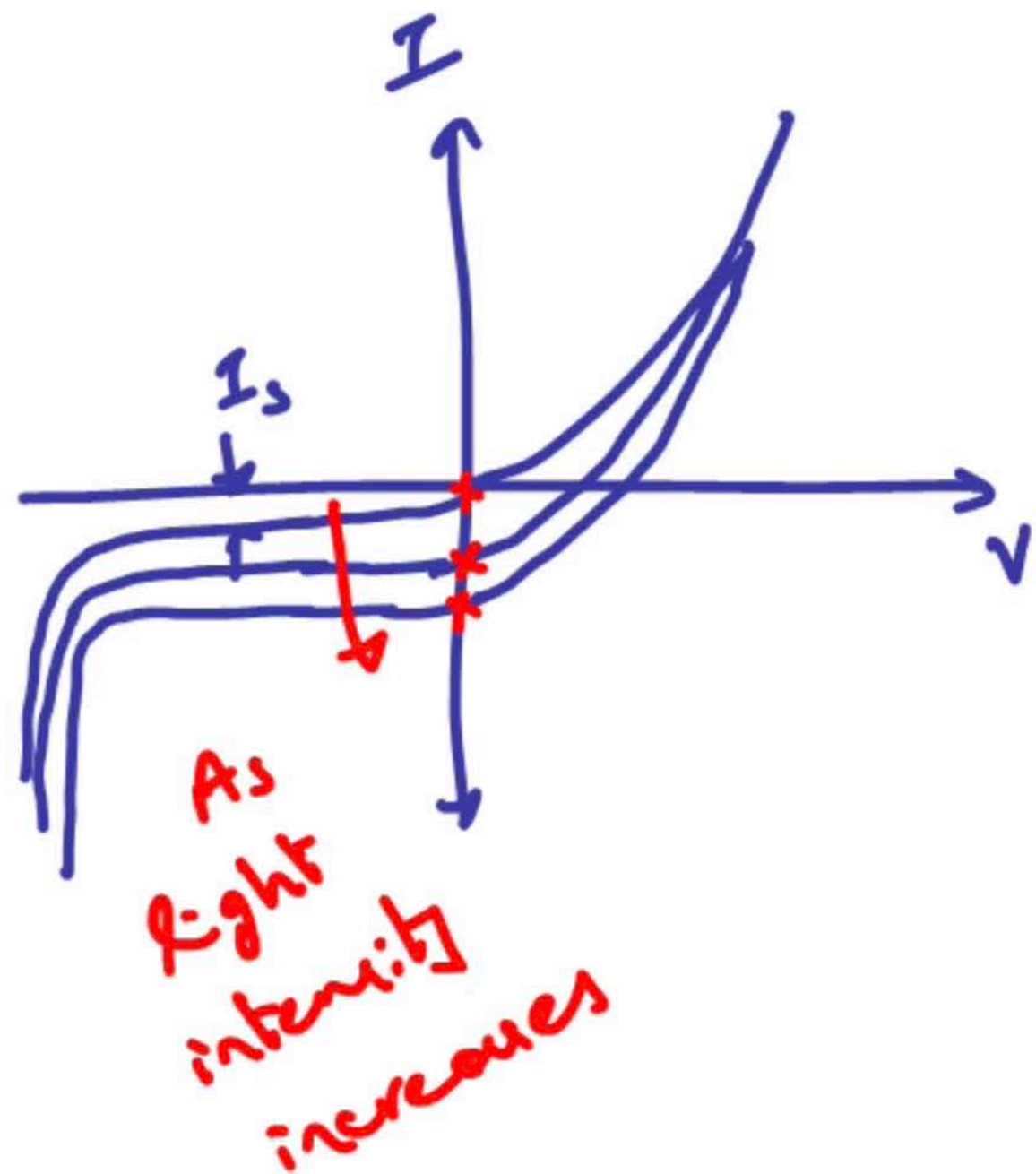
Light Detectors:

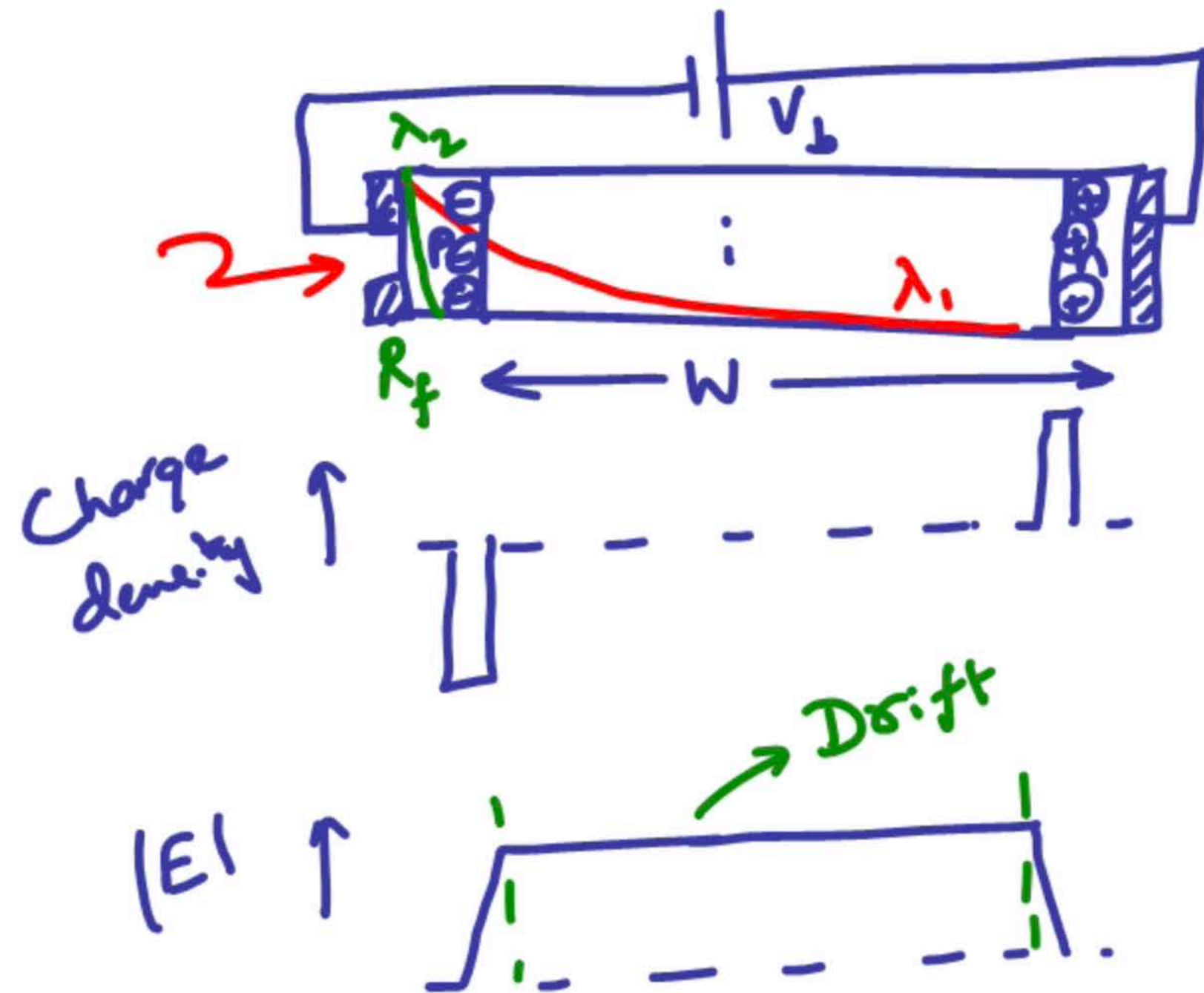




Semiconductor

Light Detector:





$$\lambda_2 < \lambda_1$$

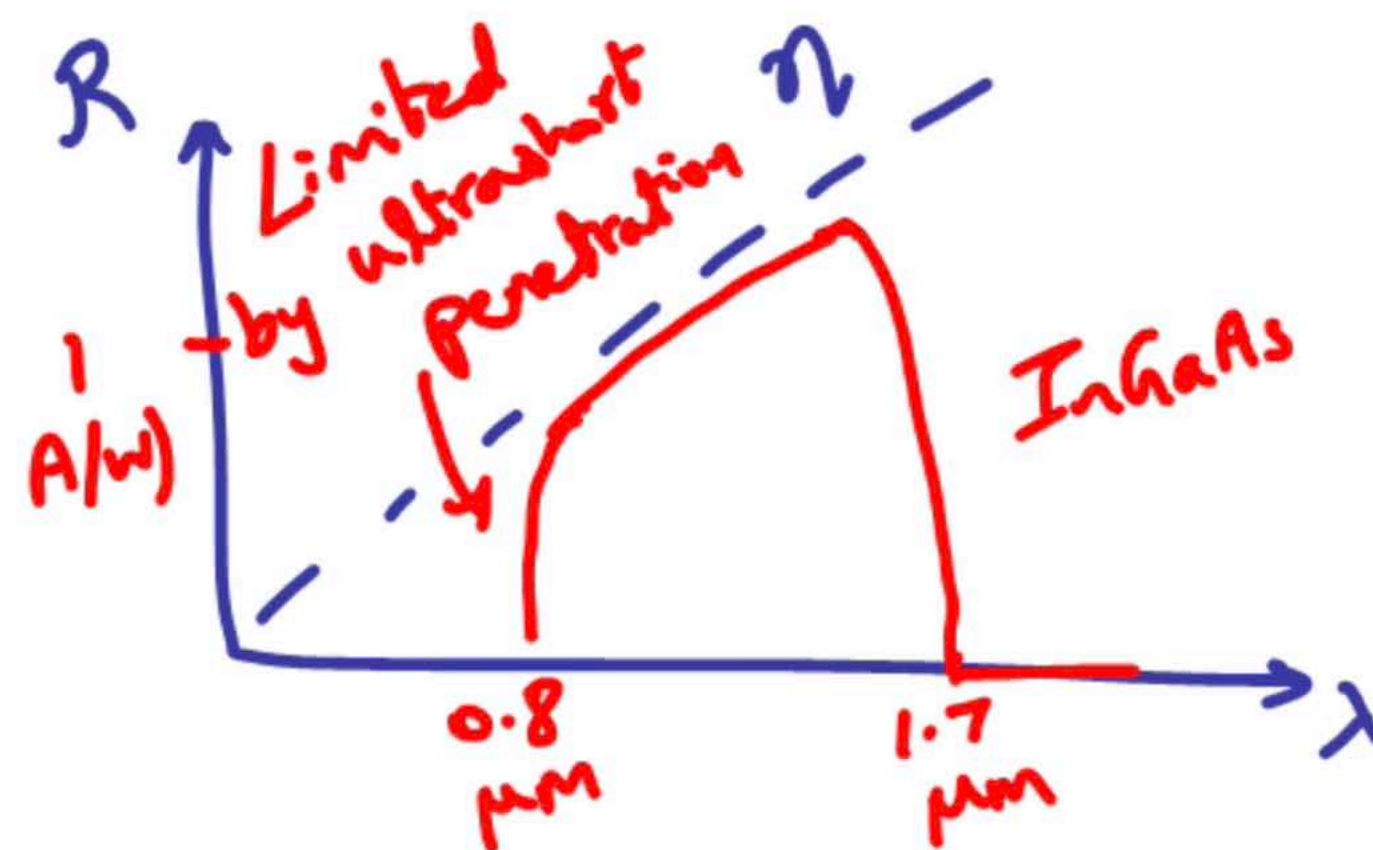
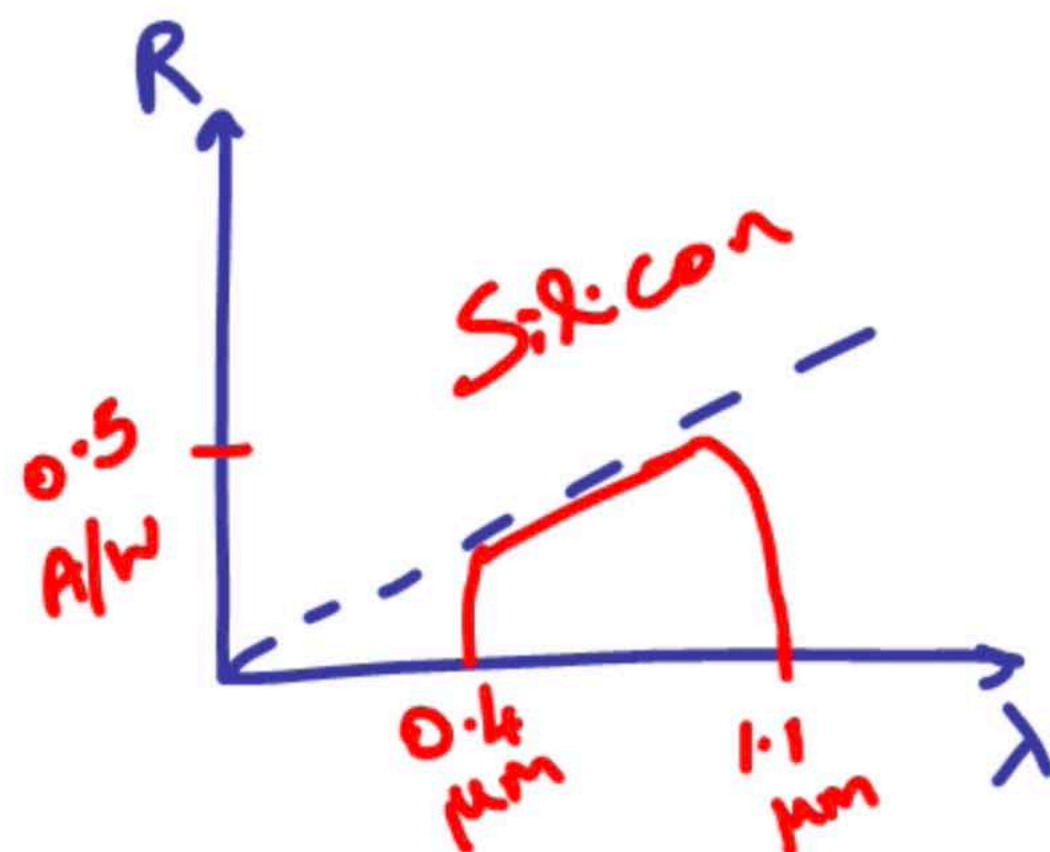
Responsivity, $\mathcal{R} = \frac{I_p}{P_{in}} \text{ (A/w)}$

$$I_p = \frac{P_{in}}{h\nu} (1 - R_f) \eta e (1 - e^{-\alpha W})$$

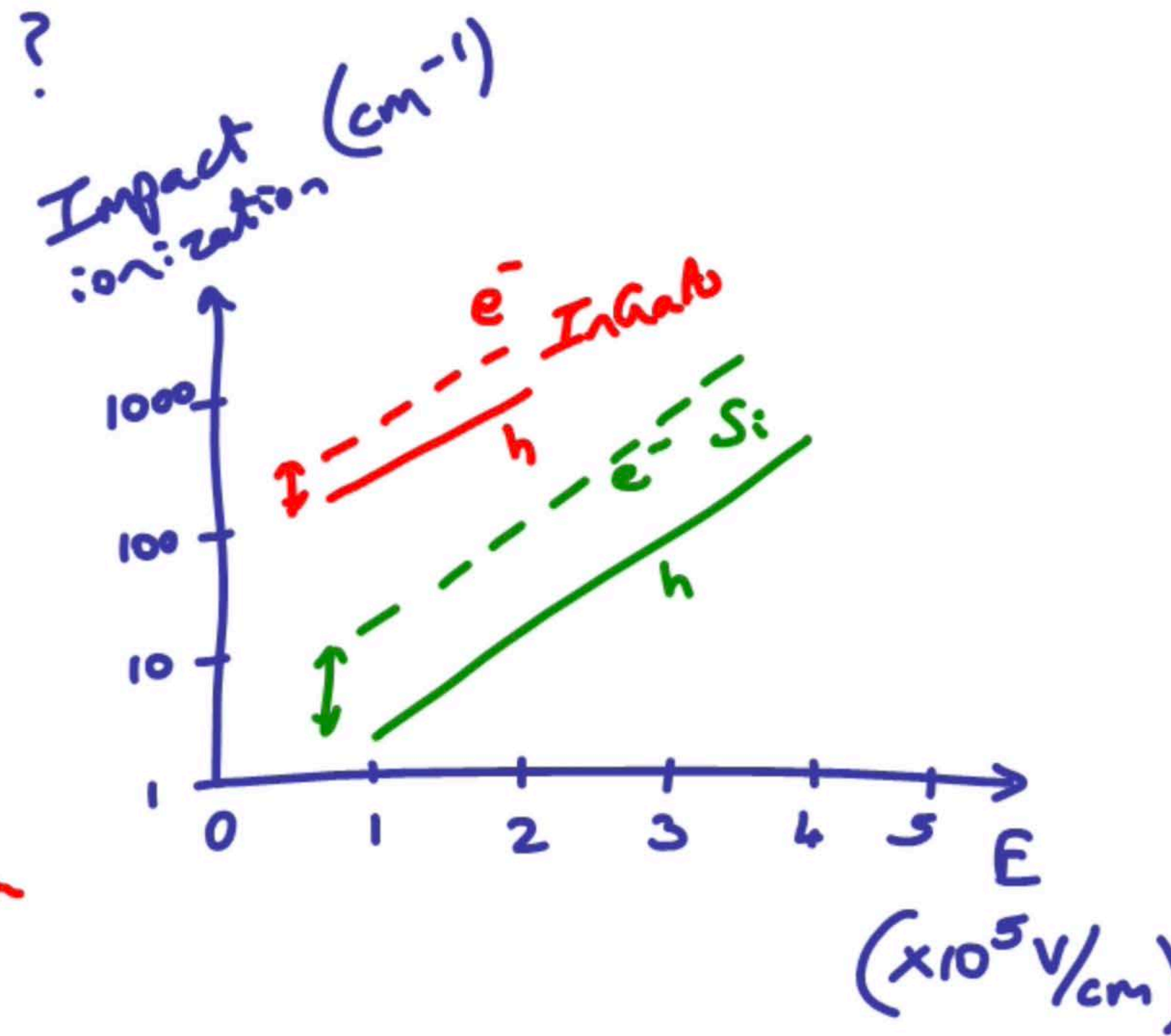
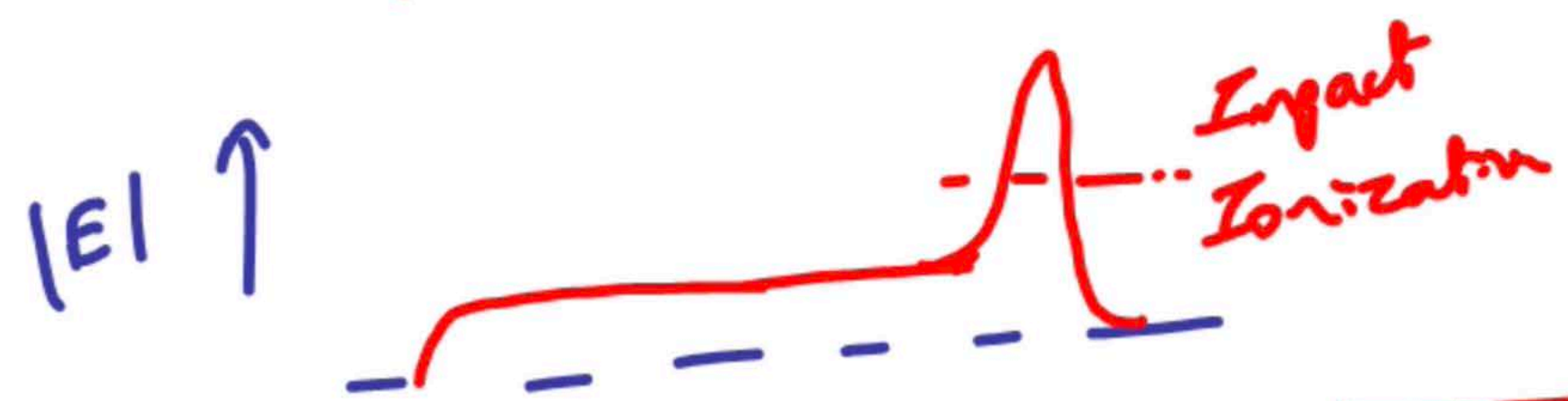
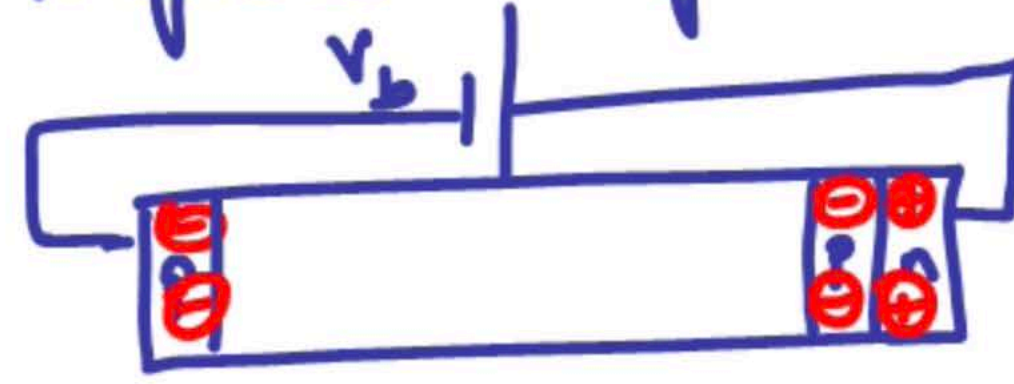
η
 \downarrow
 0.9 for InGaAs
 0.7 for Si

$$\mathcal{R} = \frac{\eta e}{h\nu} \text{ A/w}$$

$$= \frac{\eta \lambda (\mu\text{m})}{1.24}$$



How to improve responsivity (R)?



$$R_{APD} = M \cdot R_{PIN}$$