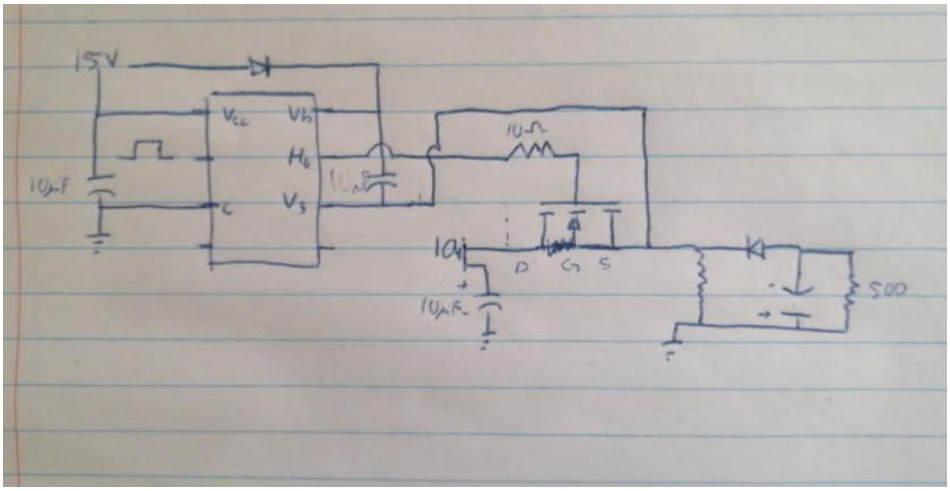
EEEN313 LAB 5 Hau Shian Chin 300493343

Lab 5

a)

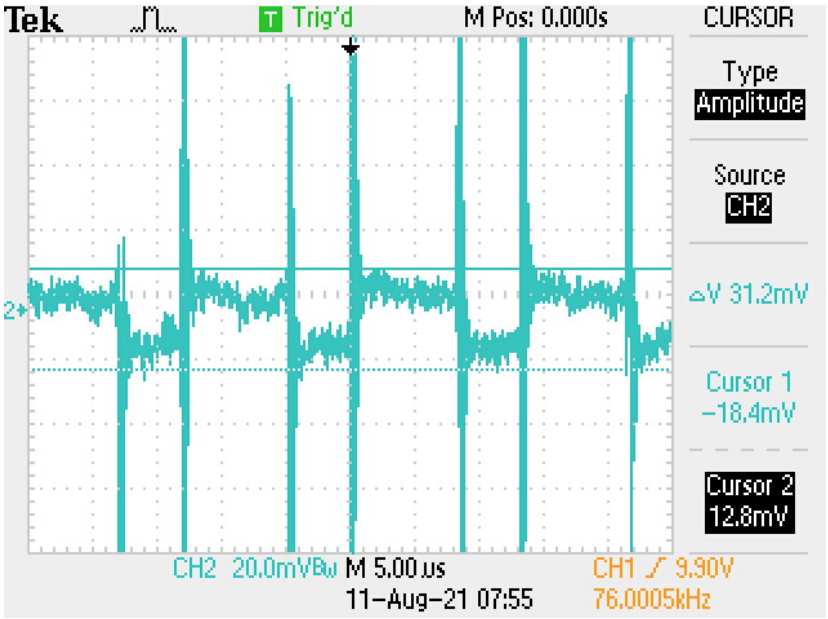
Switching f = 76.95363309kHz

b)

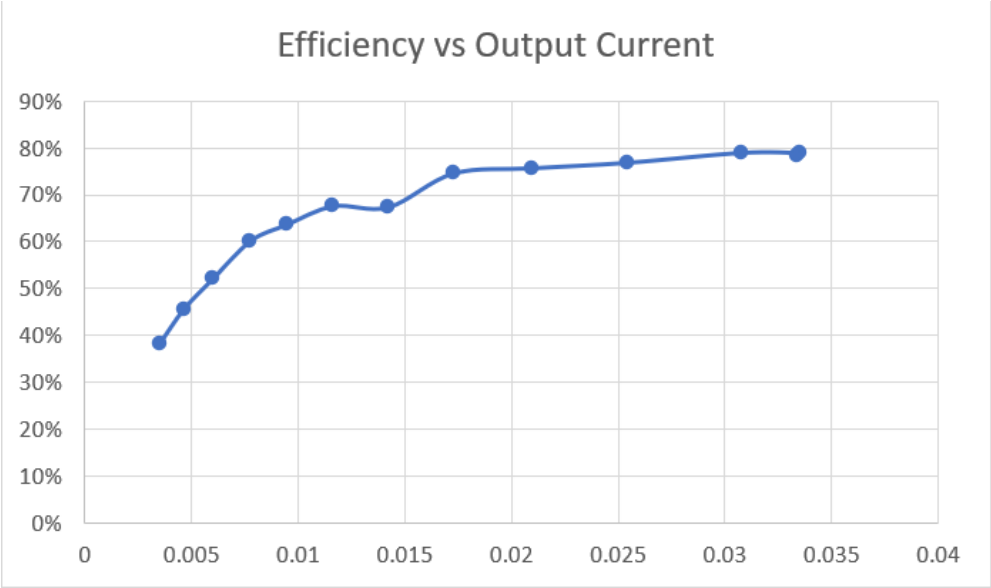


c)
Output voltage ripple: ΔV = 0.00353V

2)
Voltage ripple value is 31.2mV according to the oscilloscope.



3



Appendix

1a)

Vo = (0.67/(1-0.67))*10 = 20.3V

Io = Vo/R = 20/500 = 0.0406A

$$\Delta I_L = 0.2 \text{ to } 0.4 \times I_{out} \frac{V_{out}}{V_{in}}$$

Inductor ripple: 0.2 * 0.0406 * 20.3/10 = 0.0164836ΔA

$$L = \frac{V_{in}(V_{out} - V_{in})}{f_{sw} \Delta I_L V_{out}}$$

4 * 10 ^-3 = (10(20.3-10))/**f**(0.0164836*20.3) = 76.95363309kHz

c)

$$C_{out} = \frac{I_{out\ (max)} D}{f_{sw} \Delta V_{out}}$$

100 * 10 ^ -6 = (0.0406*0.67)/(77kHz * ΔV) . : ΔV = 0.00353