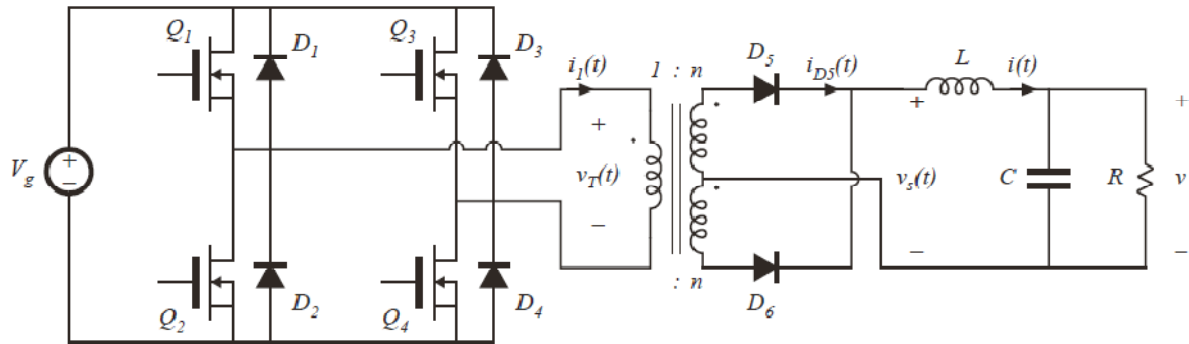


12.4 modified.



The full bridge converter shown operates with $V_g=320$ V, and supplies 1000 W to a 42 V resistive load. Losses can be neglected, the duty cycle is 0.7, and the switching period $T_s=10\mu\text{s}$. $L=50\mu\text{H}$, $C=100\mu\text{F}$. A current – programmed controller is employed, whose waveforms are referred to the secondary side of the transformer. Neglect the transformer magnetizing current.

- Sketch the waveforms of $v_s(t)$ and $i(t)$ for one periode T_s . Calculate m_1 and m_2 .
- What is the minimum artificial ramp slope m_a that will stabilize the controller at the given operating point? Express your result in terms of m_2 and D .
- Calculate the value of m_a and R .