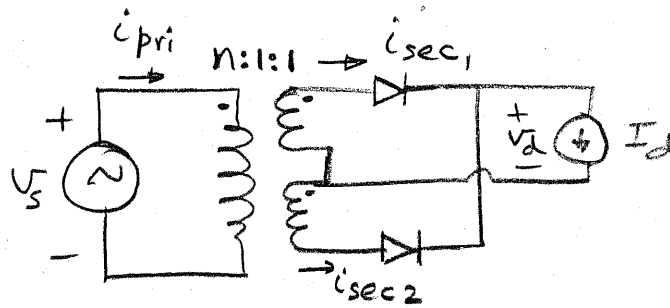
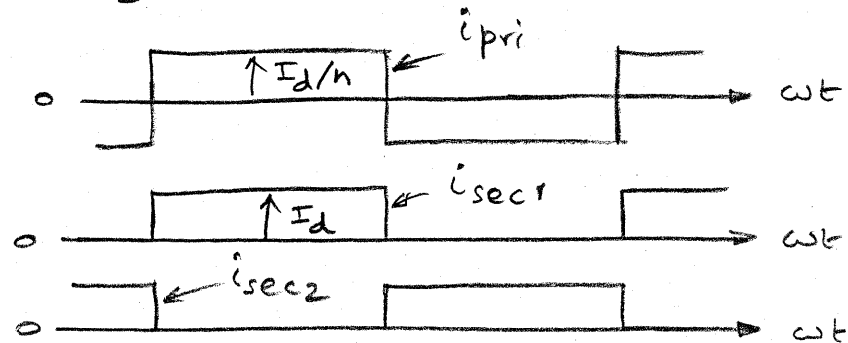


Problem 5-20



V_s = rms voltage



Primary: V_s = rms voltage, $I_s = I_d/n$ = rms current

Secondary 1: V_s/n = rms voltage, $\frac{I_d}{\sqrt{2}}$ = rms current

Secondary 2: Same as secondary 1

\therefore Winding volt-amp ratings

$$= V_s \frac{I_d}{n} + 2 \left(\frac{V_s}{n} \cdot \frac{I_d}{\sqrt{2}} \right)$$

$$= \frac{V_s I_d}{n} (1 + \sqrt{2})$$

Transformer VA rating = Winding ratings / 2

$$= \frac{V_s I_d}{n} \frac{1 + \sqrt{2}}{2}$$

$$V_d = 0.9 V_s/n \quad \therefore \text{Load Power} = \frac{0.9 V_s}{n} I_d$$

$$\therefore \frac{\text{Transformer VA}}{\text{Load Power}} = \frac{\frac{1 + \sqrt{2}}{2}}{0.9} = 1.34$$