Power Electronics Lab
Experiment-2

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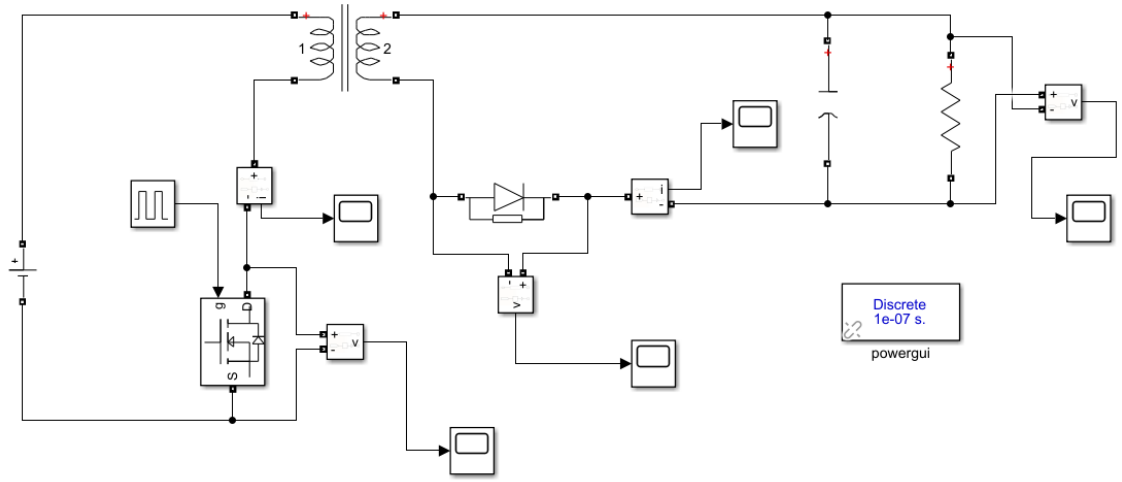
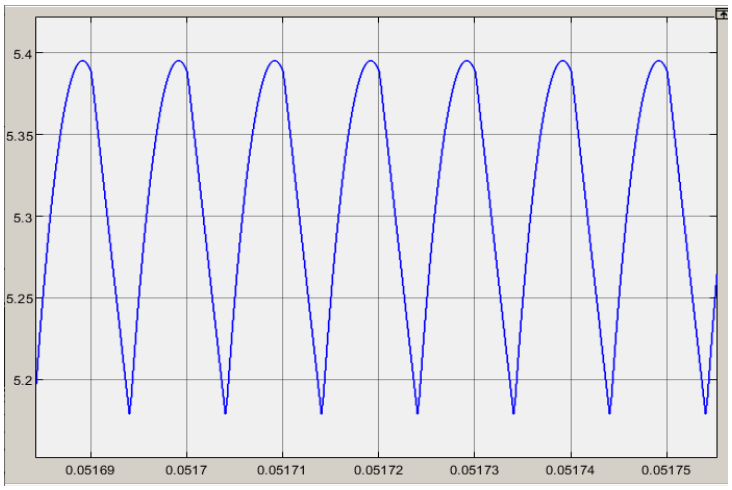
Part-A:

1.

Circuit:

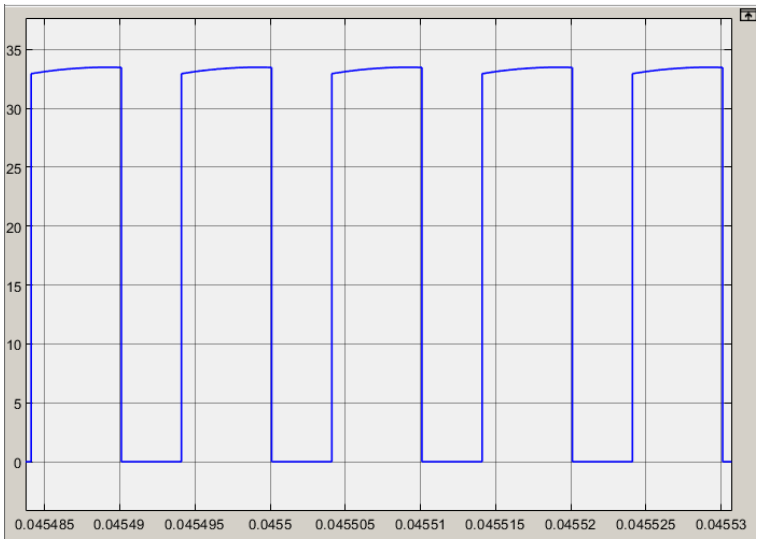


Output voltage:



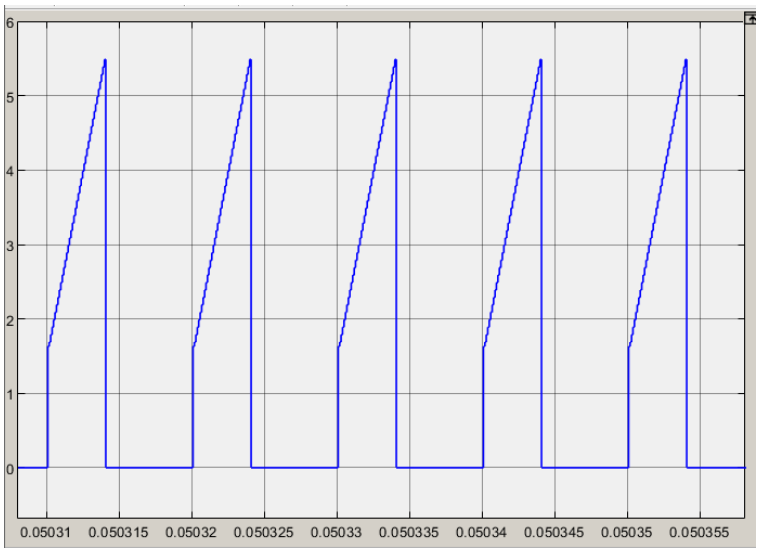
V_{avg}=5.313V

MOSFET voltage:



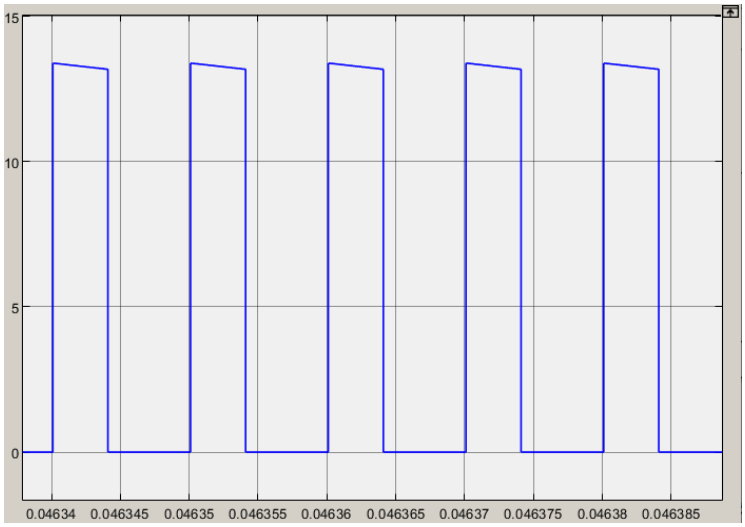
Mean = 20V

MOSFET current:



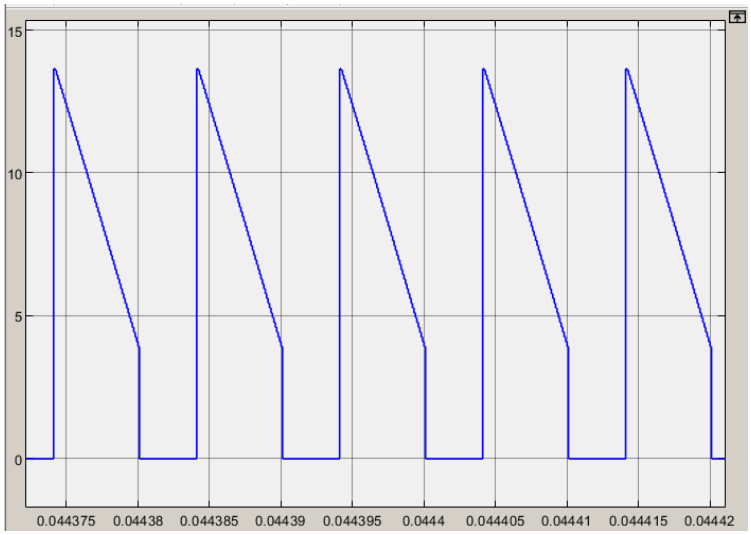
Mean=1.416A

Diode Voltage:



Mean = 5.313V

Diode current:



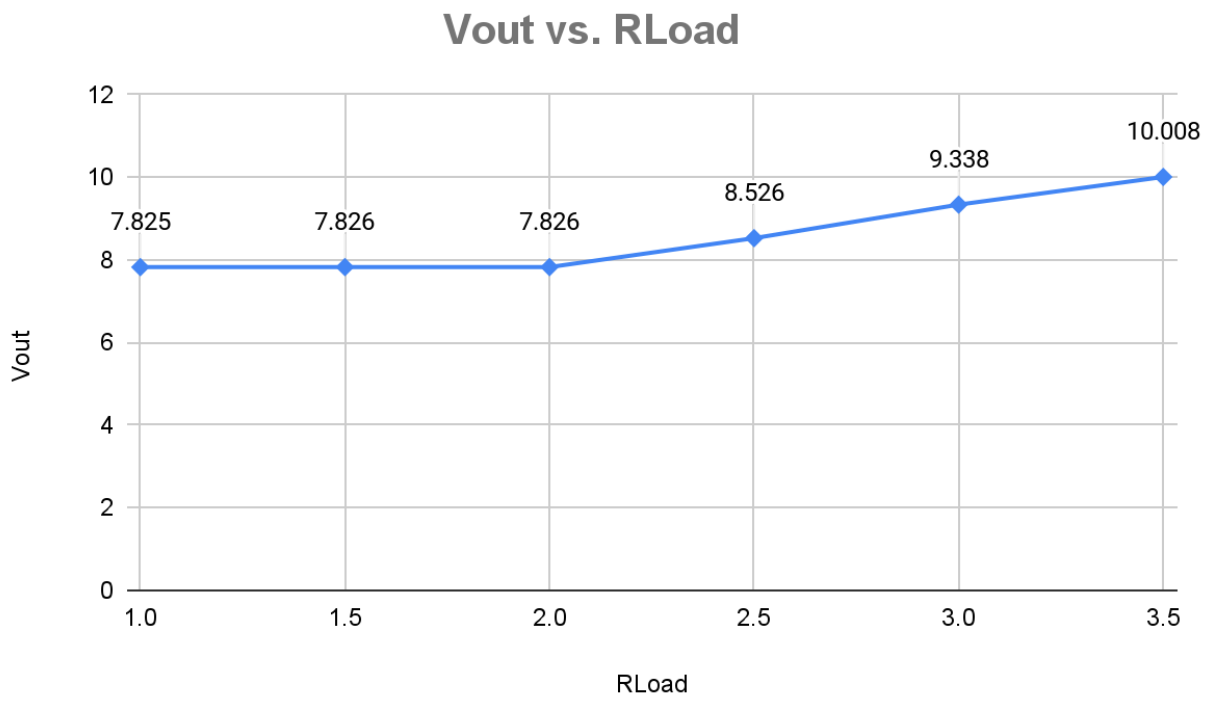
Mean= 5.313A

4.

Load resistance is varied keeping everything else the same.

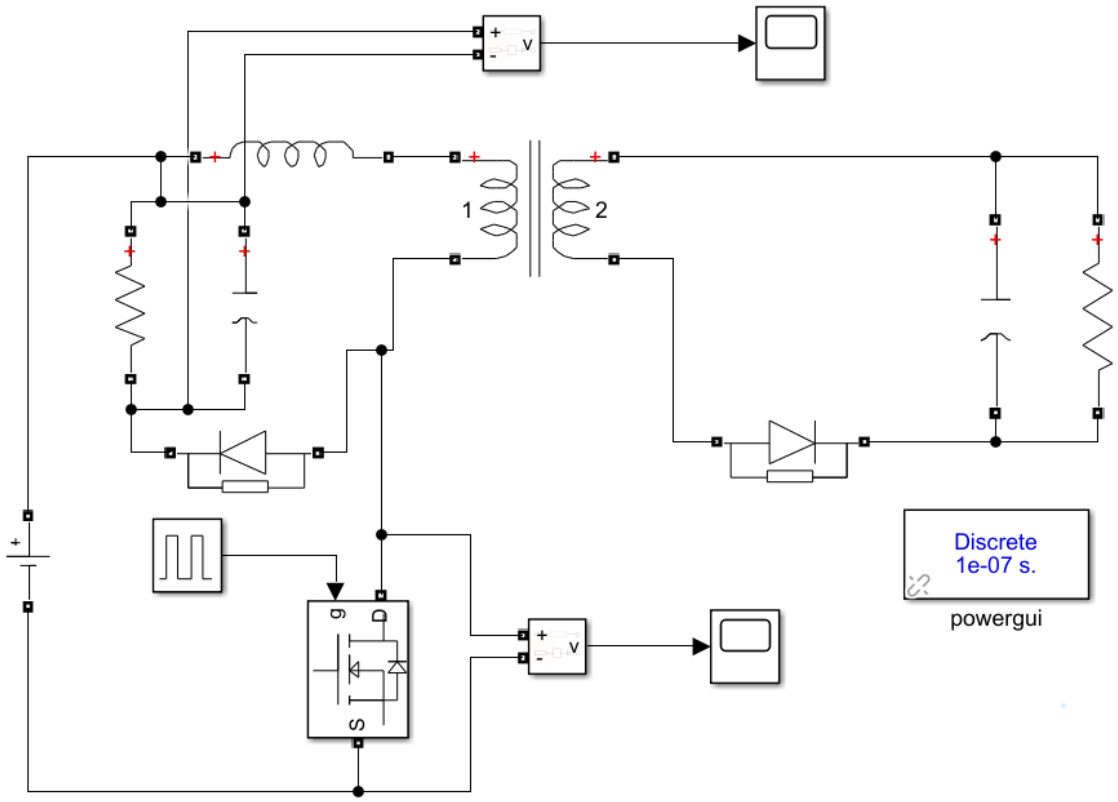
R_{Load}	V_{out}	Mode
1	7.825	CCM
1.5	7.826	CCM
2	7.826	CCM
2.5	8.526	DCM
3	9.338	DCM
3.5	10.008	DCM

V_{out} vs R_{Load} plot:-

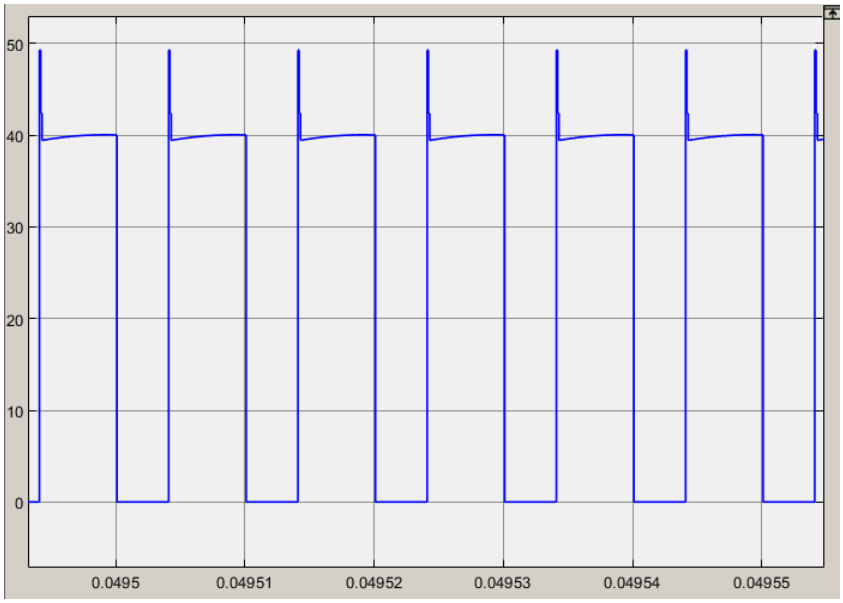


Part B:

Circuit:

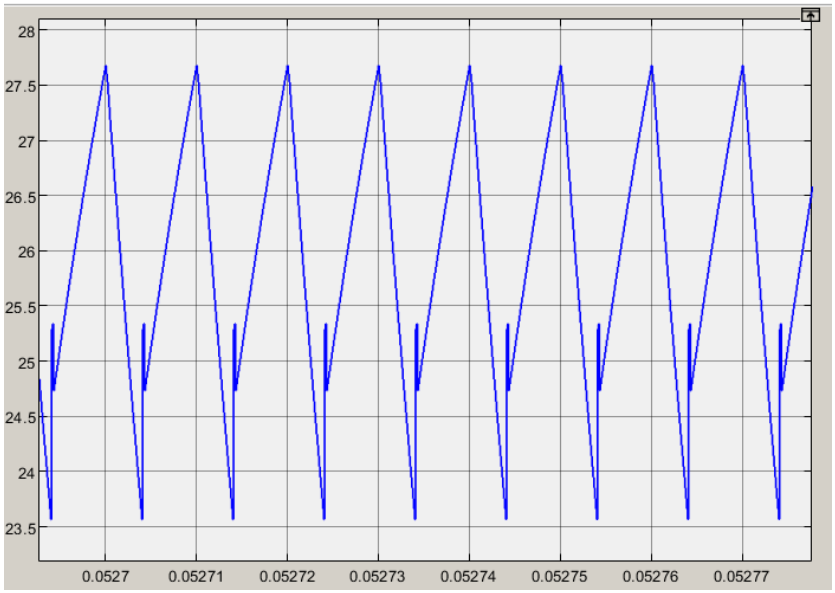


Steady state voltage across switch:



Voltage across Snubber capacitor:

V_{avg} = 25.96V



Power dissipation in R_d:

Average voltage across Snubber capacitor = 25.96V

So power dissipated across R_d = $\frac{25.96^2}{5000}$= 0.1348W

----x----x----