Lab Experiment-1

Experiment Name: Oscilloscope and Function Generator Operation.

1)Objective:

To use the oscilloscope and function generator to calculate, obtain, and measure the frequency, durations (time period) and peak to peak value of three types of wave shape.

2)Apparatus:

a) Oscilloscope
b) Function generator
c) DC supply
d) scope probes

3)Theory:

Oscilloscope

The oscilloscope is the most important instrument available to the practicing technician or engineer. It permits the visual display of a voltage signal that can reveal a range of information regarding the operating characteristics of a circuit or system that is not available with a standard multimeter. In addition to the display of a signal, it can also be used to measure the average value, rms value, frequency and period of a sinusoidal or no sinusoidal signal. The screen is divided into centimeter divisions in the vertical and horizontal directions. The vertical sensitivity is provided (or set) in1volts/div., while the horizontal scale is provided (or set) in **t** time (s/div). signal can be determined using the following equations:

Period of signal voltage = horizontal sensitivity (V/div.)×deflection (div.)

$T=1/f$

So, f$= 1/T$

Function Generator

The function generator is a voltage supply that typically provides a sinusoidal, square-wave, and triangular voltage waveform for a range of frequencies and amplitudes. Although the frequency of the function generator can be set multimeter by the dial position and appropriate multiplier, the

oscilloscope can be used to precisely set the output frequency. They can also produce composite waveforms which are combinations of any two or all the three waveforms. This can be done using the waveform shape select control.

Time Period or Frequency

A wide range of frequencies can be generated (0.01Hz to 10MHz or even more). Adjusting the Frequency Multiplier and the Frequency Selector knob helps select the frequency of the generated signal.

Amplitude

The amplitude of the output signal can be increased and decreased over a wide range using the attenuation control.

Frequency

Generators also allow us to sweep the frequency both linearly and logarithmically, this option is available in the new digital function generators.

Modulated Signals

Digital Function Generators allow us to produce Amplitude, Frequency and Pulse Amplitude Modulated signals as well.

4)Diagram:

Different positions of sinusoidal, square-wave, and triangular wave.

Sinusoidal wave:

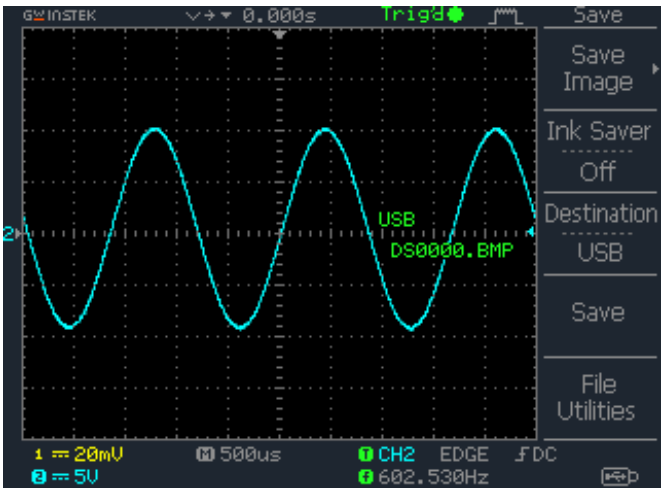


Fig 1: Sine wave (position-1)

Calculations

Time Period(T)	Frequency (f)	Peak to peak value(v)
T =2.1 x 500 µs =1050 µs	f =1/T =1/1050 = 0.0009 Hz	V_P =1.9v x 5v =9.5 v

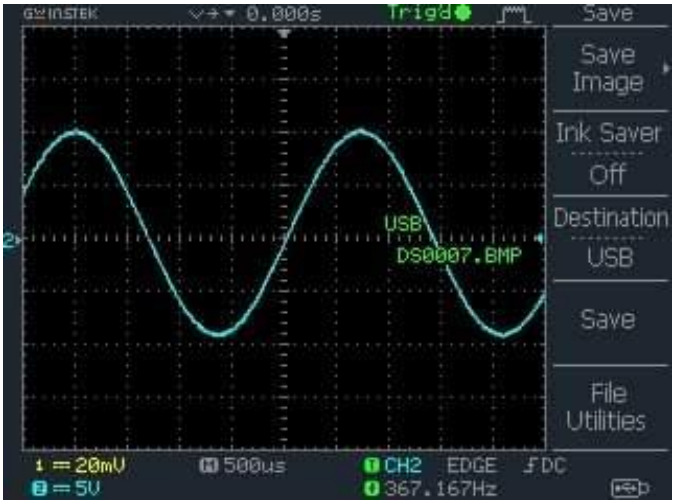
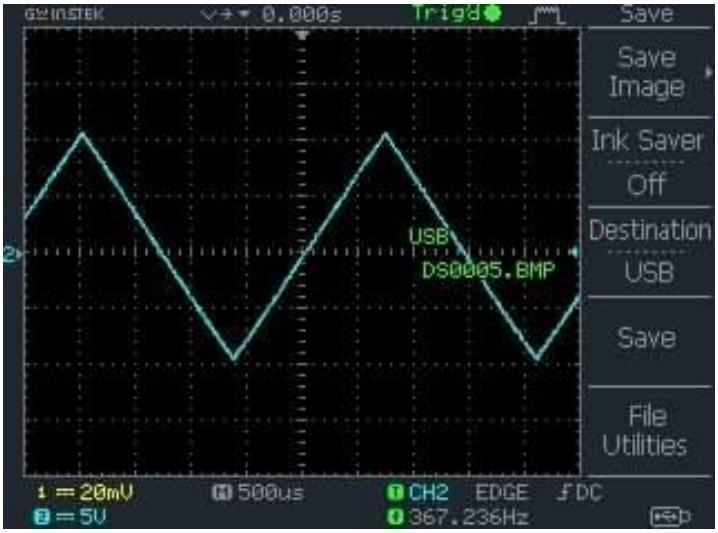


Fig 2: Sine wave (position-2)

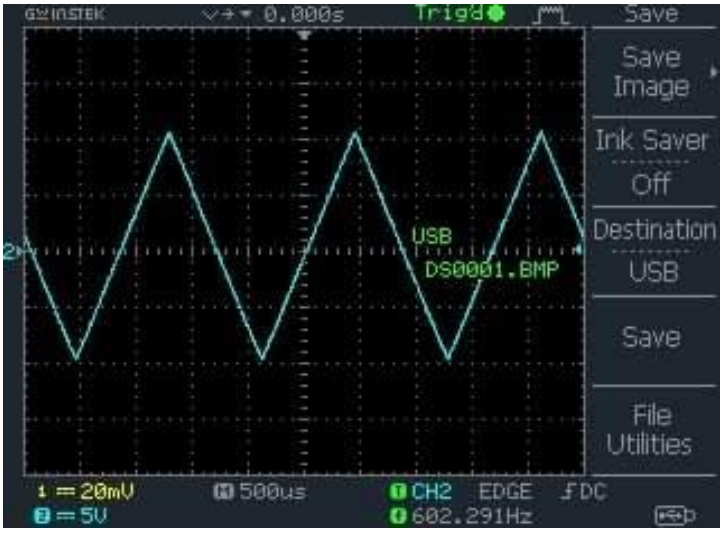
Time Period(T)	Frequency (f)	Peak to peak value
T = 1.3 x 1 µs = 1.3 µs	f = 1/T = 1/1 = 1 Hz	V_P = 2.2 x 5v = 11 v

Triangular wave:



Time Period(T)	Frequency (f)	Peak to peak value(v)
T = 2.1 x500 µs =1050 µs	f = 1/T = 1/1050 = 0.009 Hz	V_P =2.1x 5v =10.5 v

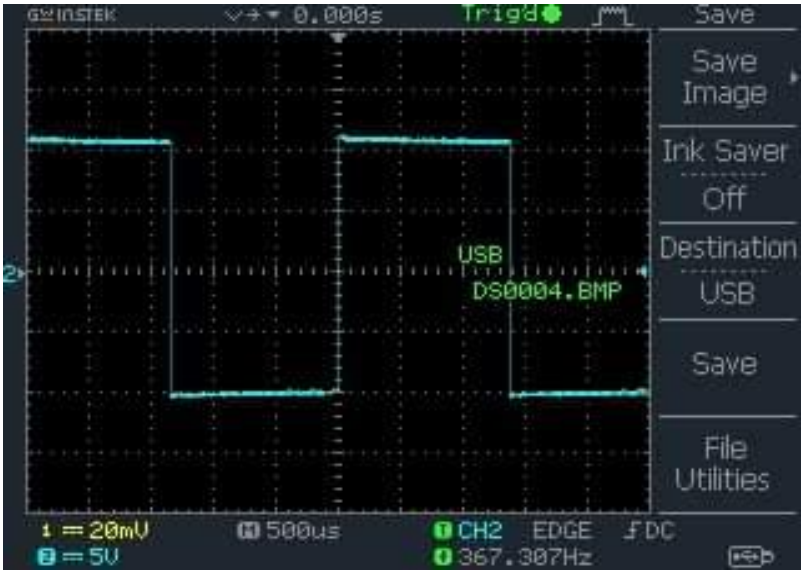
Fig: Triangular wave (position-1)



Time Period(T)	Frequency (f)	Peak to peak value (v)
T = 1.3 x 1 µs =1.3 µs	f = 1/T = 1/1 = 1 Hz	V_P =2.2x5v = 11 v

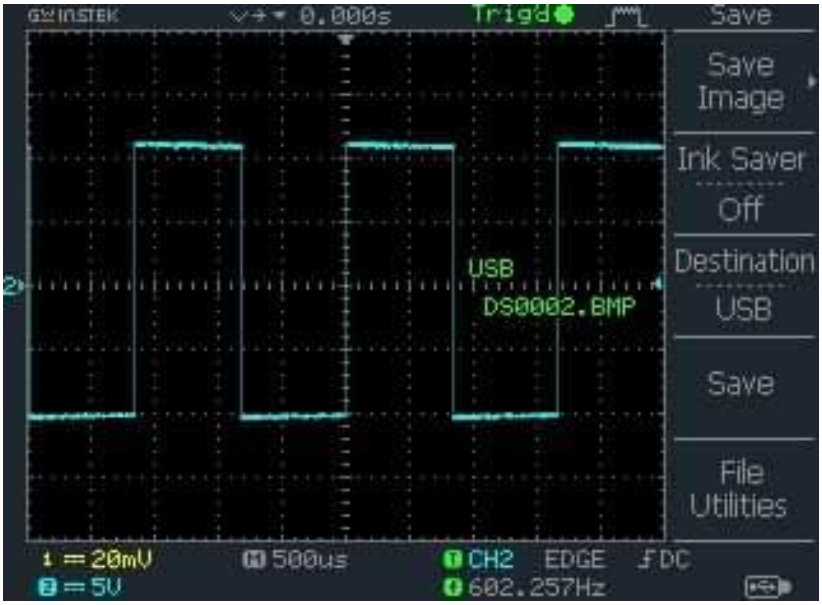
Fig: Triangular wave (position-2)

Square wave:



Time Period(T)	Frequency (f)	Peak to peak value(v)
T = 1.2 x 1 µs = 1.2 µs	f = 1/T = 1/1 = 1 Hz	V_P = 2.2x 5v =11 v

Fig: Square wave (position-1)



Time Period(T)	Frequency (f)	Peak to peak value(v)
T = 1.2 x 1 µs =1.2 µs	f = 1/T = 1/1 = 1 Hz	V_P=2.2x 5v = 11 v

Fig: Square wave (position-2)

5)Conclusion:

In this experiment we were exposed to function of oscilloscope and function generator. We measure frequency, time period, peak to peak value for three different types of wave.

We don't find any discrepancy in our Experiment works and we have collected all the values properly. We have completed our calculations perfectly. We calculated all the calculations and at last we have found a reasonable value which are almost similar to our practical values.

In conclusion we can say that we conducted this experiment to do our calculations by the help of figure in oscilloscope. And by the help of function generator we change the wave shapes.

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BANGLADESH UNIVERSITY OF BUSINESS AND TECHNOLOGY

Lab Report on

Oscilloscope and Function Generator Operation

Course Code: EEE 212

Course Title: Electronic devices and circuits lab

Submitted to:

Name: Md. Mamunoor Rahman

Lecturer, Dept. of EEE

at Bangladesh University of Business and Technology.

Submitted by:

Name: Syeda Nowshin Ibnat

ID: 17183103020

Intake: 39

Section: 1

Program: B.SC. in CSE

Date of Submission: 06.07.19

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Lab Report on

Study of Diode Characteristics

Course Code: EEE 212

Course Title: Electronic devices and circuits lab

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