

## Test Three Topics:

- Semiconductor PN Junction Characteristics
- Forward and Reverse Biasing the PN Junction
- Diode Characteristics and Circuits (Rectifiers, Clamps, Clippers)
- Solving diode biasing problems for both standard diodes and Zener diodes
- Optoelectronics including LEDs Photoresistors, Photodiodes, Solar Cells
- Generators & Motors including Stepper Motors and RC Servo Motors Concepts

## Test Three Resource Materials:

- Reading Assignments & Homework
- Course Notes
  - Diode Characteristics*
  - Optoelectronics (LEDs, PhotoResistors, PhotoDiodes)*
  - Generators & Motors*

## Test Three Review Problems

- Diode Problems*
- Zener Diode Problems*
- Additional Review Problems (Diodes and LED Applications)*

## Types of possible exam questions and problems:

- Sketch diode characteristic voltage/current curves including barrier voltage values
- Sketch forward and reversed biased diode circuits including mechanical switch analogs
- Calculate diode circuit current and voltage values (including voltage drops across series diodes)
- Calculate current limiting resistor values for simple LED circuits
- Calculate minimum input voltage to activate LED voltage-level indicator circuits
- Calculate voltage drops, current draws, and power consumption for LEDs in series and parallel
- Explaining basic concepts of Generators, DC Motors, RC Servo Motors, Stepper Motors