ECSE-2210 Microelectronics Technology
Fall 2005
Class Activity 18

1. Why cannot the detectors for 1.55 μm IR light be made from Si?

2. GaAs has a bandgap of 1.4 eV. If an LED is made from GaAs, what will be the approximate wavelength of the light output?

3. Consider the p-n junction diode detector shown below. A laser with a photon energy greater than the bandgap of the detector is focused such that illuminated area on the detector is very small (about 1μm in diameter). The hole and electron diffusion lengths are 10 μm and 20 μm respectively. Plot the photo-response you will expect when you scan the laser beam from x = -100 μm to x = +100 μm. Make a qualitative plot.