

Description

LED and Laser diode Characteristics Apparatus

A light-emitting diode (LED) is a semiconductor light source.

Like a normal diode, the LED consists of a chip of semiconducting material doped with impurities to create a p-n junction.

As in other diodes, current flows easily from the p-side, or anode, to then-side, or cathode, but not in the reverse direction.

When an electron meets a hole, it falls into a lower energy level and releases energy in the form of a photon.

The wavelength of the light emitted, and therefore its colour depends on the band gap energy of the materials forming the p-n junction.

Typical I-V Characteristics of LED in forwarding bias are shown in the fig.

Charge-carriers-electrons and holes - flow into the junction from electrodes with different voltages.

A laser diode, like many other semiconductor devices, is formed by doping a very thin layer on the surface of a crystal wafer.

A laser diode is a laser where the active medium is a semiconductor similar to that found in a light-emitting diode.

The crystal is doped to produce an n-type region and a p-type region, one above the other, resulting in a p-n junction, or diode.

Procedure:

LEDs are connected in forward bias arrangement and applied a voltage across LED is varied & corresponding current is measured.

The result is tabulated and plotted on the graph.

In second part voltage applied across Laser diode is varied.

Its corresponding output is measured & plotted.

