## ECE 320 - Homework #8

Comparitors and Schmitt Triggers, Term Project Part 1: Due Monday, March 7th

Assume a light sensor has the following resistance vs. light relationship

$$R = \left(\frac{100,000}{Lux}\right) \,\Omega$$

1) Design a circuit which outputs

- 5V when the light level is less than 10 Lux
- 0V when the light level is more than 10 Lux
- 2) Design a circuit with hysteresis which outputs
  - 5V when the light level exceeds 15 Lux
  - 0V when the light level drops below 10 Lux, and
  - No change (remains 0V or 5V) for light levels between 10 and 15 Lux

## Term Project (part 1)

Your term project must have two sections which include (total for the whole project) at least one diode, one transistor, and one op-amp.

3) Requirements: Specify the requirements for the first part of your term project

- Inputs
- Outputs
- How they relate
- 4) Analysis: Show your calculations for your circuit design relating to meeting the requirements
- 5) Test: Check your analysis with a PartSim (or similar simulation)
- 6) Validation: Build your circuit in lab and collect data to verify you meet your requirements.