

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

Department of Electronics & Electrical Engineering
EE102: Basic Electronics Laboratory

Expt.No.1: Familiarization of Lab Equipment

Objectives:

1. To become familiar with basic components used in building electronic circuits such as resistors, capacitors, inductors, diodes, transistors, breadboards and power supplies.
2. To become familiar with the operation of the function generator and the oscilloscope in the study of waveforms.

Part A: Demonstration of Lab Equipment

This part of the lab will involve a demonstration by TAs regarding the basic components and the use of breadboards, function generator & oscilloscope.

Part B: Basic Components

Make a list of basic components provided to you in the box and note their features in detail. For resistors, capacitors and inductors, compute relevant values such as resistance, capacitance, inductance, tolerance etc. For diodes and transistors, note how to find the anode, cathode, base, emitter, collector etc. Note the features of the power supplies and verify the internal connections of the breadboard.

Part C: Function Generator and Oscilloscope

Set a function generator to output a triangular waveform of 2.3 kHz. Connect the output of the function generator to Channel 2 of an oscilloscope. Adjust appropriate knobs of the oscilloscope to get a stable display of the triangular wave. Note the time scale and number of divisions per cycle on the time axis (x-axis) of the display and calculate the period and frequency of the waveform.

With the oscilloscope connected, adjust the knobs of the function generator to obtain a square wave of frequency 5 kHz and amplitude 5 V_{p-p} by doing measurement on the oscilloscope screen (ignore the indicator on the function generator). Note the selected time scale, number of divisions per cycle on x-axis, selected amplitude scale, number of divisions between the peaks on y-axis and verify the frequency and amplitude are as required.

Part D: Lab Report

Prepare and submit a lab report as specified in the general instructions regarding the lab. Include the answers to the following questions in the report:

1. How are the cathode and anode generally indicated on a diode?
2. What does the notch on a transistor indicate?