HW 6 EET 360 | Joe Munoz | UIN 01185657 | 10 OCT 24

1) if $a = 6$, $V_i = 240V$, find $V_L$ $\quad V_L = V_{pri} + V_{sec}$

$V_{sec}$: $a = \frac{V_{HS}}{V_{LS}} = \frac{V_i}{V_{sec}}$

$$V_{sec} = \frac{V_i}{a} = \frac{240V}{6} = 40V$$

$$V_L = 240V + 40V = \boxed{280V}$$

2). If $V_L = 120V$, $I_L = 5A$, find total Power delievered to Load

$$S_{Load} = V_L \cdot I_L = 120V \cdot 5A = \boxed{600VA}$$

3) if $I_{Tr} = 5A$, $I_{cond} = 20A$, find output current $I_L$

$$I_{cond} = I_{sec} = I_L = \boxed{20A}$$

4) if $I_{tr} = 50A$, $I_{Cond} = 125A$, find $I_i$ (input current)

$$I_i = I_{TOTAL} = I_{pri} + I_{sec} = I_{tr} + I_{cond} = 125A + 50A = \boxed{175A}$$

5) $V_{HS\,(Rated)} = 480V$, $V_{LS\,(rated)} = 120V$, $S_{rated} = 10KVA$, if operated @ rated voltage + Load, find $I_i$ $\quad S_{rated} = V_{pri} I_{pri} = V_{sec} I_{sec}$

$V_i I_{Tr} = V_L I_{cond}$

$$I_{cond} = \frac{S_{rated}}{V_L} = \frac{10000VA}{120V} = 83.3A$$

$$I_{tr} = \frac{S_{rated}}{V_i} = \frac{10000VA}{480V} = 20.83A$$

$$I_i = I_{tr} + I_{cond} = 83.3A + 20.83A = \boxed{104A}$$

6) If $V_{in} = 100V$, $V_{OUT} = 5V$, find turns ratio a

$$a = \frac{V_{HS}}{V_{LS}} = \frac{V_{in} - V_{OUT}}{V_{OUT}} = \frac{100V - 5V}{5V} = \boxed{19}$$

7). If $P_{out} = 600VA$, $V_{in} = 60V$, find $I_{in}$

$P_{OUT} = P_{in} = 600\ VA$

$P_{in} = V_{in} I_{in}$ $\quad I_{in} = \frac{P_{in}}{V_{in}} = \frac{600VA}{60V} = \boxed{10A}$