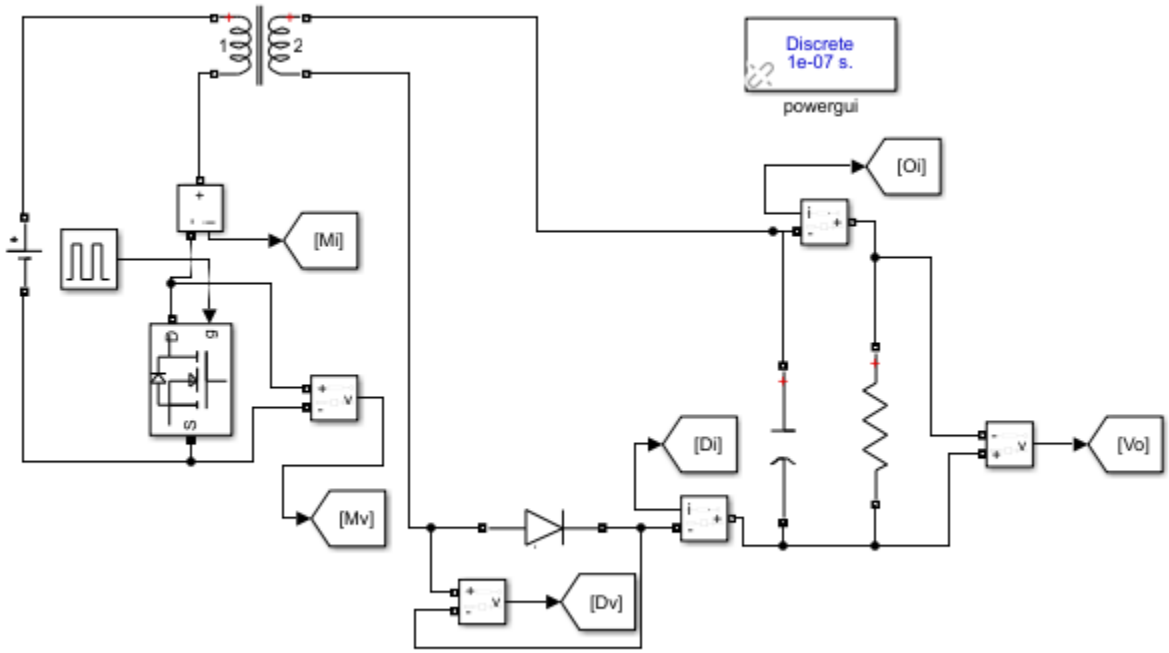
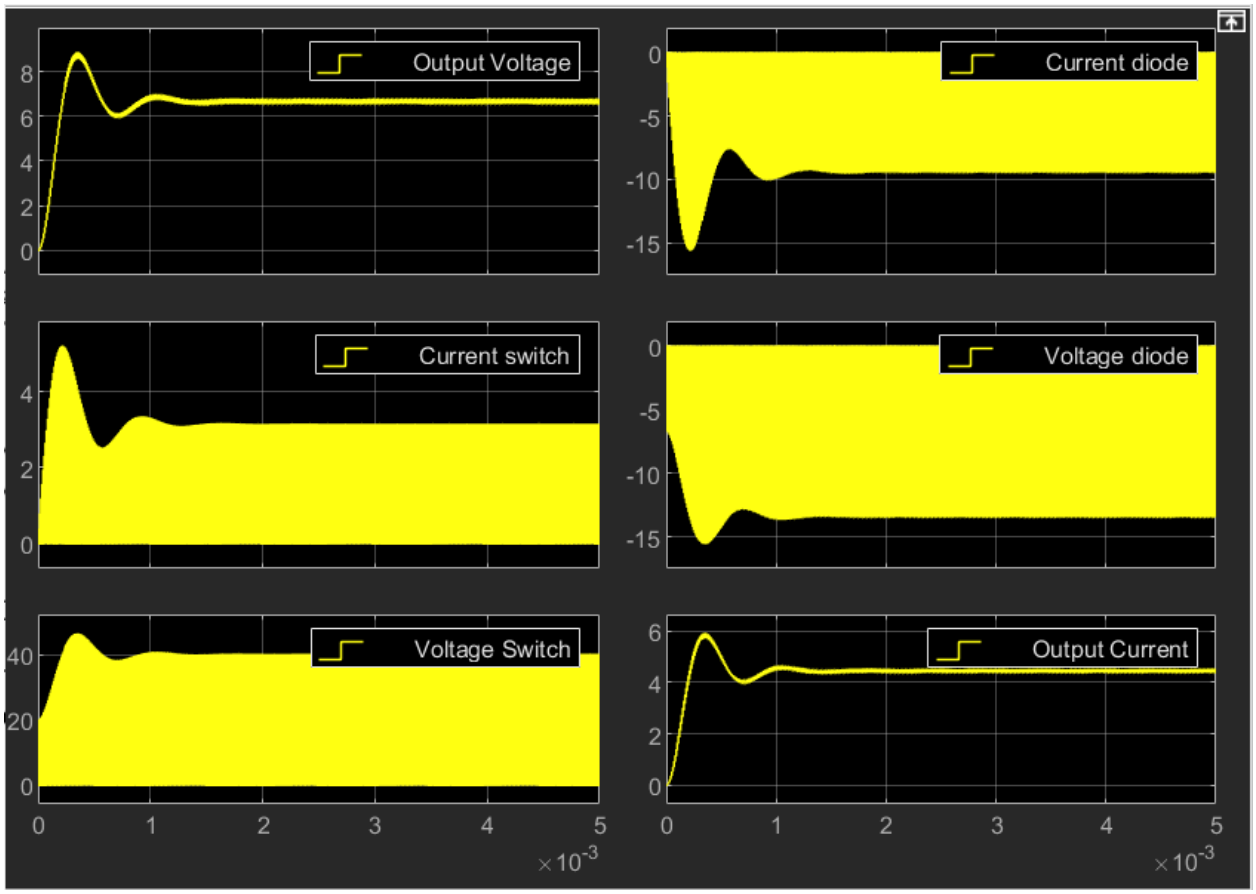
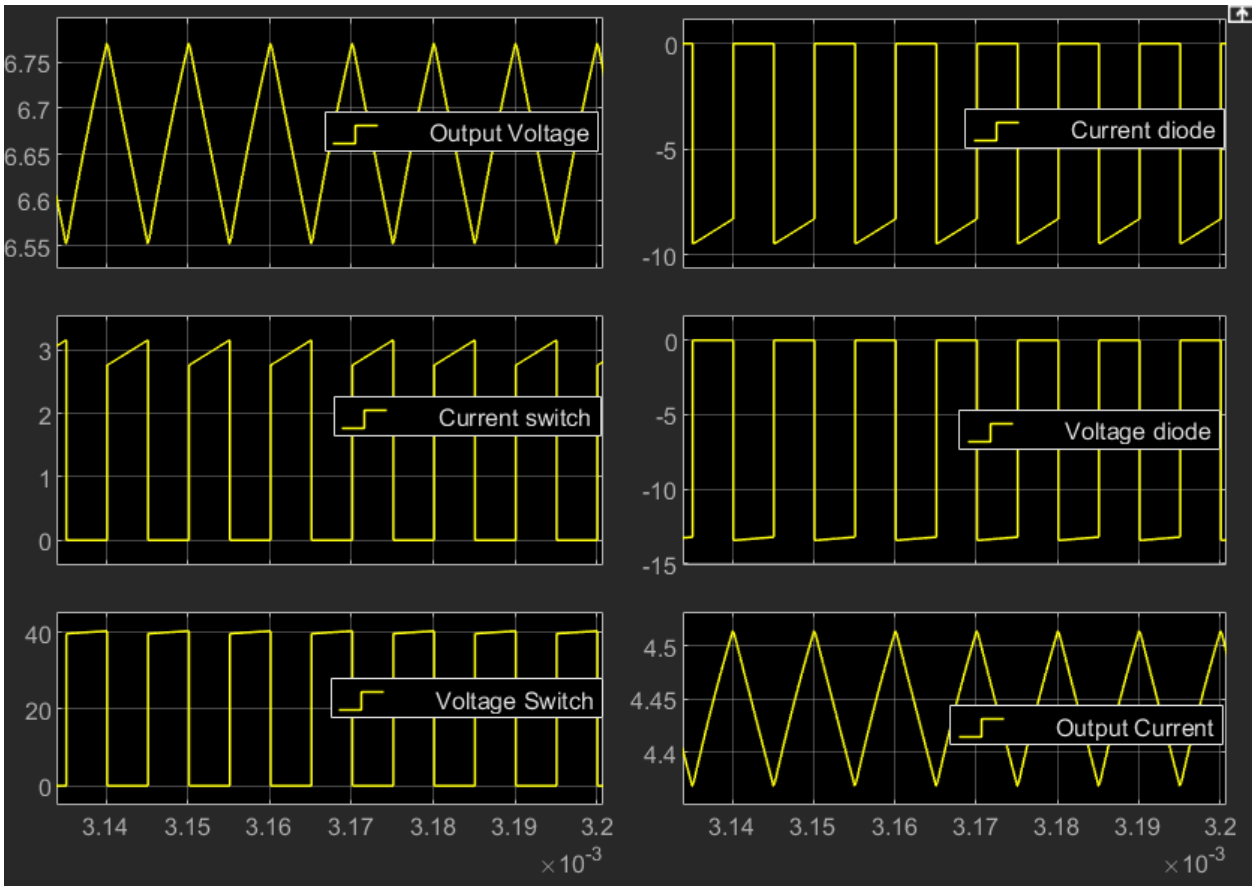
PART A:
1. The turn ratio=3:1

2.




Output Voltage
Current diode
Current switch
Voltage diode
Voltage Switch
Output Current
×10^-3
×10^-3

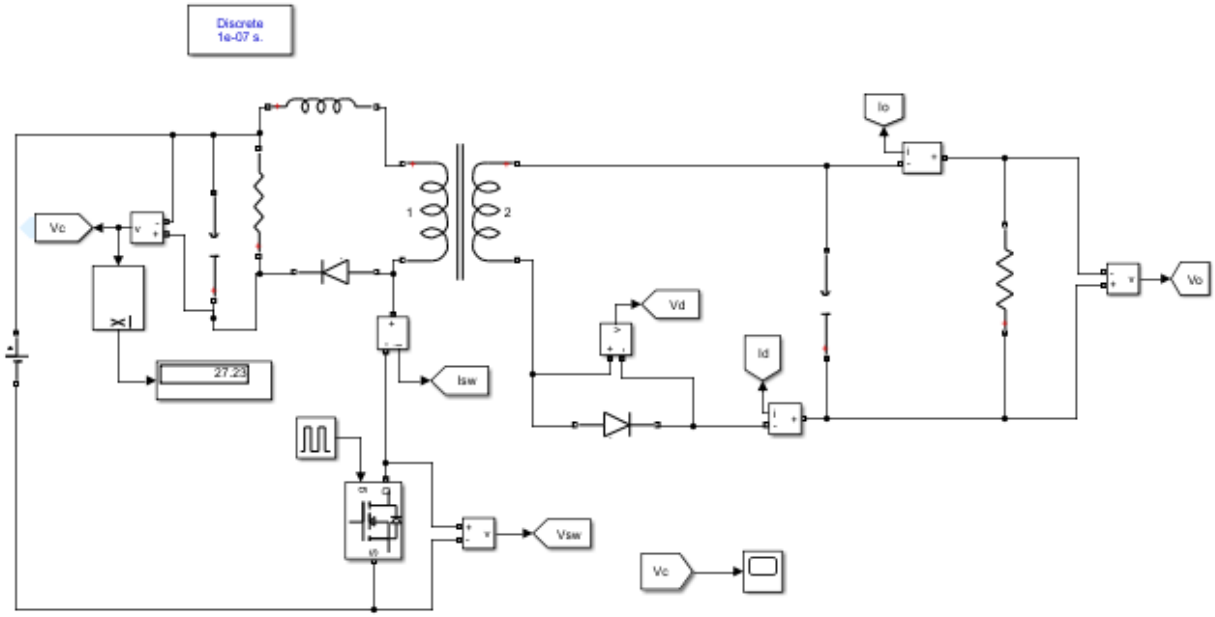


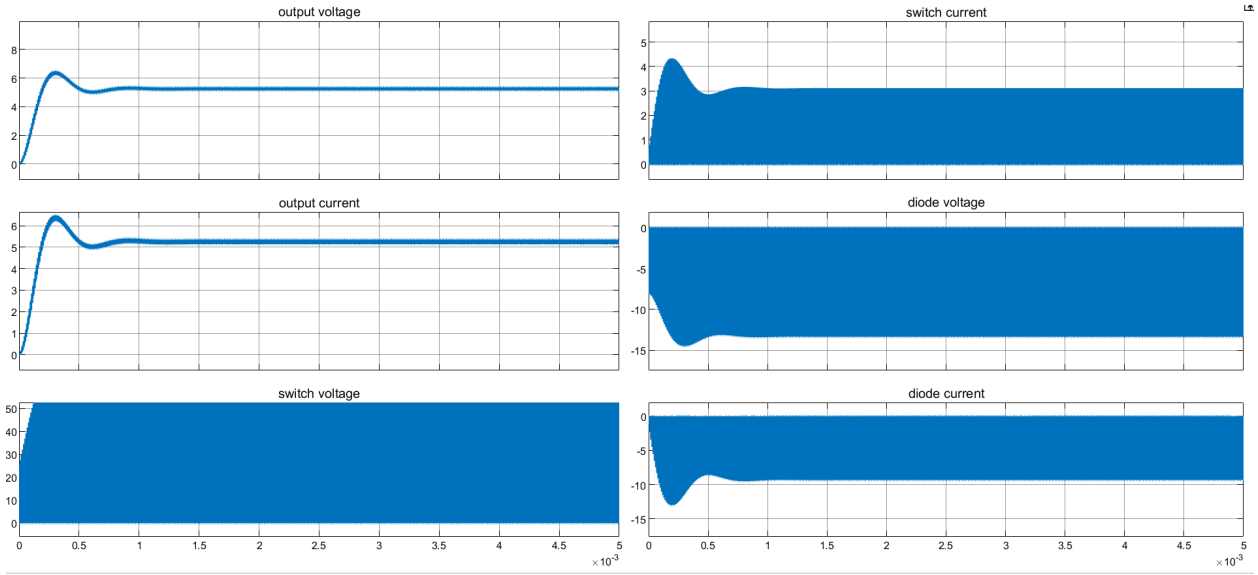
Irms = 3.961 A diode current
Irms = 1.096 A switch current
Vrms = 7.396 V diode voltage
Vrms = 25.82 V switch voltage
Vrms = 4.44 V output voltage

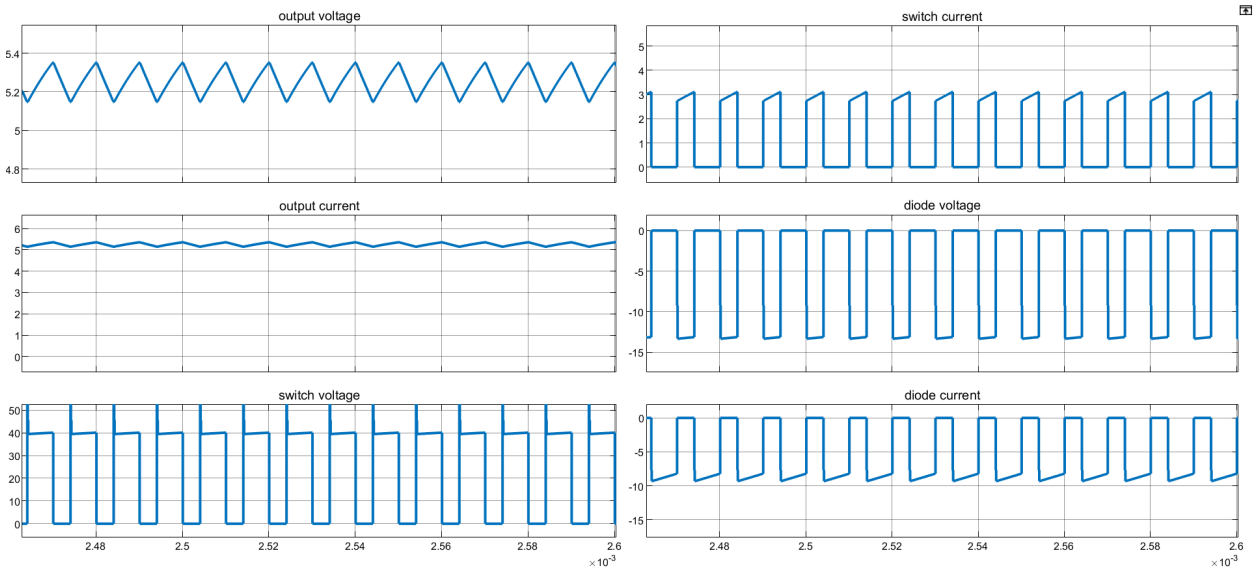
3. The input voltage is varied from 15 V to 20 V (in steps of 1 V) with a fixed load resistance of 15 Ω, and a fixed duty ratio of 45%.

4. Vin = 18 V, and duty ratio of 45 %.

PART B:


Discrete
1e-07 s.
Vc
27.23
Isw
Vd
Id
Io
Vo
Vsw
Vc
1
2


output voltage
switch current
output current
diode voltage
switch voltage
diode current
×10^-3
×10^-3



Snubber capacitor voltage 27.36V
Power=27.36^2/5000 = 0.1497