

# SY B.Tech Electrical (Working Professional)

## MINI PROJECT – Group G1

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### Simple Light-Activated LED Circuit

**Purpose:** Use the LDR to detect ambient light level and control an LED accordingly.

#### Components:

- 1 x LDR (Light Dependent Resistor).
- 1 x 10k Potentiometer (to adjust sensitivity).
- 1 x LED.
- 1 x 330 Ohm resistor (current limiting for LED).
- 1 x 10k resistor (as part of voltage divider with LDR).
- 1 x 9V battery (power supply).

#### Basic Working:

- The LDR and the 10k resistor form a voltage divider that changes voltage depending on light intensity.
- The potentiometer adjusts the threshold level for turning the LED on or off.
- The 330 Ohm resistor protects the LED from excessive current.

#### Example Wiring:

1. Connect one end of the LDR to +9V.
2. Connect the other end of the LDR to one terminal of the 10k resistor.
3. Connect the other terminal of the 10k resistor to ground.
4. Connect the junction between the LDR and 10k resistor to one end of the potentiometer (10k), with the other end of the pot connected to ground.
5. Use the wiper of the potentiometer as an adjustable output that feeds a transistor base or comparator input (or simply to LED circuit that turns LED ON/OFF based on light).
6. Connect the LED in series with the 330 Ohm resistor from power to ground, controlled via switching element that responds to the voltage from the pot/LDR section.