**Chapter 1:**

**, , , **

Fresnel’s equations: , , ,  (here ); ,

, , , , ;

Snell’s law, . Diffraction grating: 

**Chapter 2:**

, ,, MFD= 2*a* + 2*δ*, , , , , , ,

(for GRIN), , , (*AR* ≈ 0.9 dB km-1 μm4)

; (For Silica, *A* = 7.81 × 1011 dB km-1 and B = 48.5 μm).

, 

**Chapter 3:**

Fermi-Dirac distribution,  and Einstein relation, 

, , , ,

, and average Kinetic Energy of carriers,

Ambipolar transport equation in *p*-type semiconductor: 

For direct recombination, τp0 = 1/(Bn0) and for indirect recombination, 

, , **,**  and , $J\_{s0}=\left[\frac{eD\_{p}}{L\_{p}N\_{d}}+\frac{eD\_{n}}{L\_{n}N\_{a}}\right]n\_{i}^{2}$, $J\_{r0}=\frac{en\_{i}W}{2τ\_{0}}$ ,

, Φ*υ* = *Po*× (683 lm W-1) *×* *V*(*λ*), 

**Chapter 4:**

, , , , ,, , , , 

**Chapter 5:**

, , ,, , *tF* = 2.2*τ* , *M* = exp(*aew*), *ae* = *A*exp(-*B*/*E*), , *k = ah*/*ae*, Photoconductive gain , , , 

**Chapter 6:**

Malus’s law: , ,

LiNbO3: , , 

KDP: ,  and *n*3 = *n*3 = *ne*