Power electronics lab

Three phase Uncontrolled rectifier

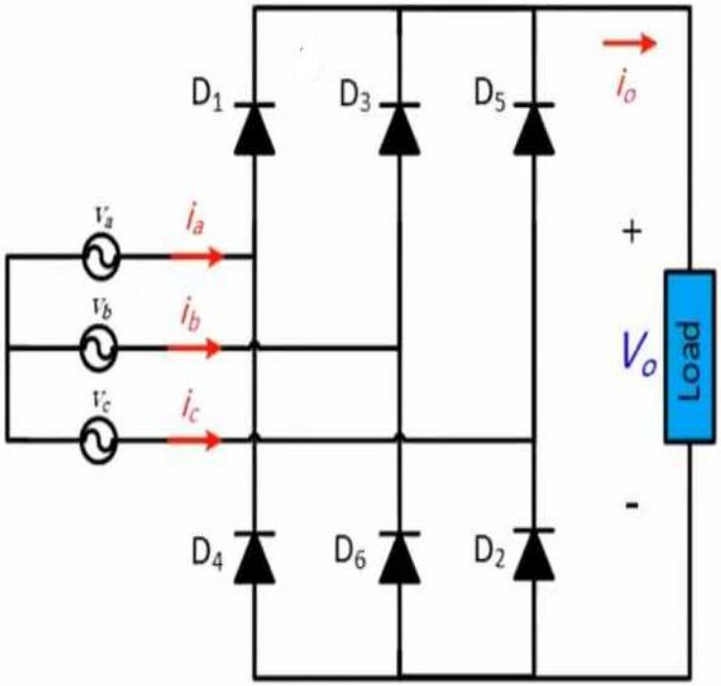
Eng :Eman Abu Hany

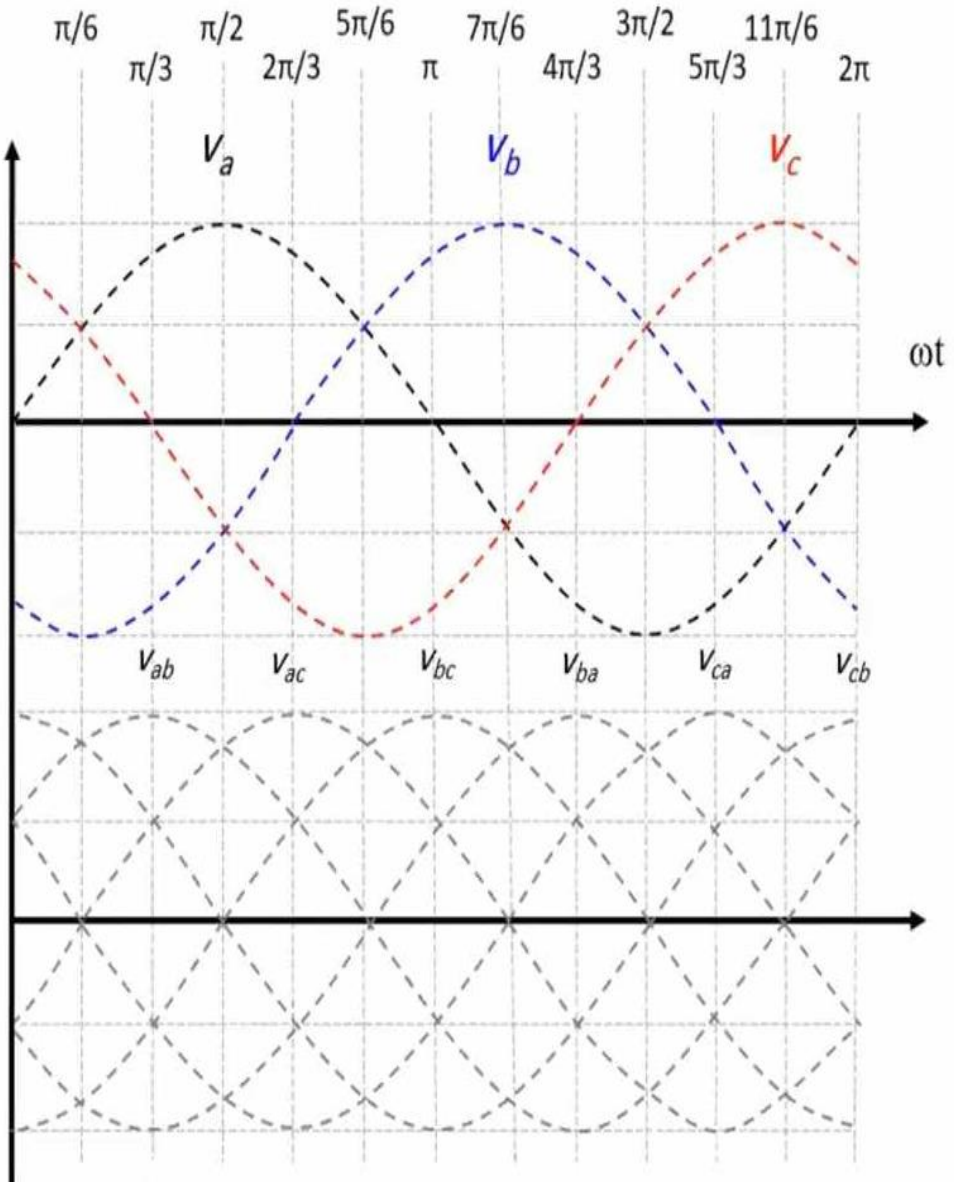
Three phase uncontrolled rectifier

- 1- the uncontrolled Three - pulse Mid – point circuit M3U

- 2- the uncontrolled Six - pulse Bridge circuit B6U

Three-phase Full-wave Uncontrolled Rectifier





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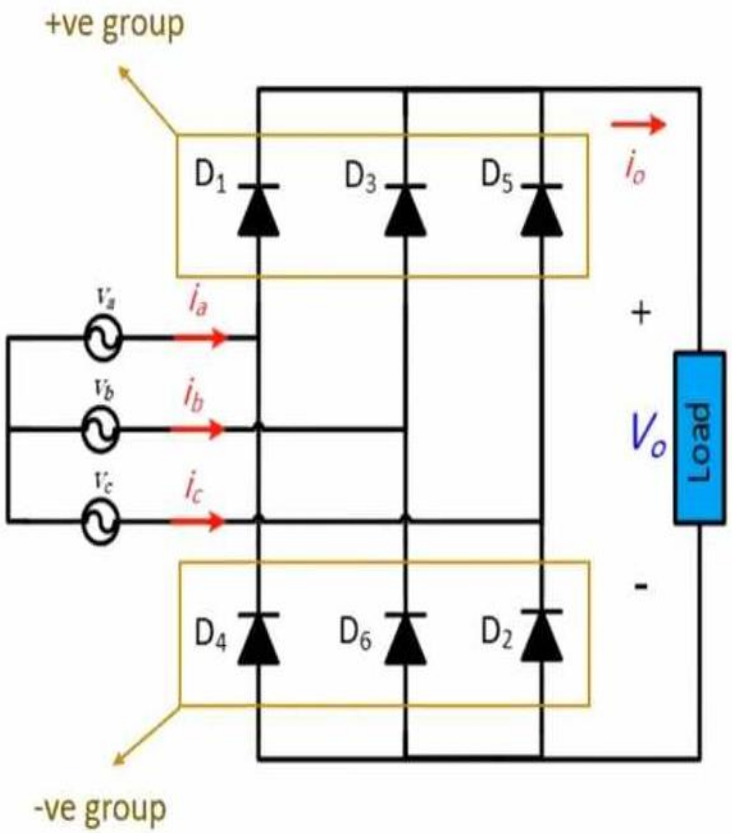

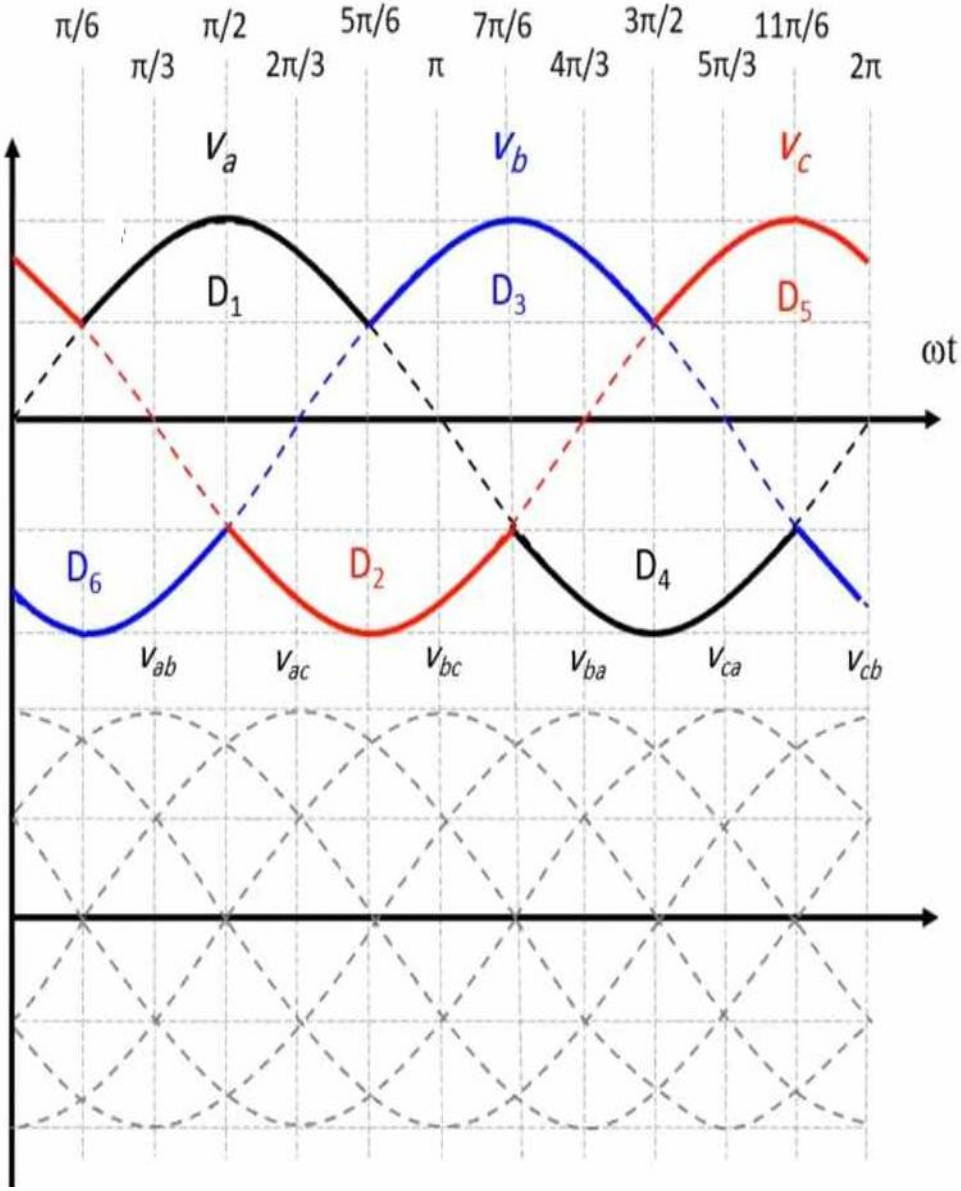

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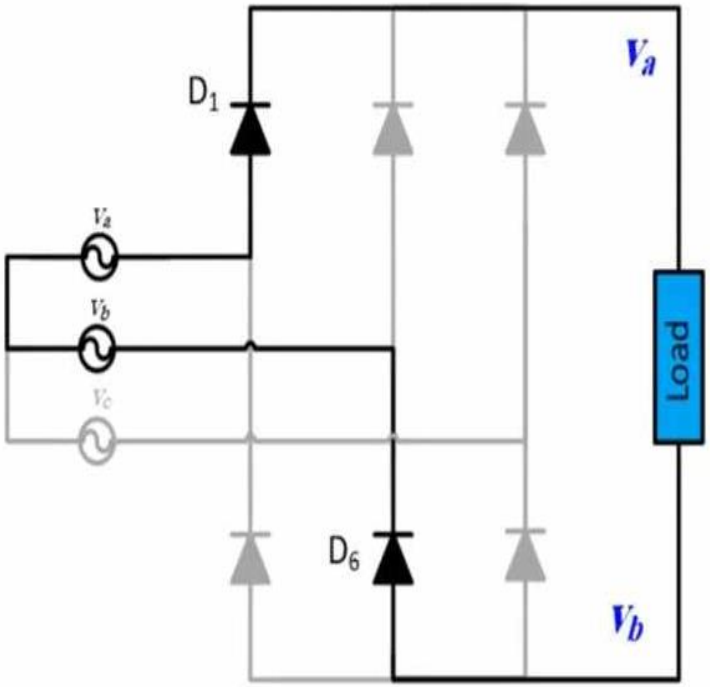

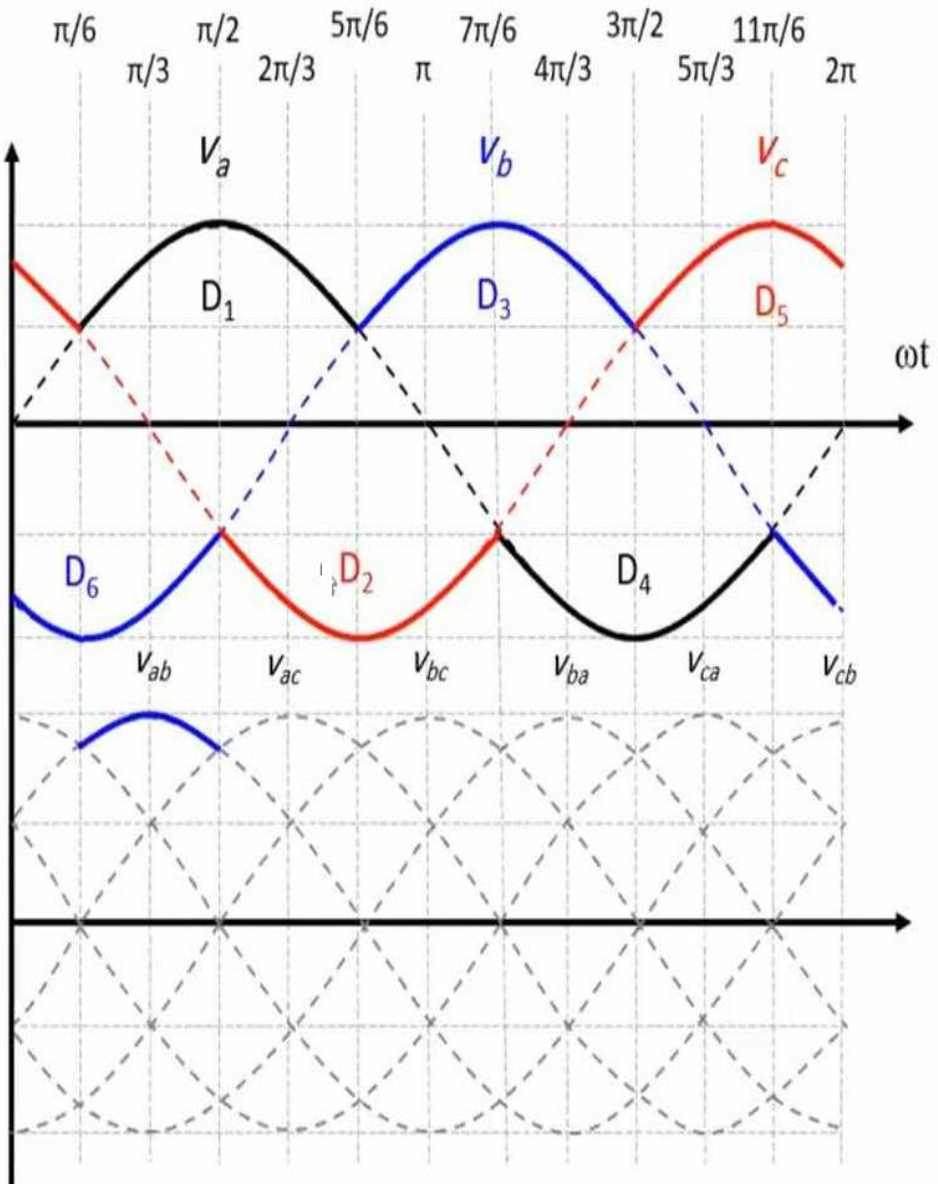

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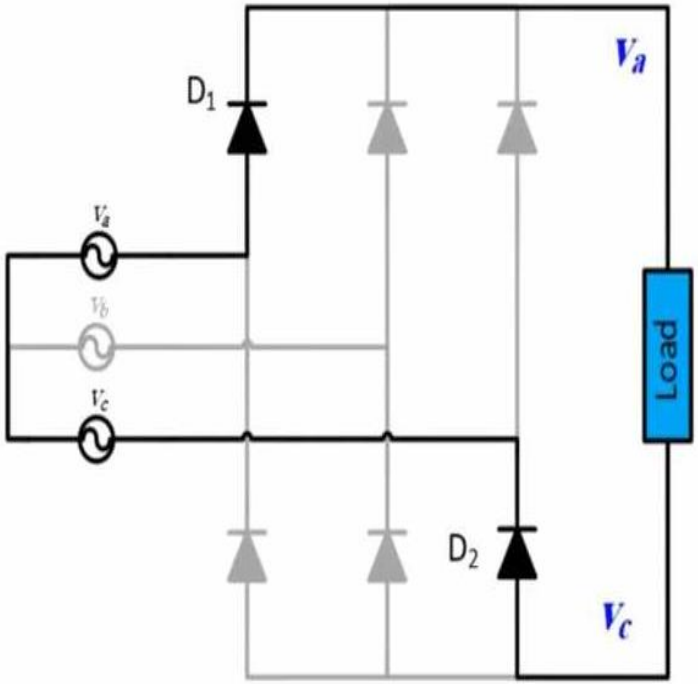

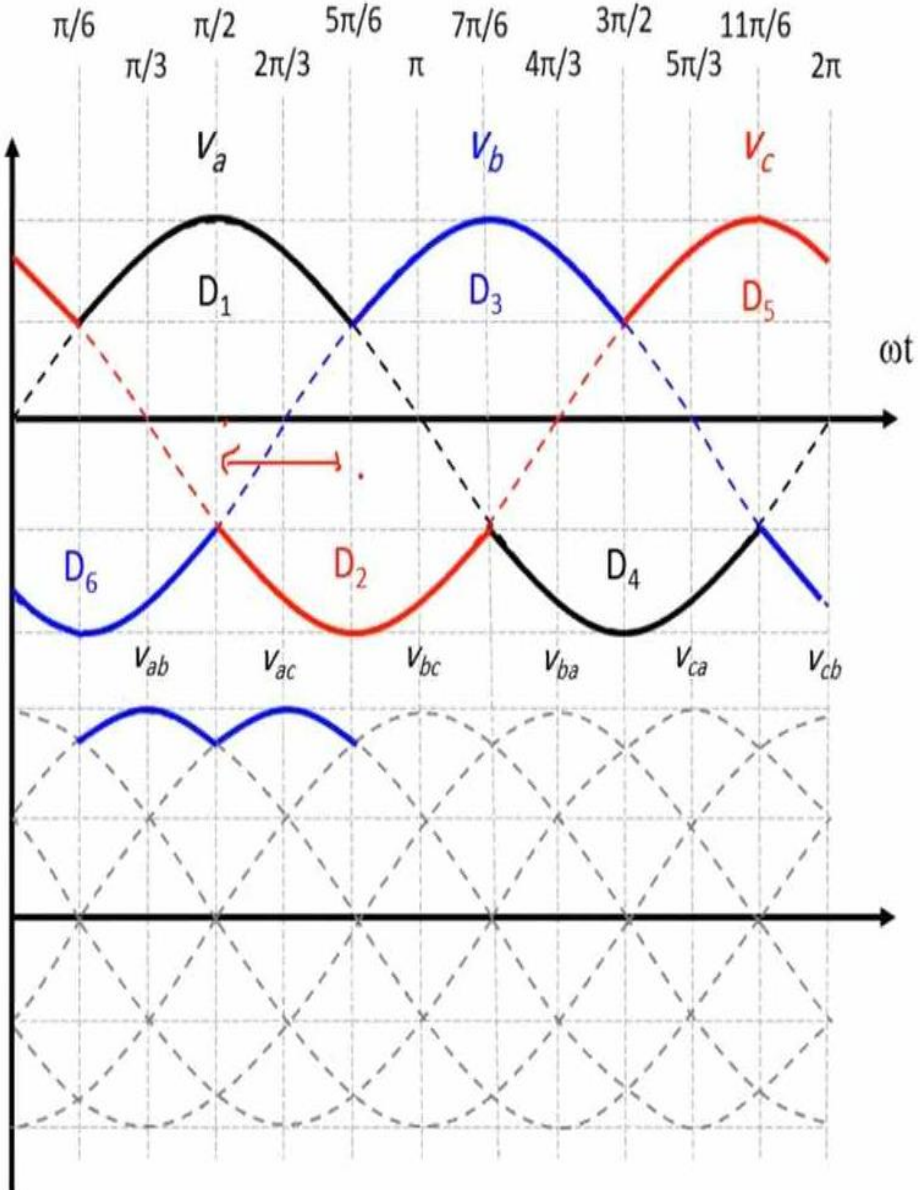

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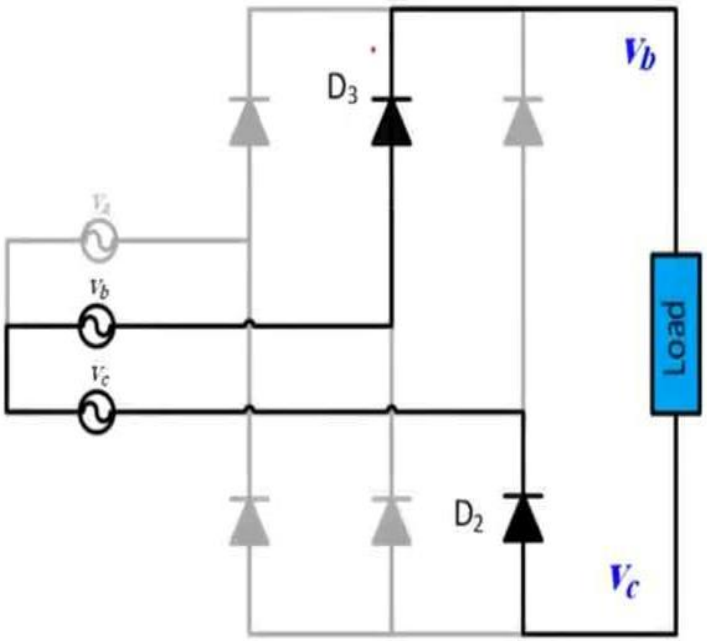

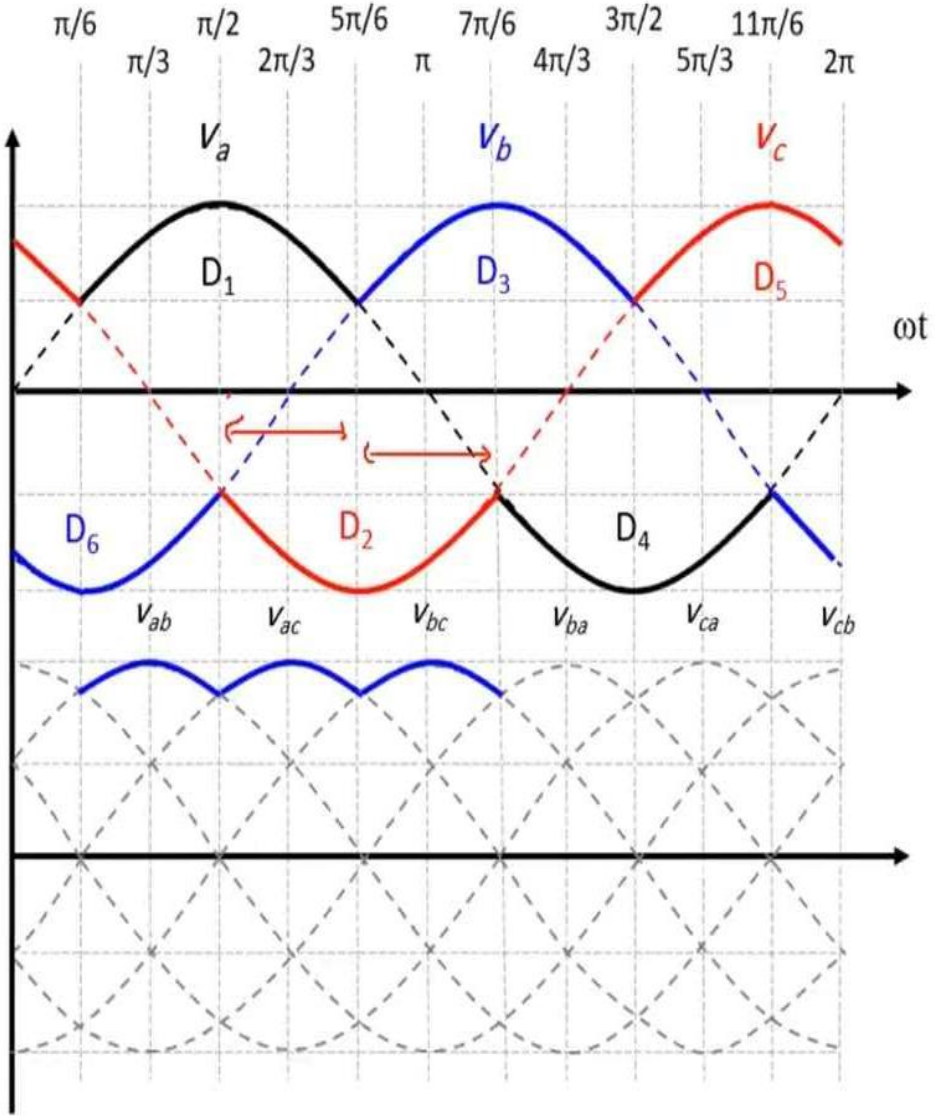

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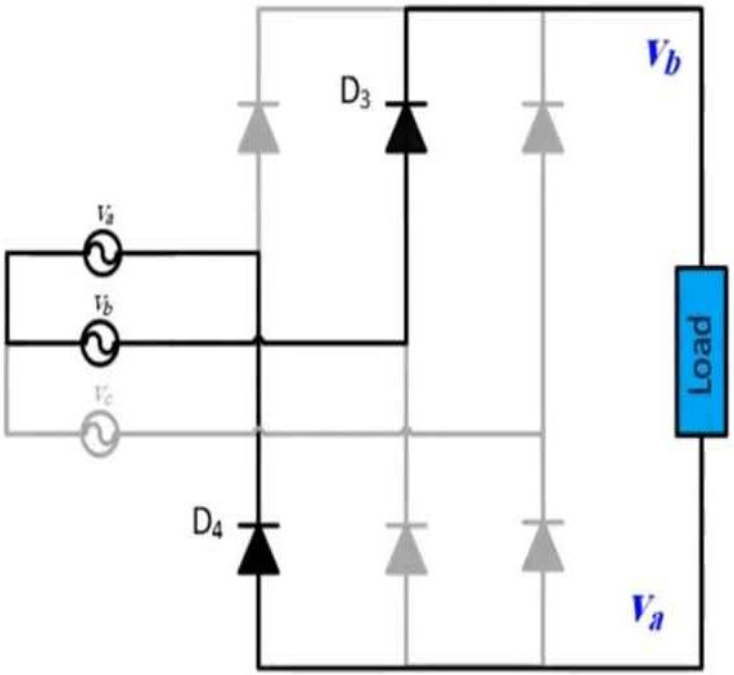

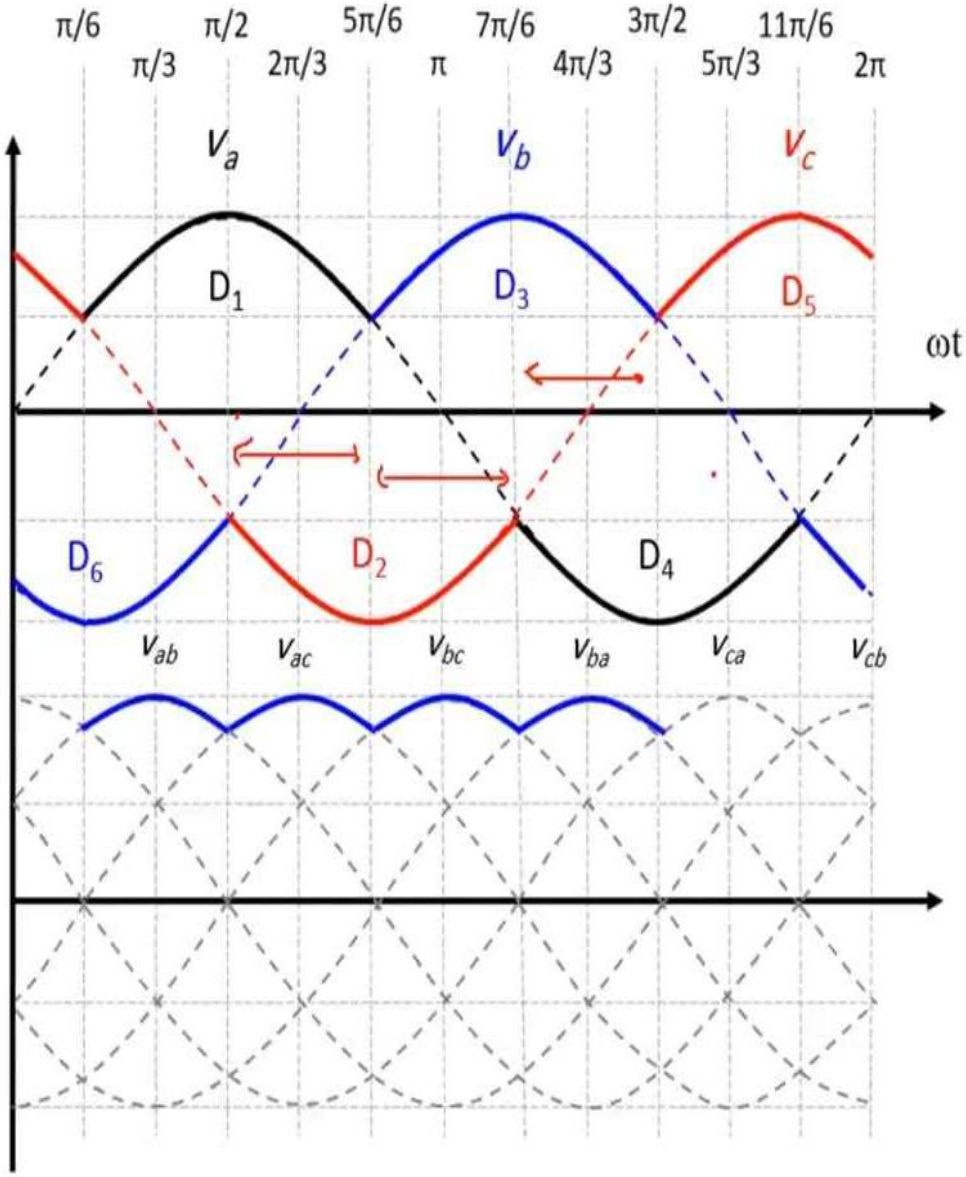

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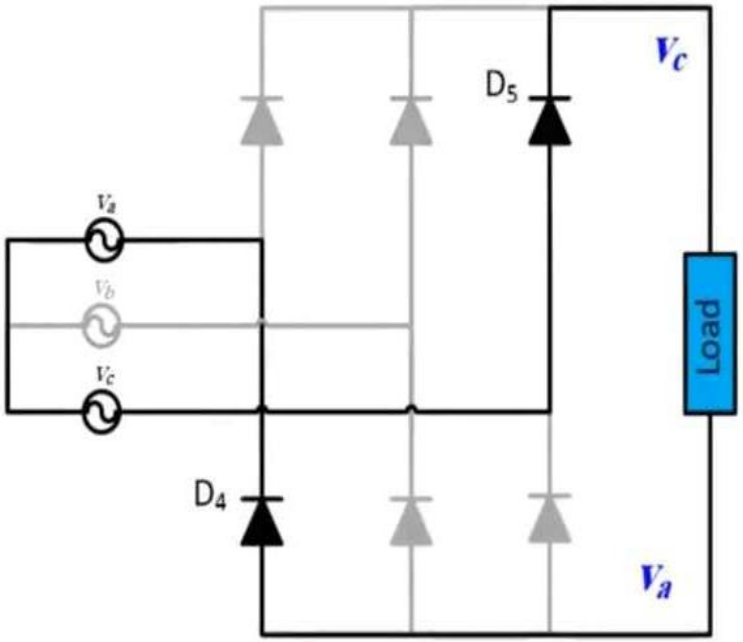

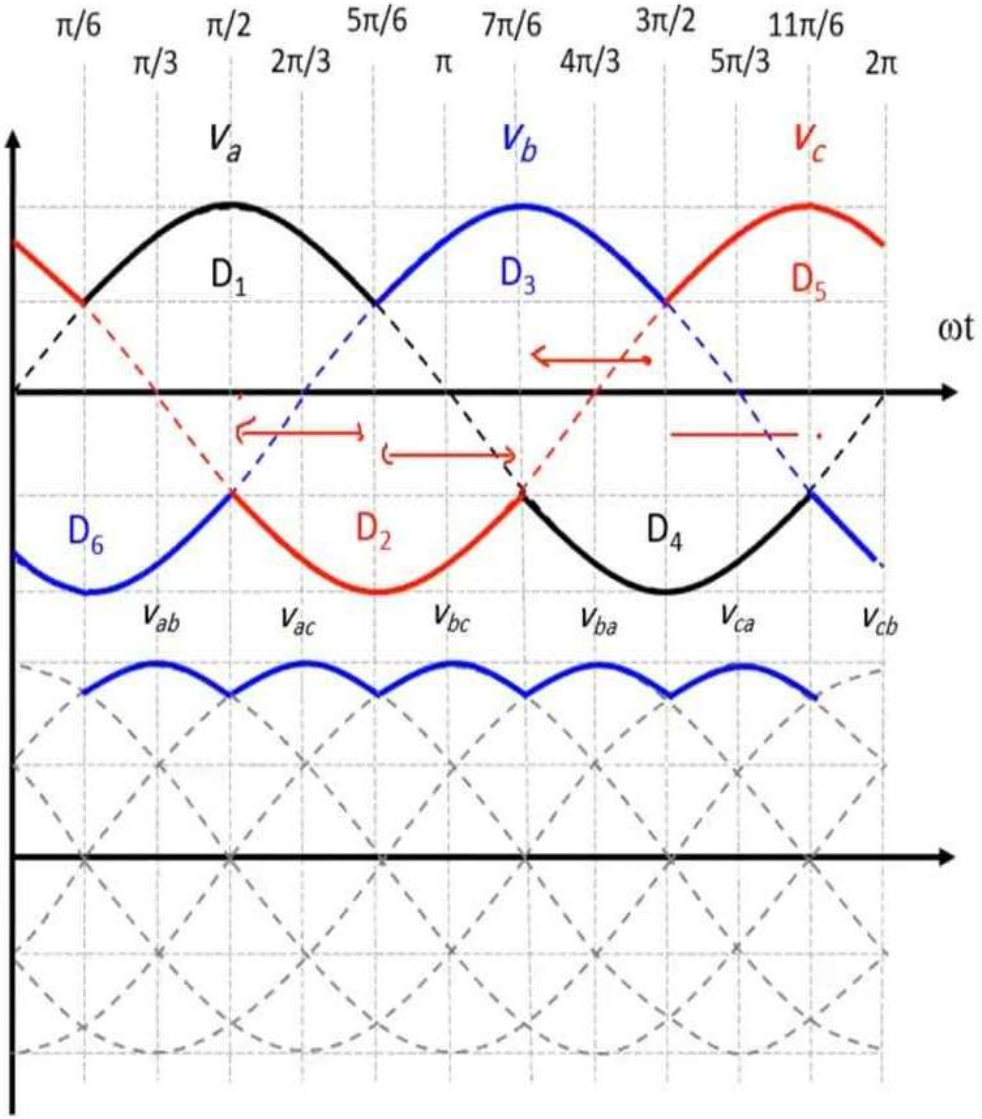

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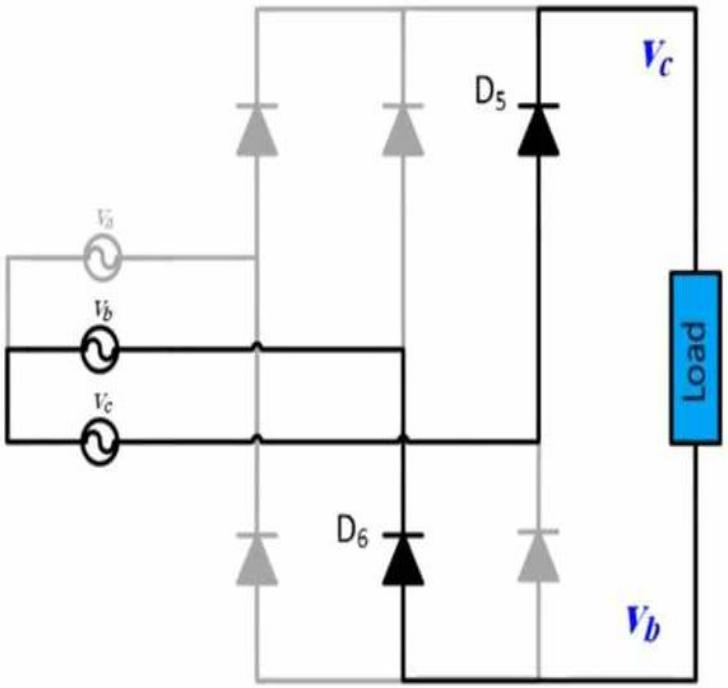
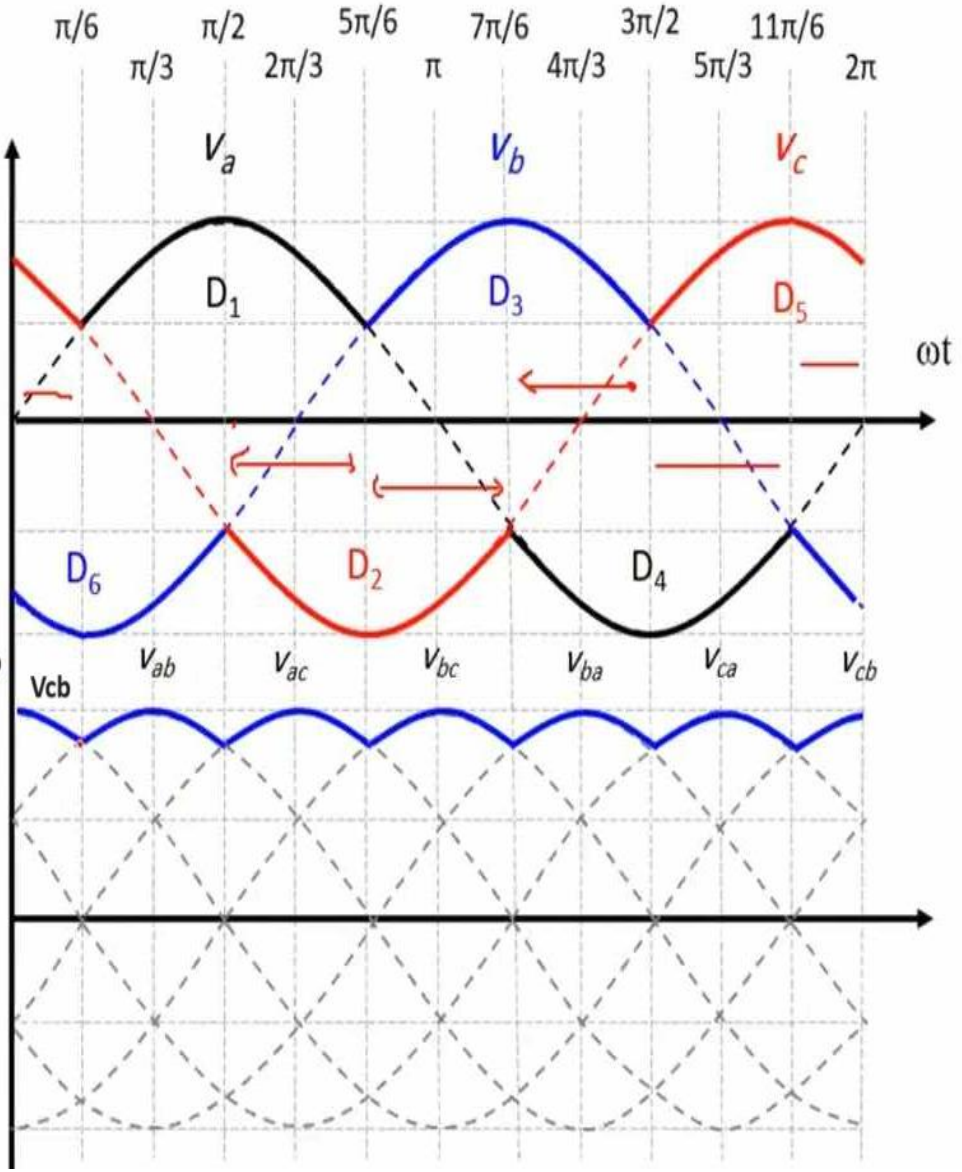
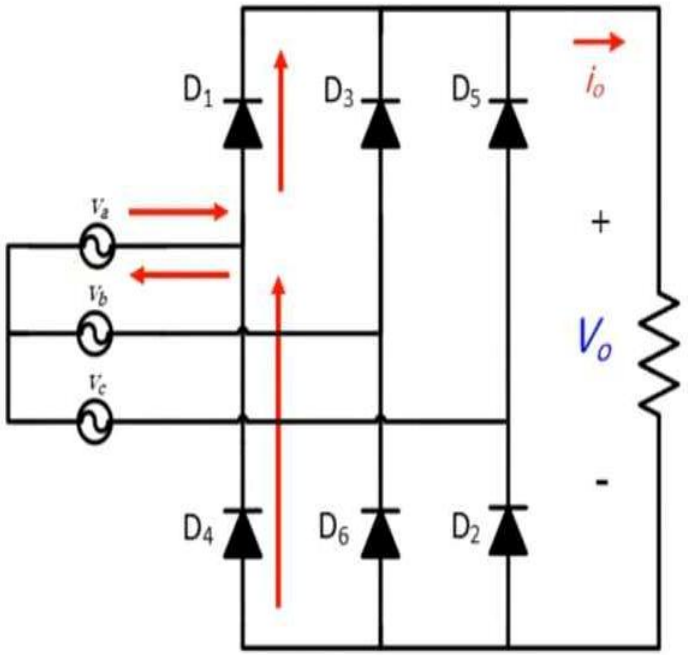
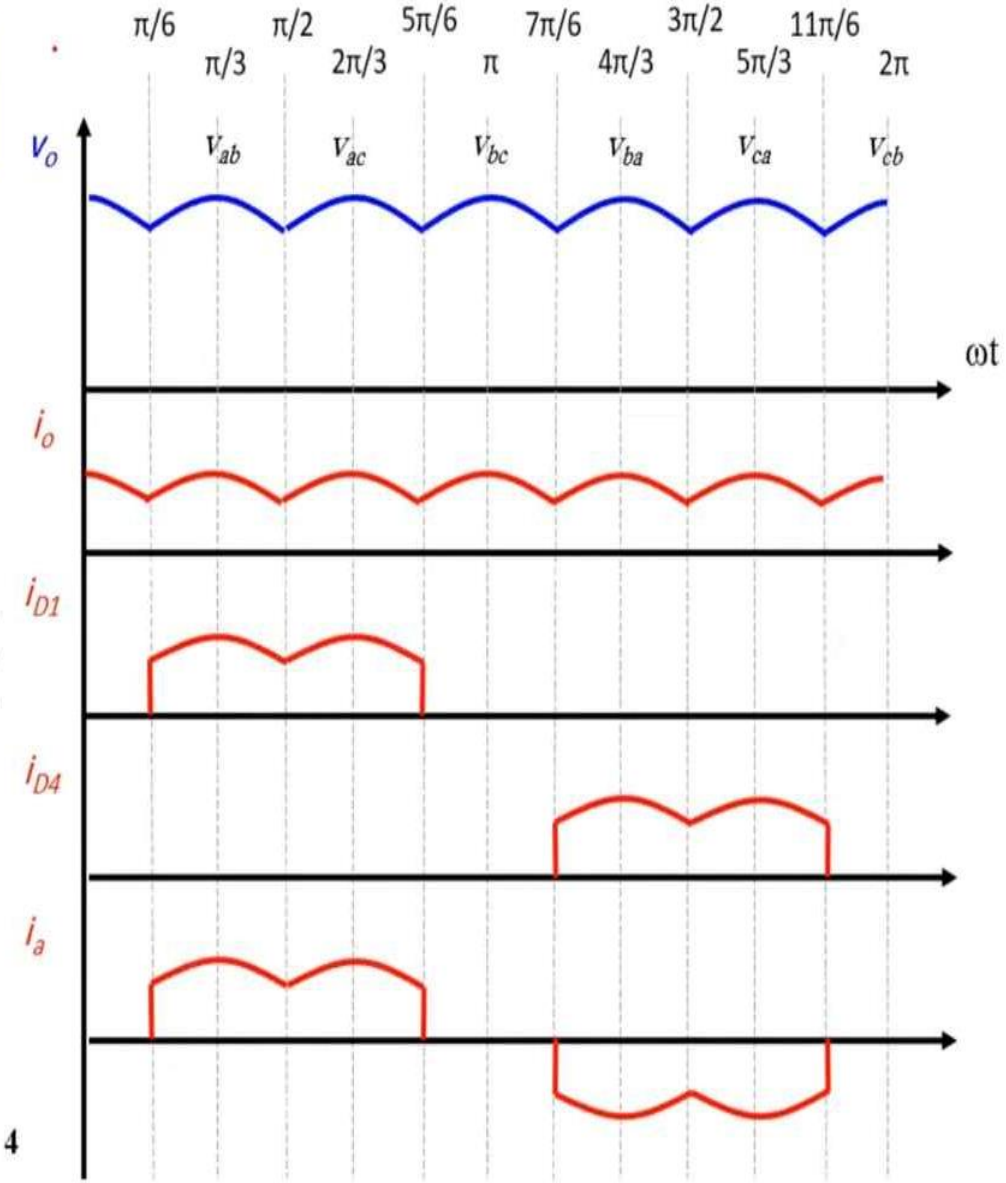


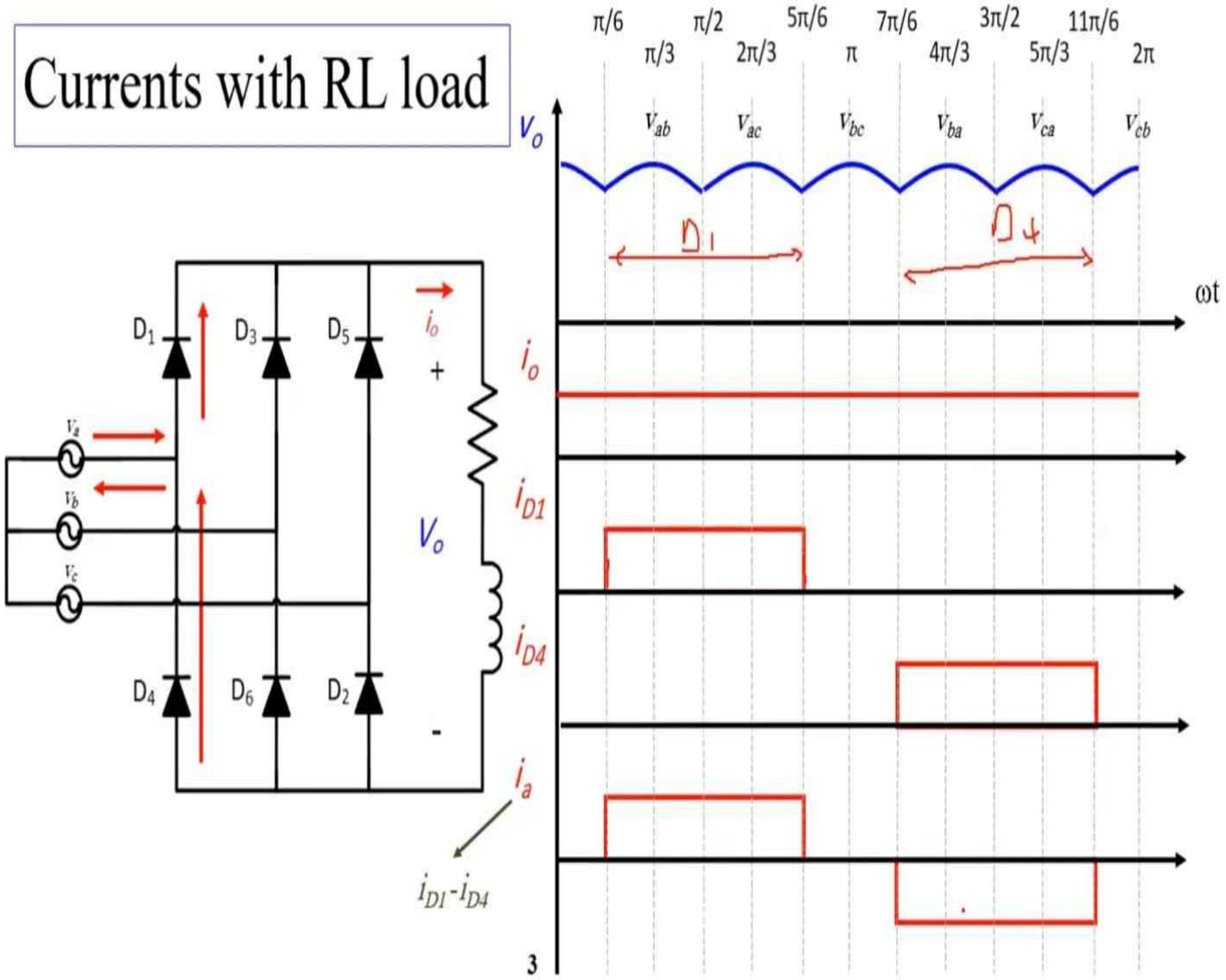


Currents with R load

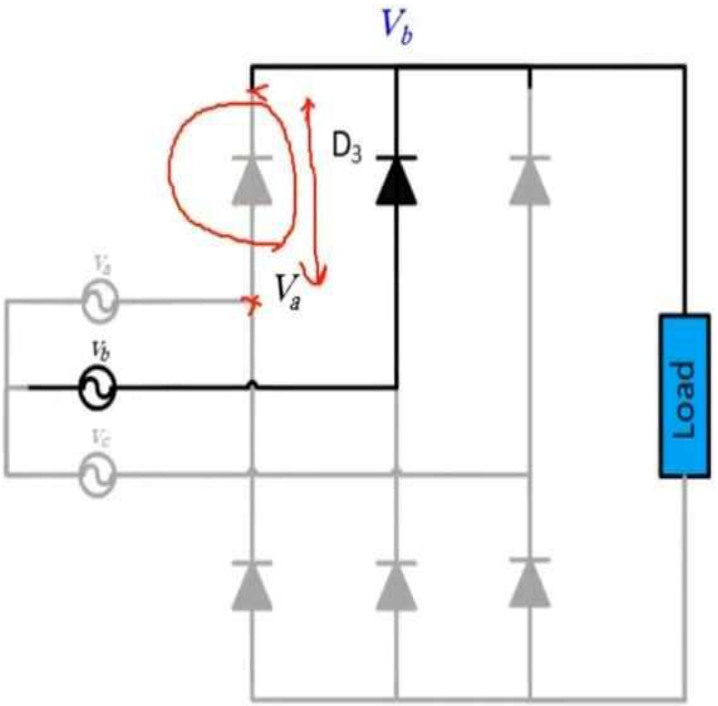


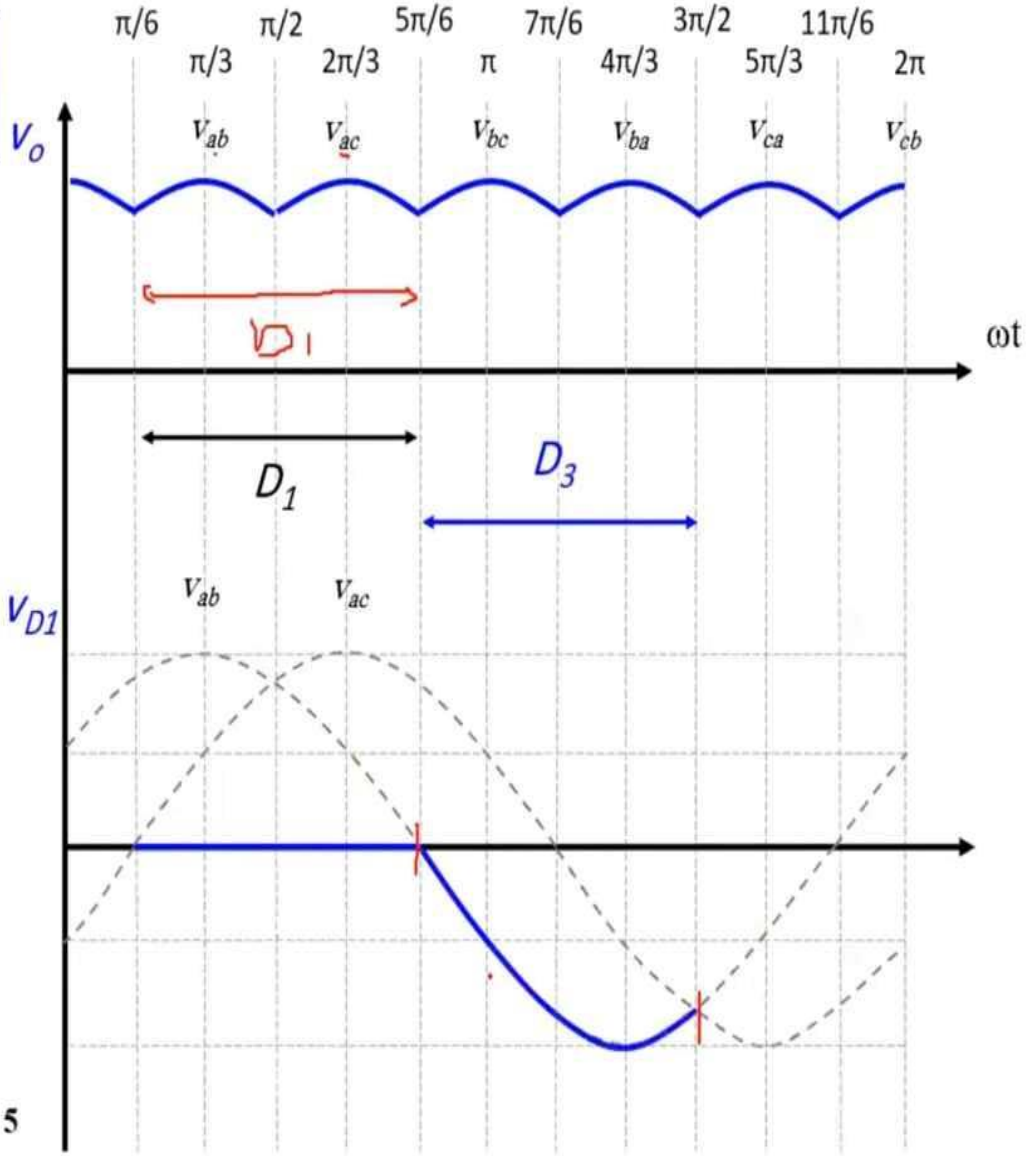


Currents with RL load



Diode Voltage





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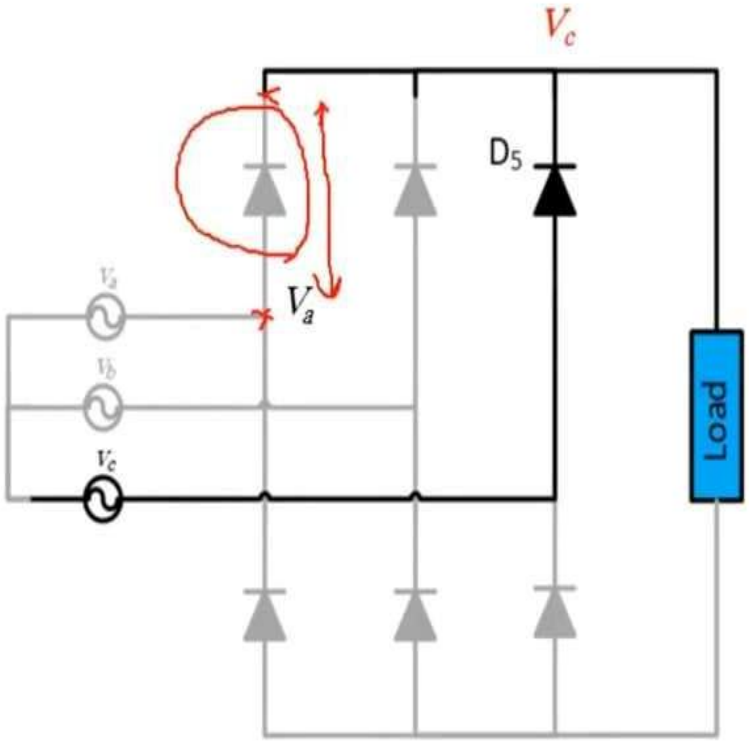

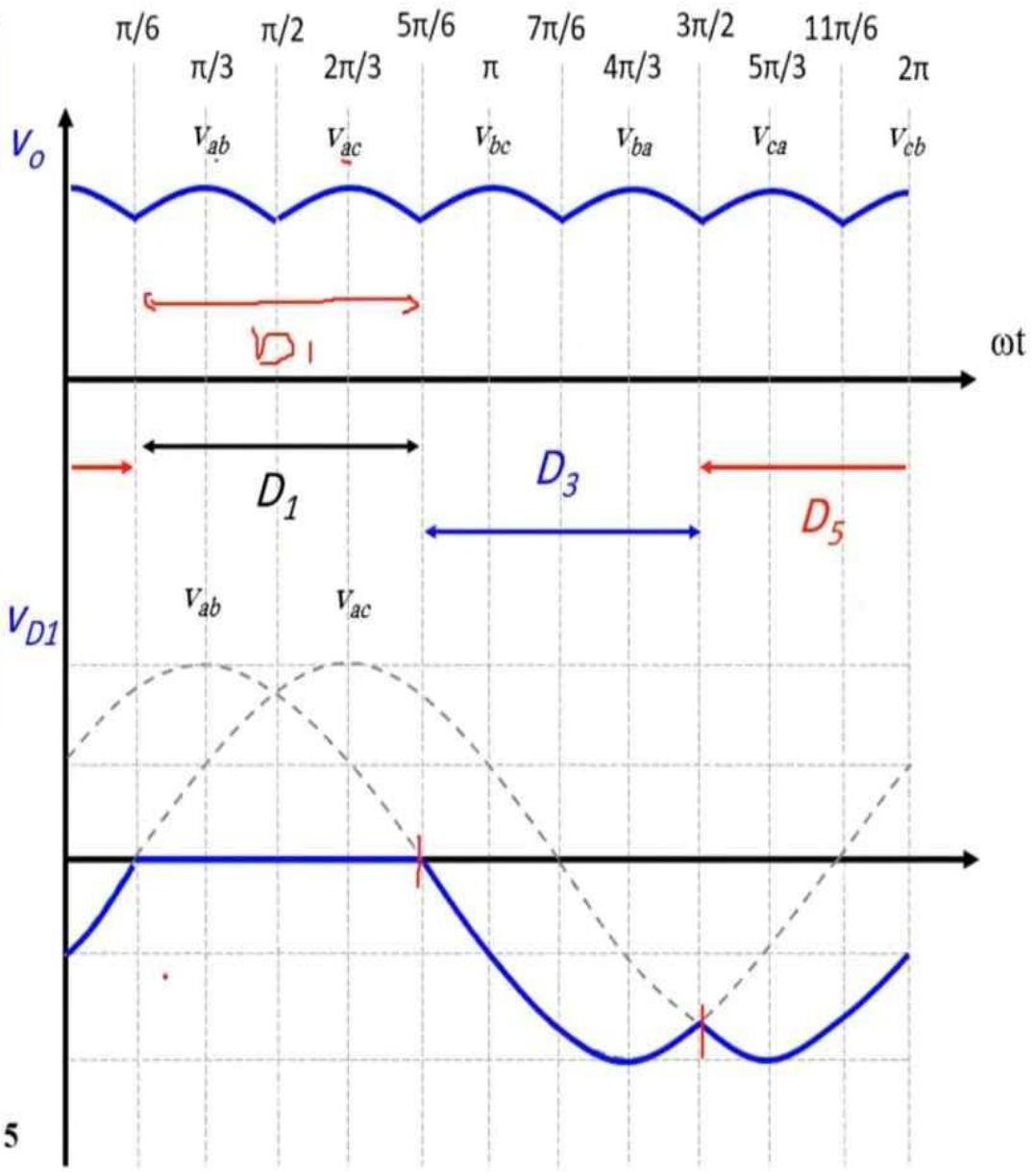

$$v_{avg} = \frac{6}{2\pi}\int_{\pi/6}^{\pi/2} V_{mL}\sin\left(\omega t + 30\right)d\omega t$$

$$v_{avg} = \frac{3}{\pi}\int_{\pi/3}^{2\pi/3} V_{mL}\sin\left(\omega t\right)d\omega t = \frac{3V_{mL}}{\pi}$$

$$I_{o,avg} = I_{o,rms} = \frac{V_{avg}}{R}$$

$$I_{D,avg} = \frac{1}{\pi}\int_{\pi/6}^{5\pi/6} I_o\, d\omega t = \frac{I_o}{3}$$

$$I_{D,rms} = \sqrt{\frac{1}{\pi}\int_{\pi/6}^{5\pi/6} I_o^2 d\omega t} = \frac{I_o}{\sqrt{3}}$$