

**Institute of Engineering & Management**  
**Department of Computer Science & Engineering**  
**Communication Engineering Laboratory for 2<sup>nd</sup> year 4<sup>th</sup> semester 2017**  
**Code: CS 491**

**Date: 18/9/18**

**ASSIGNMENT-4**

**Experiment Name: Waveforms of high and low Duty cycles**

**Objective:** Generating and displaying waveform in two different frequencies for high and low duty cycle.

**Theory:** A duty cycle is the fraction of one period in which a signal or system is active. Duty cycle is commonly expressed as a percentage or a ratio. A period is the time it takes for a signal to complete an on-and-off cycle.

$$D = \frac{PW}{T} \times 100\%$$

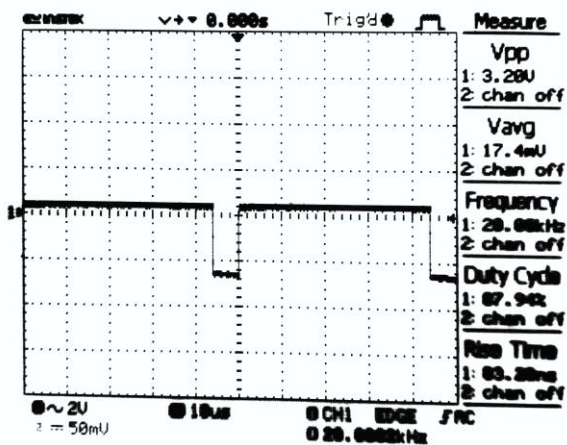
where D is the duty cycle, PW is the pulse width (pulse active time), and T is the total period of the signal. Thus, a 60% duty cycle means the signal is on 60% of the time but off 40% of the time. The "on time" for a 60% duty cycle could be a fraction of a second, a day, or even a week, depending on the length of the period.

**Observation Table:**

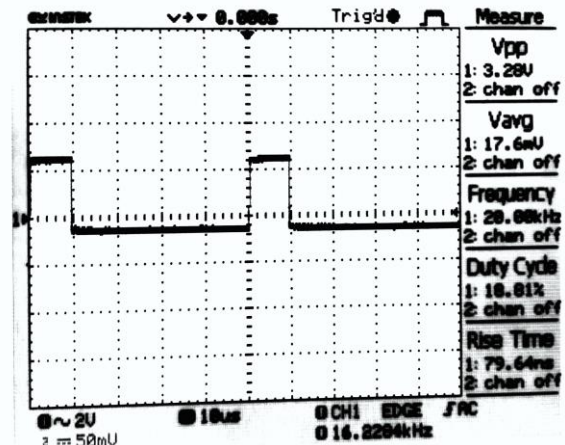
Table for duty cycle of Square wave:

Function Generator		Oscilloscope		
frequency	Volt(V)	Duty Cycle(%)	V <sub>pp</sub> (V)	Frequency(kHz)

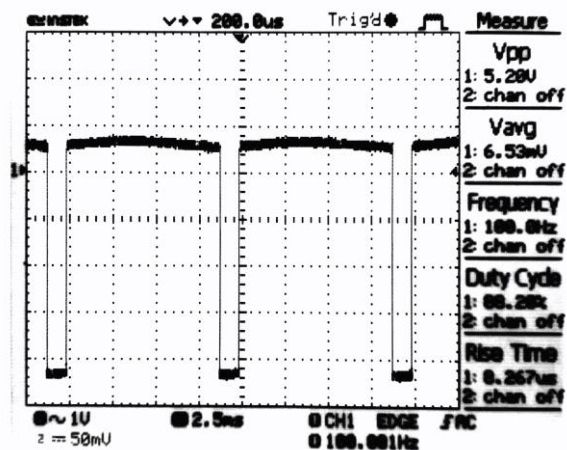
## Waveforms:



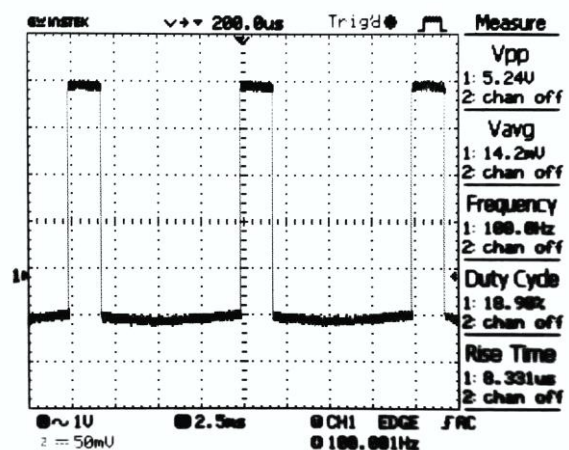
20kHz, Low duty cycle



20kHz, High duty cycle



100kHz, Low duty cycle



100kHz, High duty cycle

**Discussions:** From this experiment we came to know about different duty cycles and their implementation. The function generator cannot output 0% and 100% duty cycle waves.