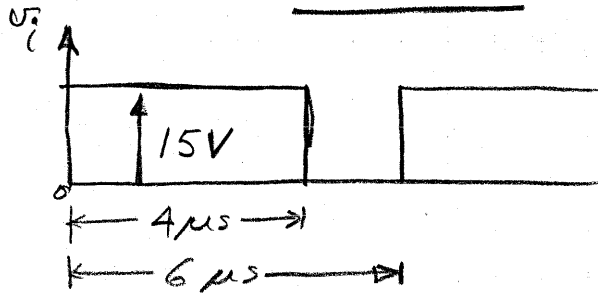


### Problem 3-8

Please Note: Amplitude of  $v_i$  is 15V.



(a) avg output  $V_o = V_i = \frac{15 \times 4}{6} = 10V$

(b) Assuming that  $v_o(t) \approx V_o$

$$i_{\text{Load}} \approx I_{\text{Load}} = \frac{V_o}{R}$$

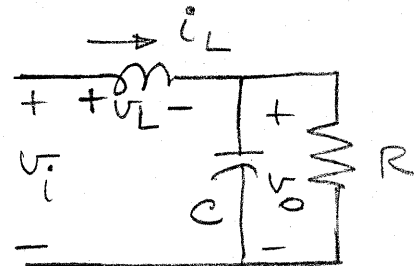
$$P_{\text{Load}} = \frac{V_o^2}{R} = 250W \text{ (given)}$$

$$\therefore R = \frac{V_o^2}{250} = 0.4\Omega$$

$$\therefore I_{\text{Load}} = \frac{V_o}{R} = 25A$$

(c)  $v_L = v_i - V_o$

and  $i_L = \frac{1}{L} \int v_L \cdot dt$



$$(\Delta i_L)_{pp} = \frac{1}{L} \int_0^{4\mu s} v_L \cdot dt = \frac{5V}{5\mu H} \cdot t \Big|_0^{4\mu s} = 4A$$

