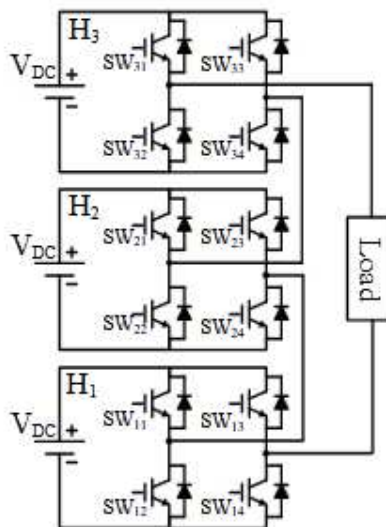


Series 5

Multilevel inverter

Exercise:

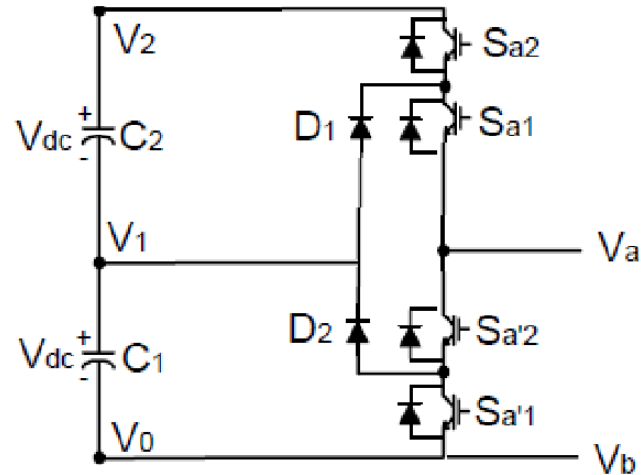
According to the following scheme, explain and describe the following questions:



- 1- The total harmonic distortion (THD)
- 2- Demonstrate and plot the output voltage wave form $V_o(\omega t)$
- 3- Express the coefficient b_n
- 4- Express the triangular number sequence (TNS)
- 5- output signal with quarter-wave symmetry is required and a quarter-wave is equal to $\pi/2$
- 6- Find the angle for each triangular number.
- 7- Plot V_{DC} vs T for sine , 5 levels, 9 levels waveforms obtain with triangular number.

Exercise 2

According to the following scheme answer to these questions:



- 1- What is the number of levels of this inverter?
- 2- What is the total voltage blocking capability per phase of an m-level converter in the figure above?
- 3- Filling the gaps of the table below according to switching state and voltage output of this converter:

<i>Voltage V_{a0}</i>	<i>Switch States</i>			
	<i>S_{a2}</i>	<i>S_{a1}</i>	<i>S_{a2}'</i>	<i>S_{a1}'</i>
<i>$V_2=2V_{dc}$</i>				
<i>$V_1=V_{dc}$</i>				
<i>$V_c=0$</i>				