THREE PHASE INVERTER

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Theory:-

Inverter is a circuit which converts DC supply into AC supply. The circuit considered here is a 3 phase voltage source inverter where a DC supply is converted to 3 phase AC supply. There are 3 limbs in the circuit. Each limb consists of two electronic switches. Switches in the same limb should not conduct simultaneously as it leads to short circuit the supply. The sequence of excitation of switches is S_1, S_6, S_3, S_2, S_5, & S_4. Each switch conducts for a duration of 180° and delays by a phase angle of 60° as mentioned in the previous sequence. The output from this inverter is fed to a 3-phase balanced load. The output voltage is 120° out of phase. The simulated circuit uses an anti-parallel freewheeling diode connected across each electronic switch.
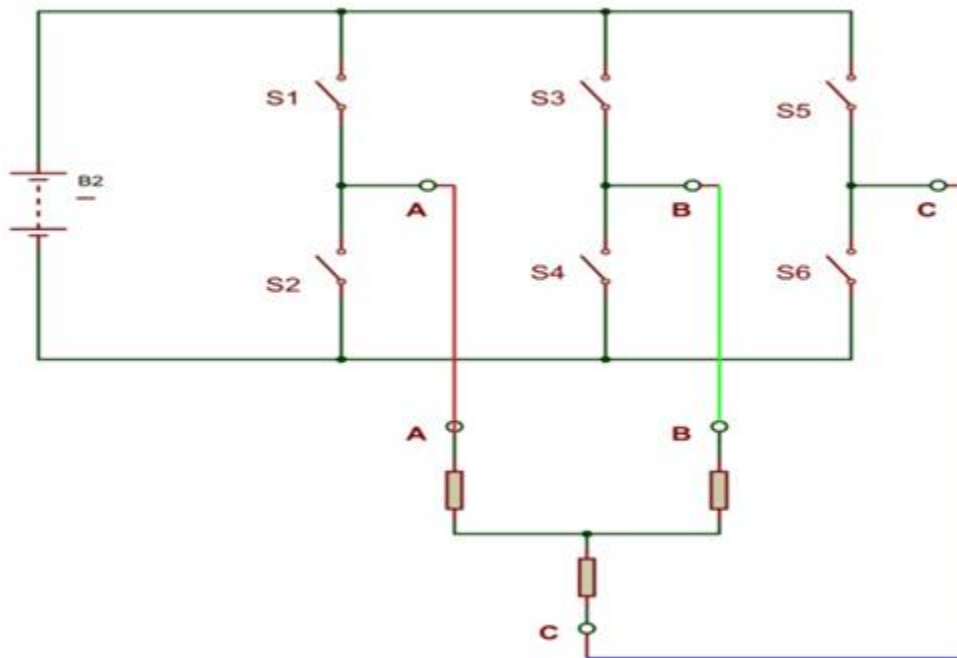
CIRCUIT DIAGRAM:-

Figure 1: Circuit diagram of 3 phase inverter
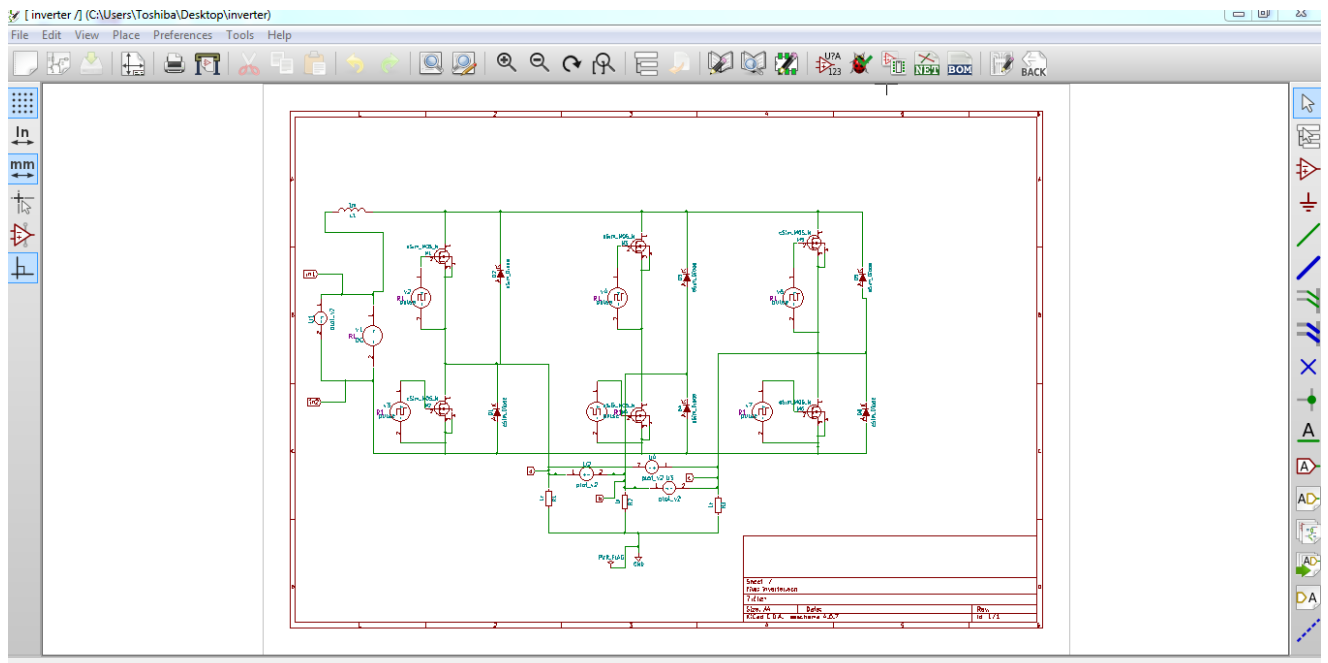
Schematic Diagram:

Figure 2: Three phase voltage source inverter

Simulation Results
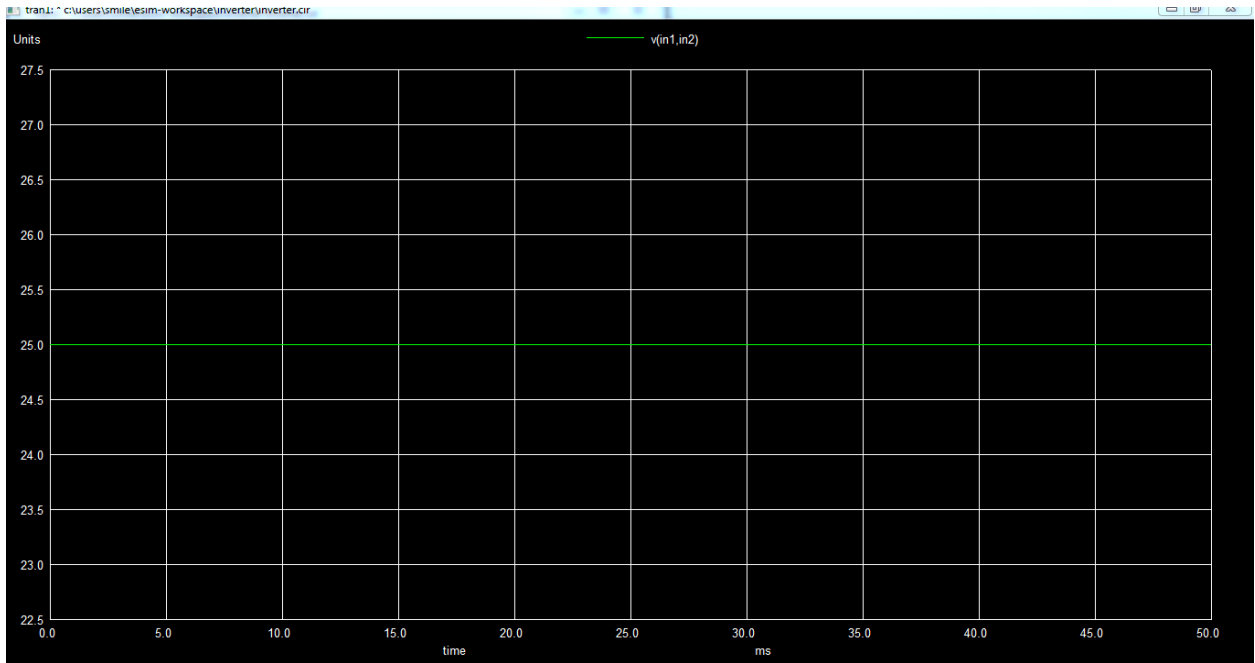
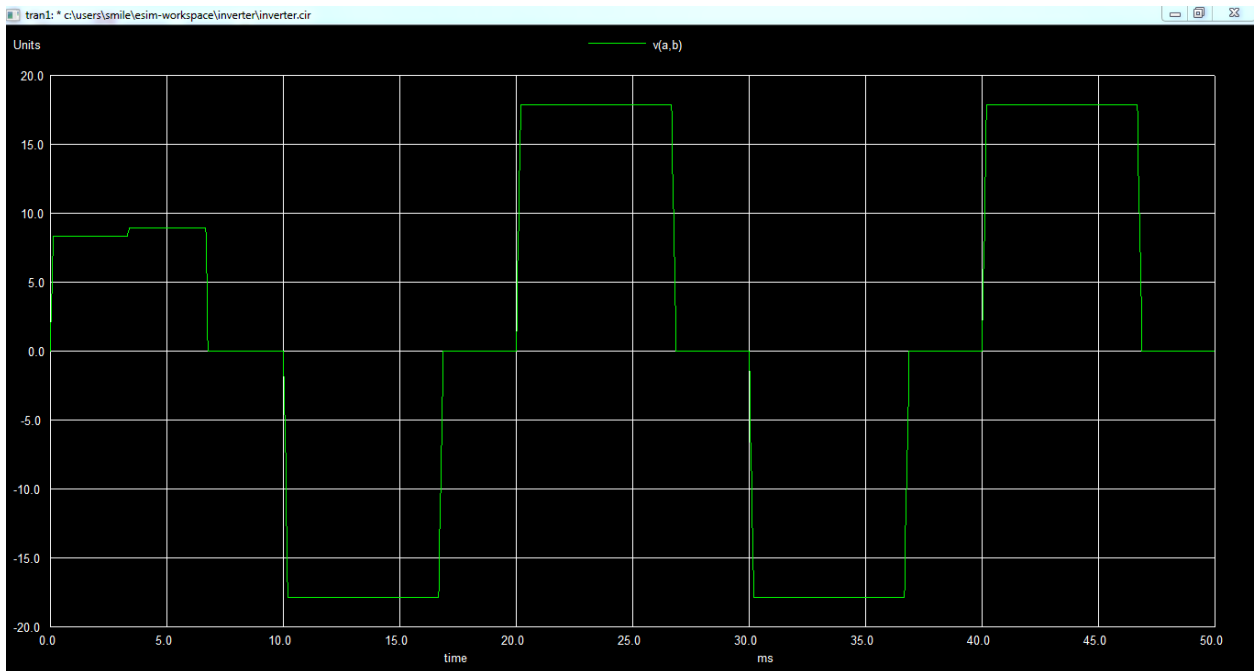### 1) Ngspice Plots

Figure 3:- Input dc voltage
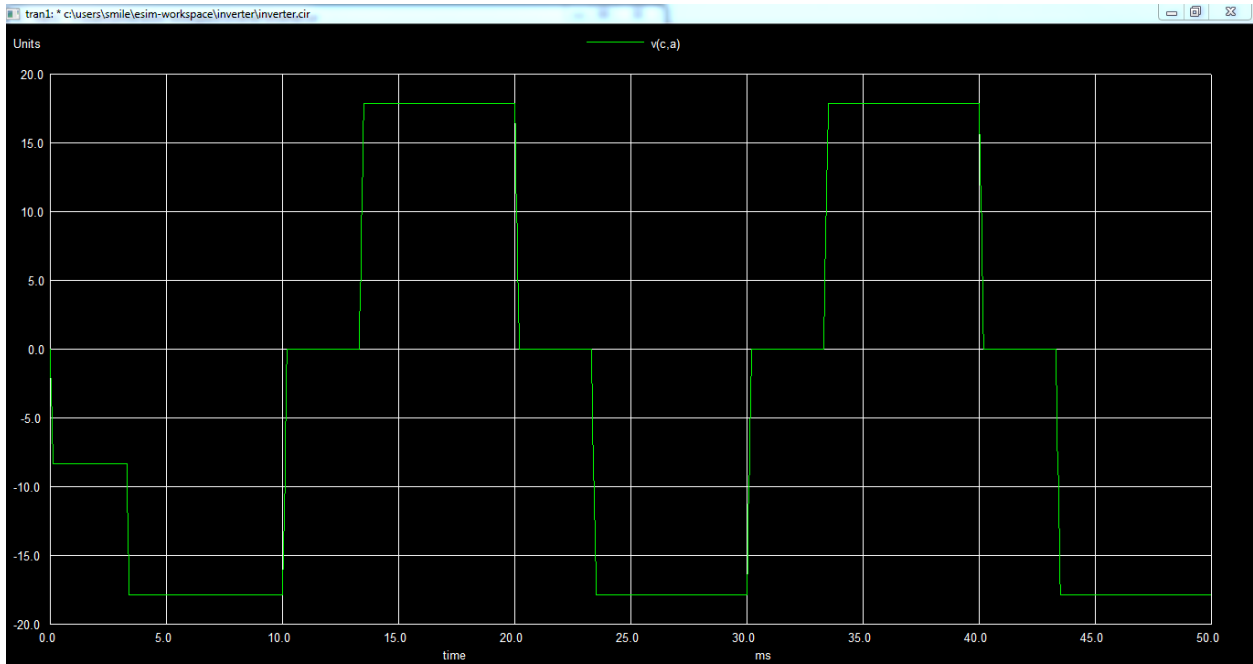

Figure 4:- Output voltage V_{ab}

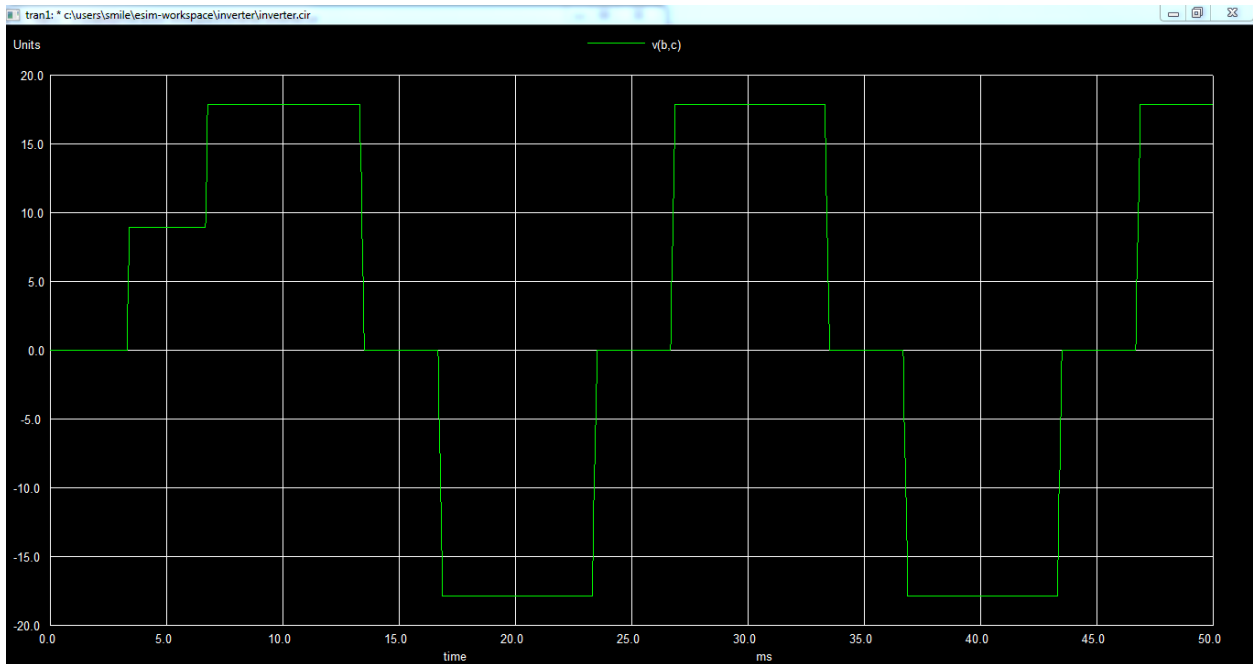**Figure 5:- Output voltage of V$_{ca}$**

Figure 6:- Output voltage of V$_{bc}$

2. Python Plots:

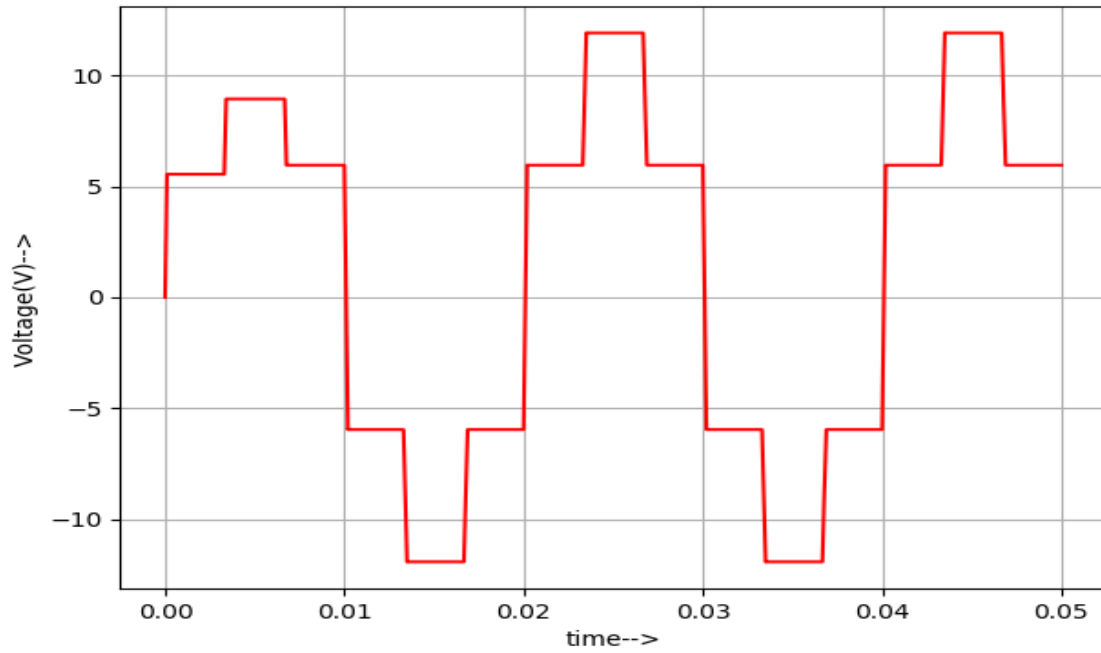**Figure7:- Python plot of V_{ab} versus time**
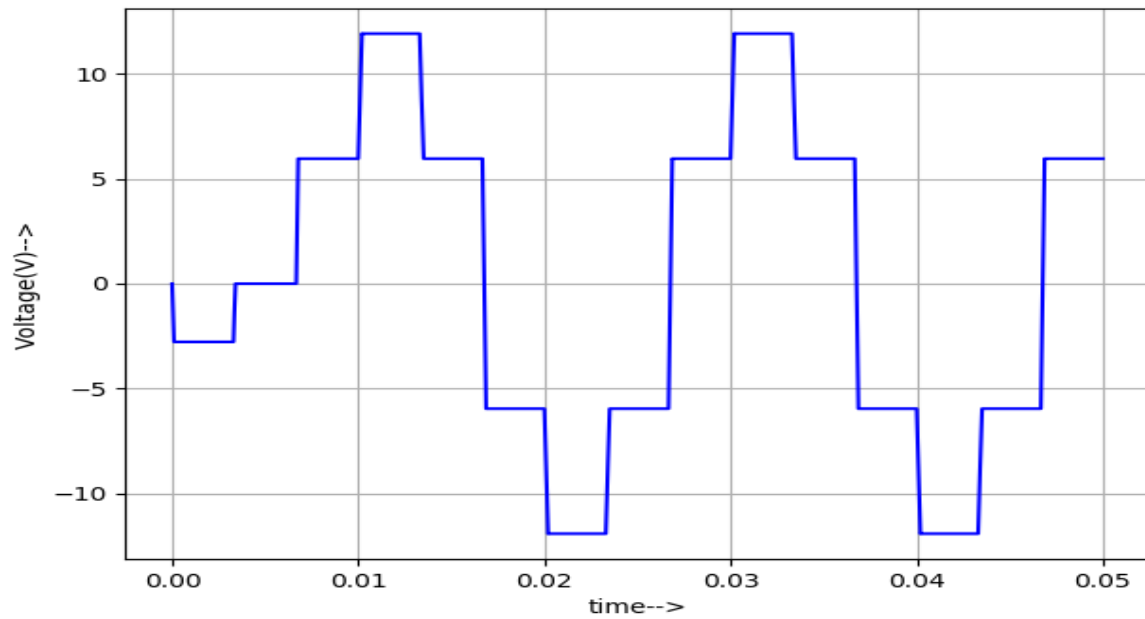

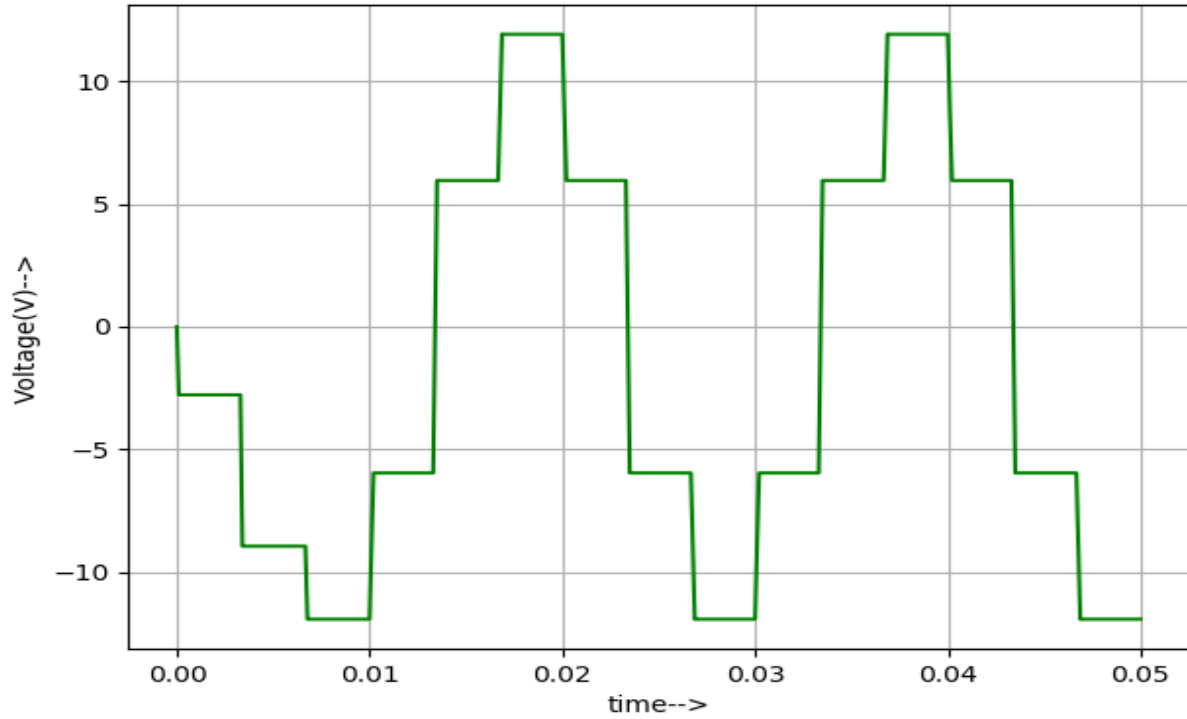**Figure 8:-Python plot of V_{bc} versus time**

Figure 9: Python plot of V$_{ca}$ versus time

References :

1. https://circuitdigest.com/tutorial/three-phase-inverter-circuit-diagram-120-degree-and-180-degree-conduction-mode