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## **MANIPAL INSTITUTE OF TECHNOLOGY**

(A constituent Unit of Manipal Academy of Higher Education)

**MANIPAL**

# **Drives, Controls and Modelling Laboratory Manual (MTE 3161)**

Fifth Semester B.Tech (Mechatronics Engineering)

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**ROLL NO: 37**

## Lab VII:

Date: 02/11/2023

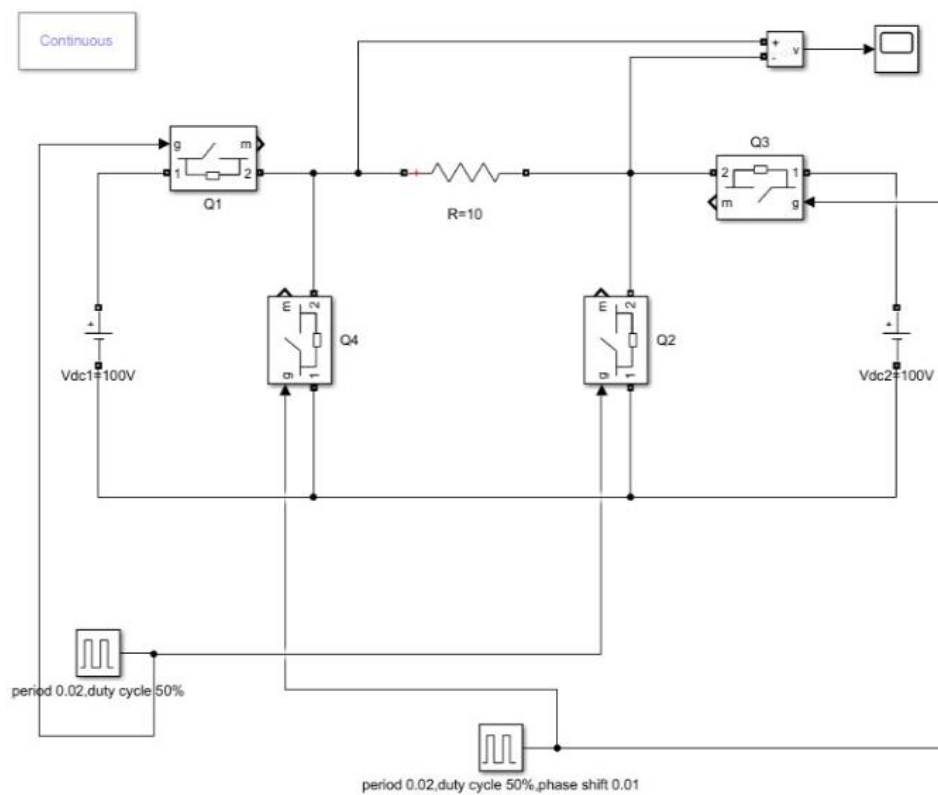
### Control of AC Induction Motor using 3ph Inverter

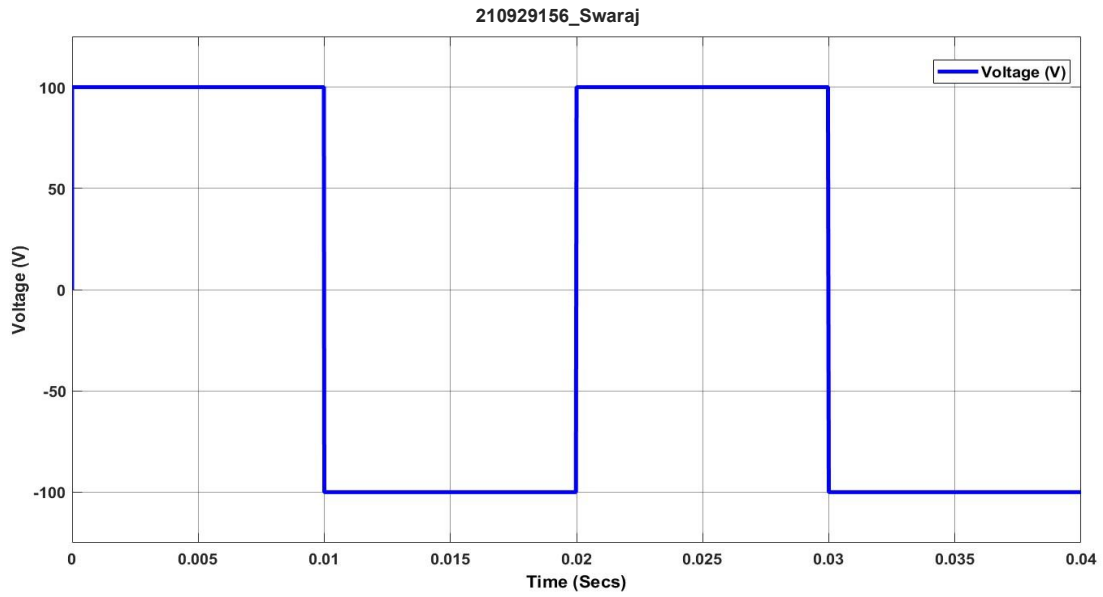
Aim:

To familiarize with DC-AC converters and SPWM technique.

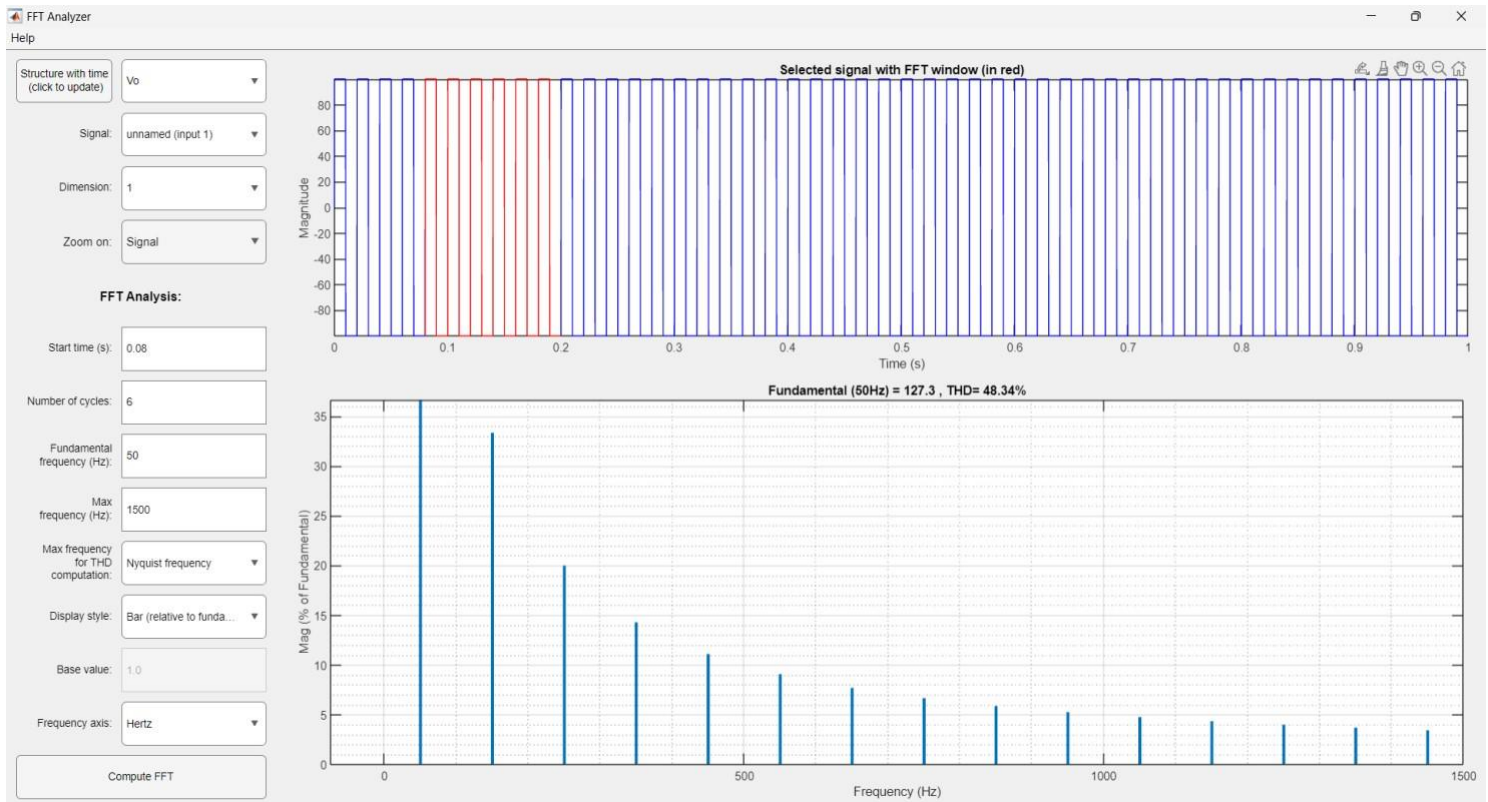
#### Problem 1:

To develop an single phase DC-AC inverter with DC voltage as 100 V and resistive load  $R=10\ \Omega$ . Observe the output Voltage to be AC form with 50Hz (0.02 sec). Observe the FFT analysis window of output voltage which depicts lower order harmonics (Which are hard to filter) Generate 100 Hz (0.01 sec) AC signal by adjusting pulse generators period.



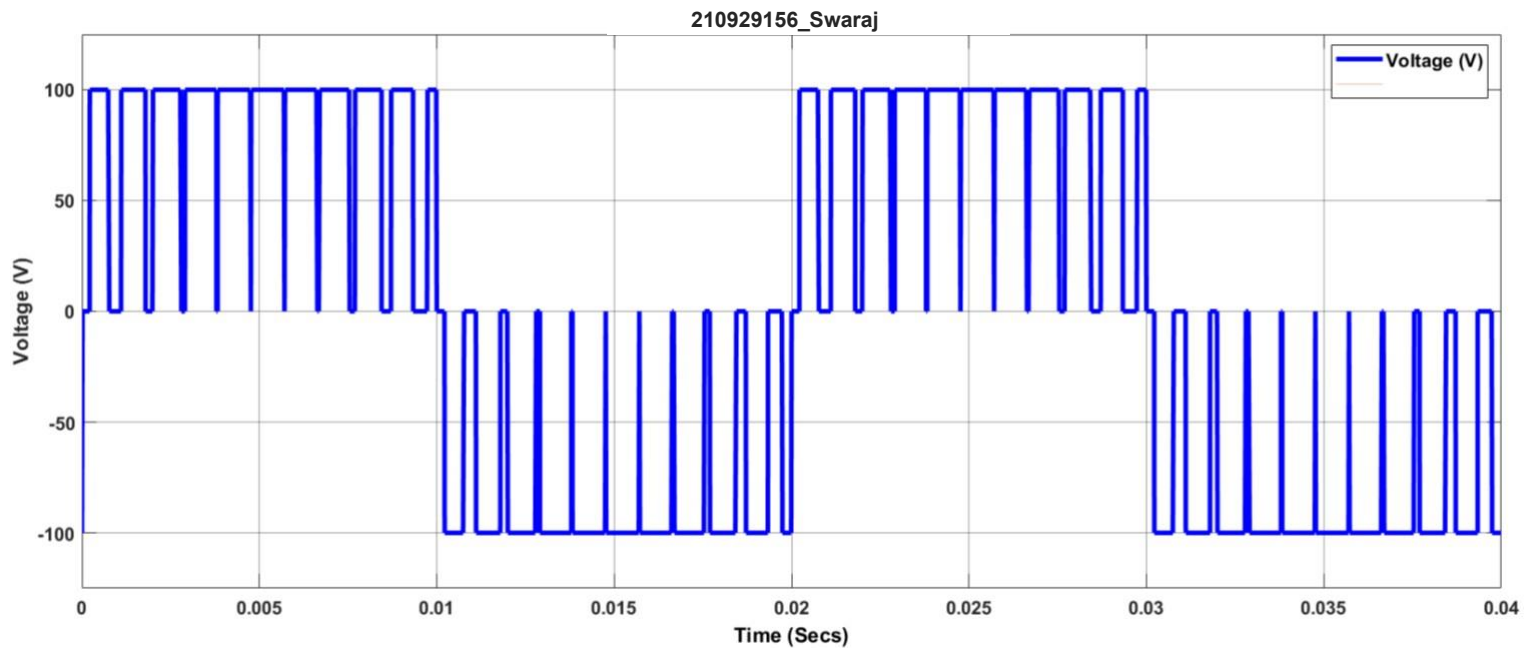
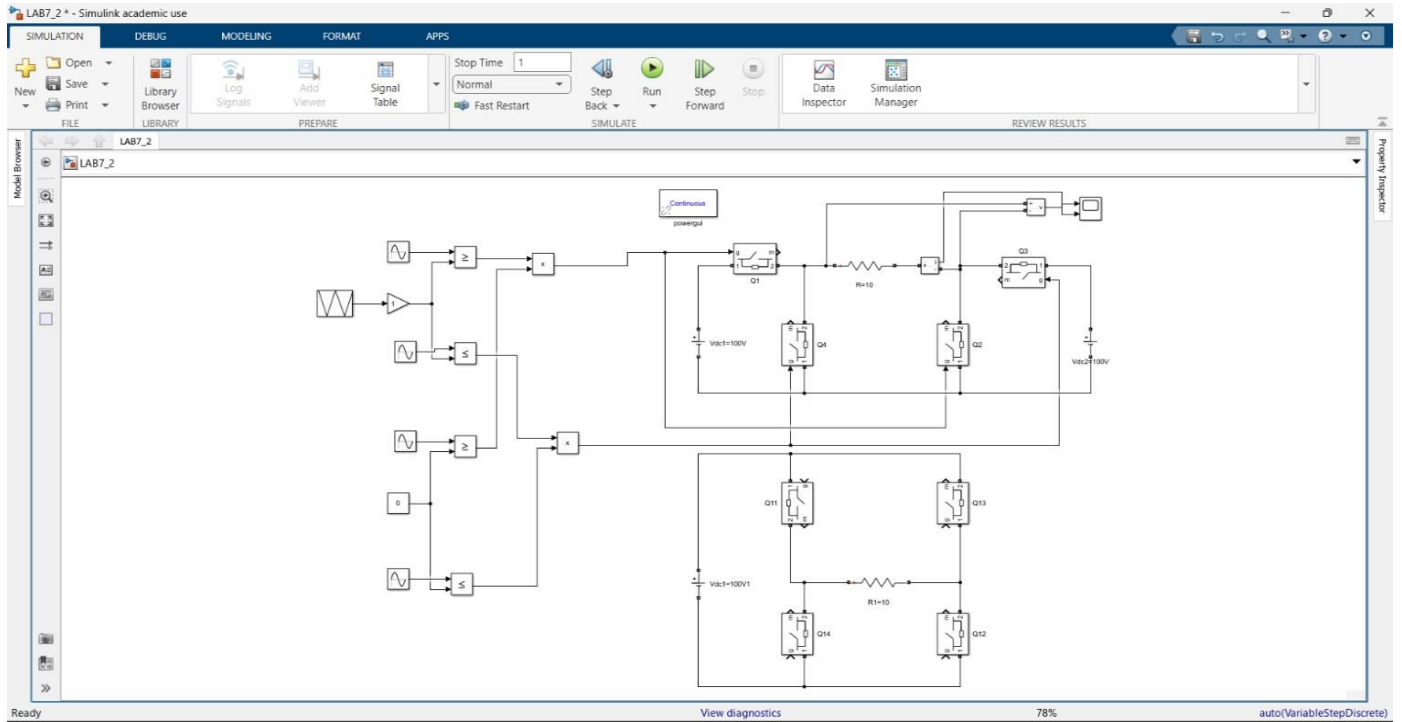


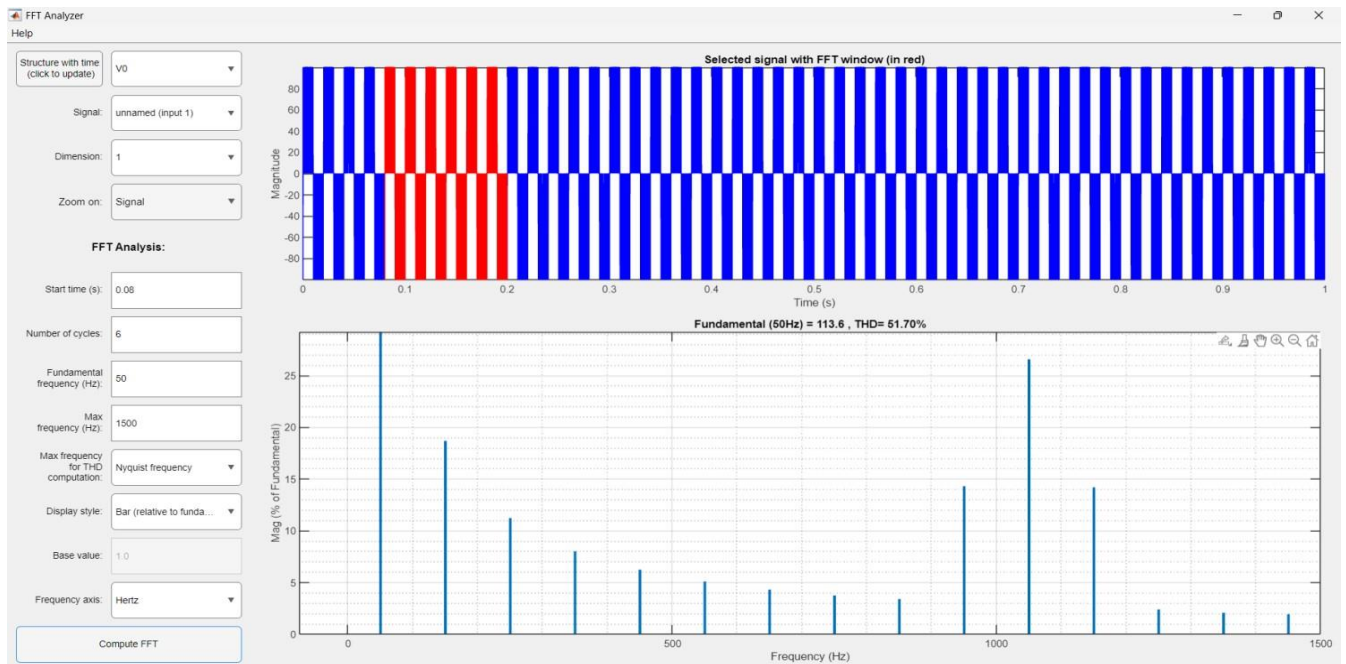
**FFT window of output voltage with single pulse PWM mode:**



## Problem 2:

To develop an single phase DC-AC inverter with DC voltage as 100 V and resistive load  $R=10\ \Omega$  using sine-PWM technique. Observe the output Voltage to be AC form with 50Hz (0.02 sec). The carrier frequency of triangular wave can be 1050 Hz. Observe the FFT analysis window of output voltage which depicts lower order harmonics (Which are hard to filter)





Major portion of harmonics are shifted to carrier frequency (1050 Hz) which is higher frequency than fundamental frequency and is easy to filter out with small value of filters.

### Three phase Inverter: 180 deg conduction mode

