

# Assignment Three. (Spring 2019.)

EE - 222.

81. Consider the circuit shown in Fig 1. Plot the current, showing its key features (i.e. starting <sup>instant</sup>, peak value etc) once the ckt. attains steady state.

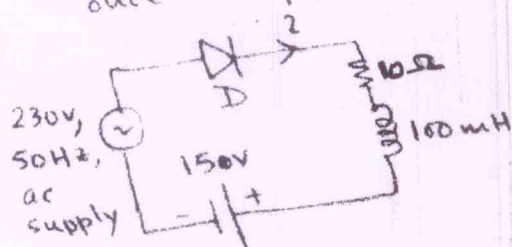


Fig. 1

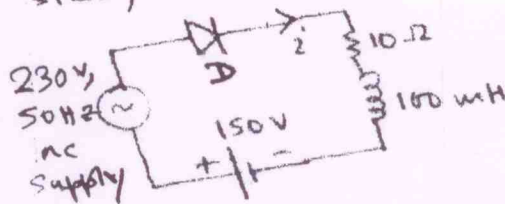


Fig 2

92. Plot current,  $i$  for Fig. 2 as well.

93. Consider the single phase fully controlled ac to dc converter circuit shown in Fig 3. Analytically show whether the current,  $i_o$  will be continuous or discontinuous when  
i)  $\alpha = 30^\circ$ , ii)  $\alpha = 80^\circ$

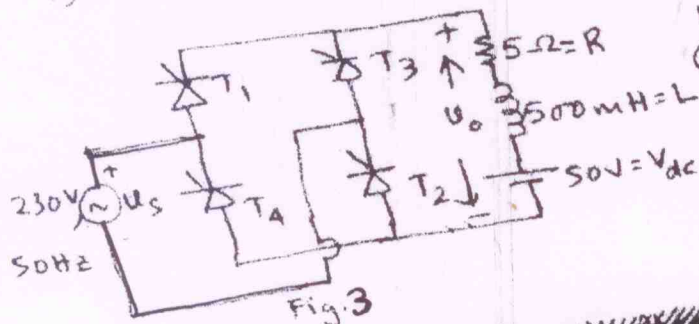


Fig. 3

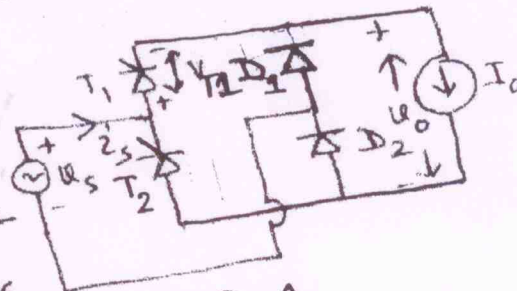


Fig 4

84. Consider the ~~ac to dc converter ckt. shown~~ ~~in Fig. 4.~~ In this ckt. two of the thyristors of the ckt. of Fig 3 have been replaced by two ~~diodes~~ diodes,  $D_1$  and  $D_2$ .  $T_1$  receives gating pulses from  $\alpha$  to  $\pi + \alpha$  and  $T_2$  receives gating pulses from  $\pi + \alpha$  to  $2\pi + \alpha$ . Plot  $u_o$ ,  $u_{T1}$  and  $u_s$  for  $\alpha \approx 45^\circ$ .

95. The circuit of Fig. 3 is supplied by an ac source of 240V, 50Hz.  $V_{dc} = 100V$ ,  $R = 5\Omega$  and  $L$  is large enough to ensure continuous conduction. Determine the delay angle,  $\alpha$  to be maintained for the converter so that 1000W is absorbed by the dc source.