

## EECE 598, Homework 03

1. Explain three different pn junction diode operating regions.
  - (a) What happens to the “depletion region” in each region?
  - (b) What happens to the “built-in-potential” in each region?
2. Explain the difference between “intrinsic” semiconductor and “extrinsic” semiconductor.
3. Explain the working principle for the laser diode.
  - (a) What does LASER stands for?
  - (b) Explain working principle for basic (Fabry Perot) laser diode.
  - (c) How do you create “single mode” lasers?
4. Explain the difference between FP laser and DFB laser.
5. Design the following by using block diagrams.
  - (a) Control and monitoring scheme to keep constant optical power for laser transmitter package.
  - (b) Tunable laser chip tuning mechanism.
  - (c) Control and monitoring scheme to keep fixed frequency in a tunable laser transmitter package.

See class notes for the detailed descriptions.