

Class:

Roll No:

Experiment No: 3

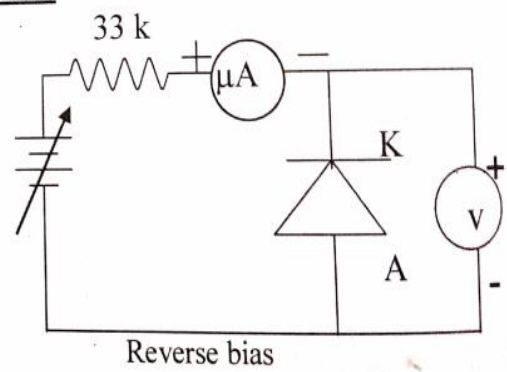
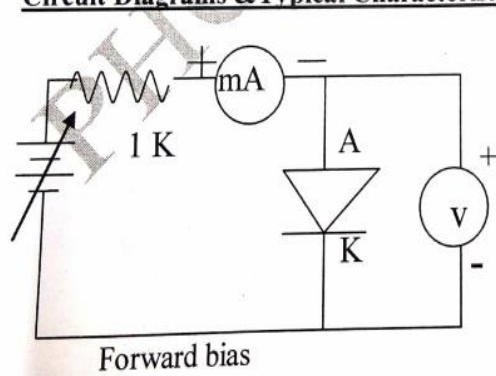
Study of I-V Characteristics of given
photodiode.

Date Of Preparation:

Date of Submission:

Signature of Teacher:

Circuit Diagrams & Typical Characteristics Curve:



EXPERIMENT NO. 3

AIM: To study the V-I characteristics of a photo-diode

APPARATUS: Commercial setup with following components:
Photodiode, variable light source with lamp (1to12v),Regulated power supply V (0 to 20V) with Ammeter and Voltmeter. Patch cords

THEORY: A silicon photodiode is a solid state light detector that consists of a shallow diffused P-N junction with connections provided to the outside world. When the top surface is illuminated, photons of light penetrate into the silicon to a depth determined by the photon energy and are absorbed by the silicon generating electron hole pairs. The electron-hole pairs are free to diffuse (or wander) throughout the bulk of the photodiode until they recombine. The average time before recombination is the “minority carrier lifetime”. At the P-N junction is a region of strong electric field called the depletion region. It is formed by the voltage potential that exists at the P-N junction. Those light generated carriers that wander into contact with this field are swept across the junction. If an external connection is made to both sides of the junction a photo induced current will flow as long as light falls upon the photodiode. In addition to the photocurrent, a voltage is produced across the diode.

Plot the graph:

Diode Current against Distance.

OBSERVATION TABLE:

[illegible]