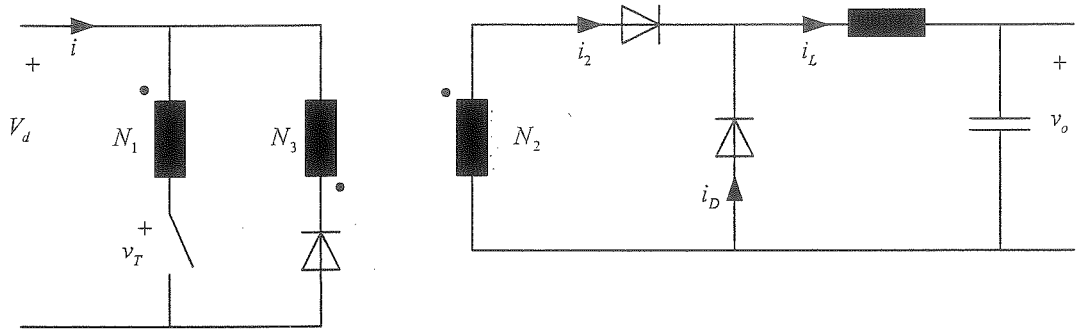
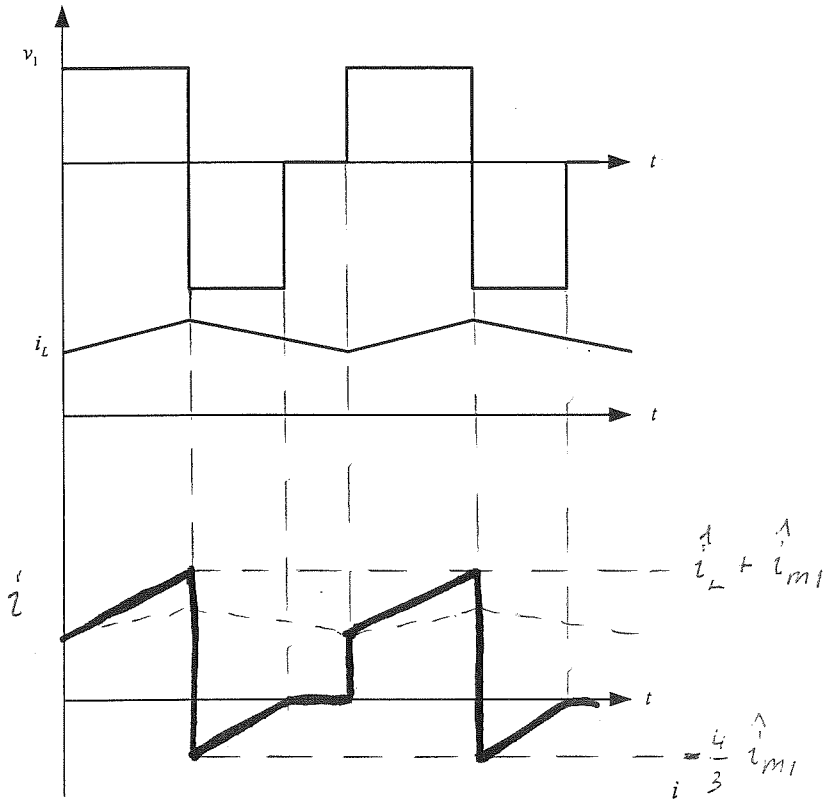
Peer assessment #5 in Power Electronics, *version A*

1. Draw the waveform of i in the empty diagram below if v_1 is the voltage across Winding 1 and if $N_1 = N_2 = 40$ and $N_3 = 30$. The magnetizing current should be considered, but the magnitude can be chosen arbitrarily.





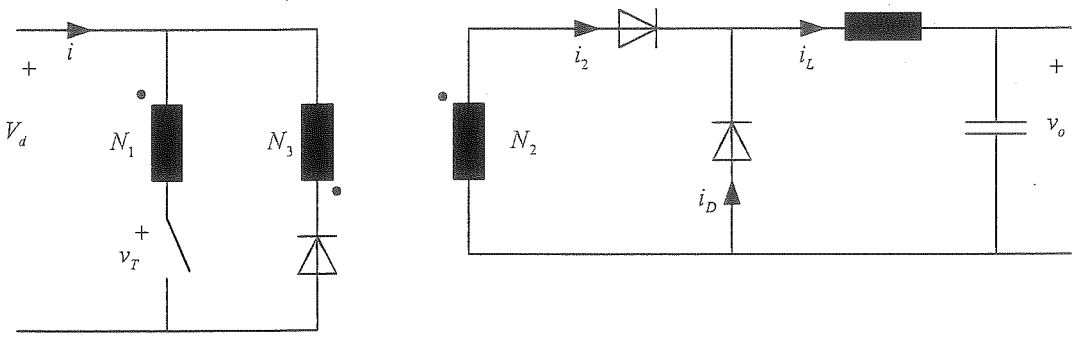
2. Estimate the average value of the output voltage if $V_d = 48$ V.

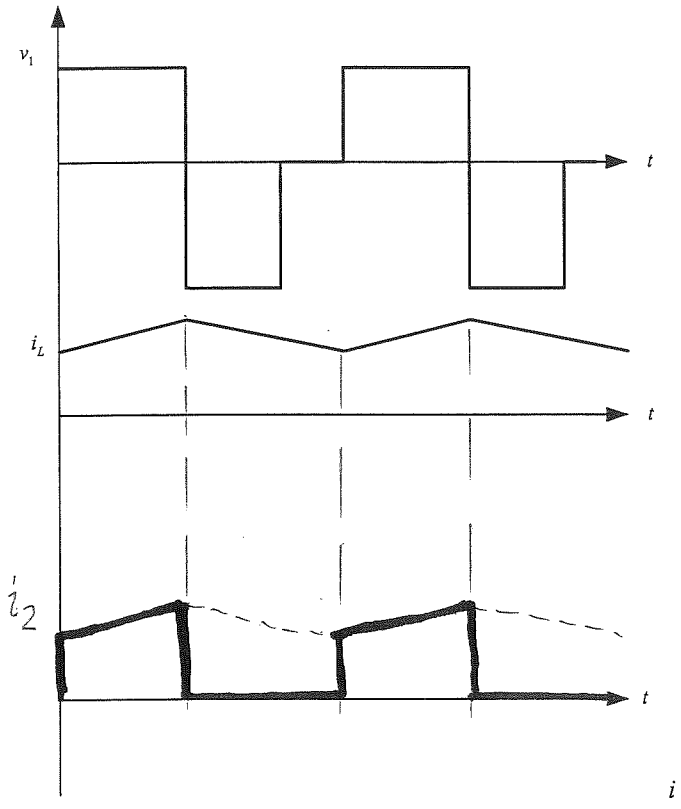
From the graph: T_s: 38mm; t_{ON}: 17mm $\Rightarrow D = \frac{17}{38}$

$V_o = V_d \cdot \frac{N_2}{N_1} \cdot D = 48 \cdot 1 \cdot \frac{17}{38} = 21{,}5$ V

Peer assessment #5 in Power Electronics, *version B*

1. Draw the waveform of i_2 in the empty diagram below if v_1 is the voltage across Winding 1 and if $N_1 = N_2 = 40$ and $N_3 = 30$.





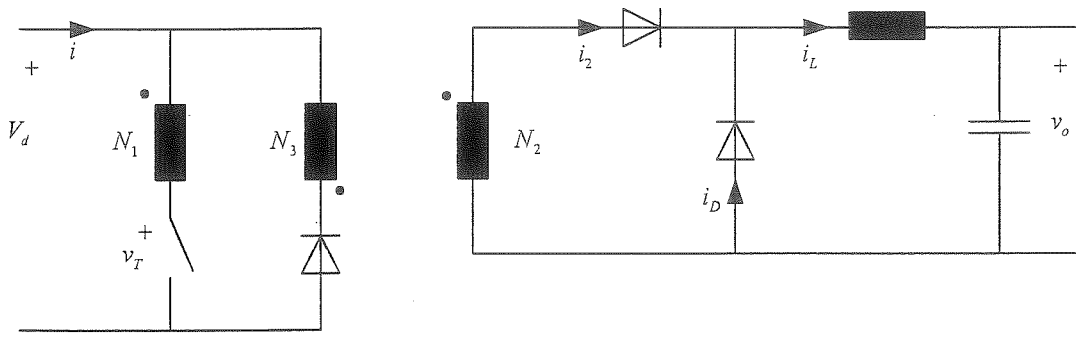
2. Estimate the average value of the output voltage if $V_d = 24$ V.

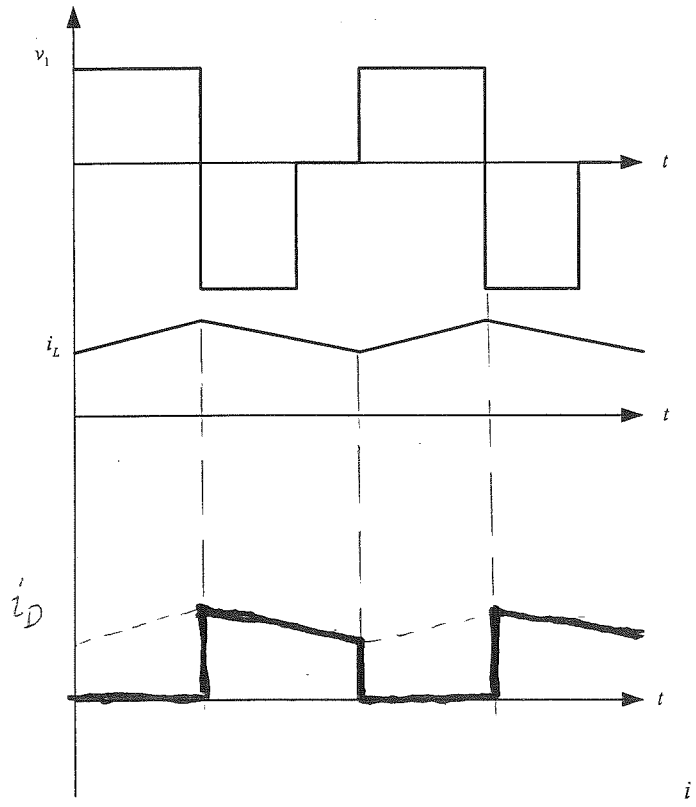
From the graph: $T_S = 38$ ms; $t_{ON} = 17$ ms $\Rightarrow D = \frac{17}{38}$

$V_0 = V_d \cdot \frac{N_2}{N_1} \cdot D = 24 \cdot 1 \cdot \frac{17}{38} = 10{,}7$ V

Peer assessment #5 in Power Electronics, *version C*

1. Draw the waveform of i_D in the empty diagram below if v_1 is the voltage across Winding 1 and if $N_1 = N_2 = 40$ and $N_3 = 30$.





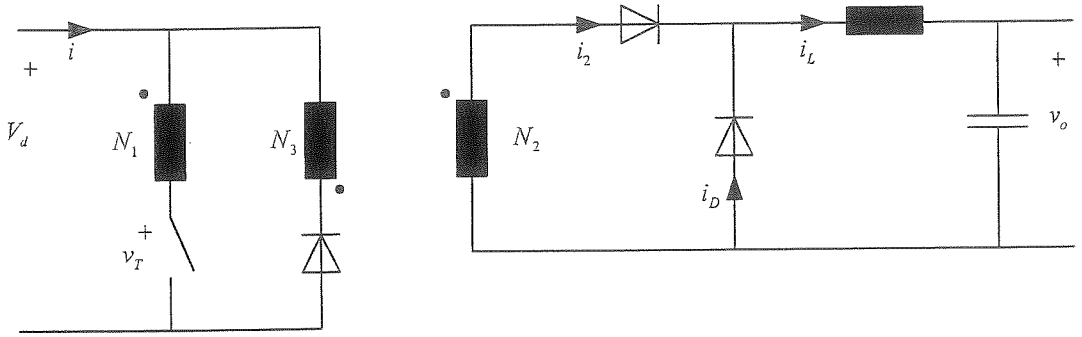
2. Estimate the average value of the output voltage if $V_d = 36$ V.

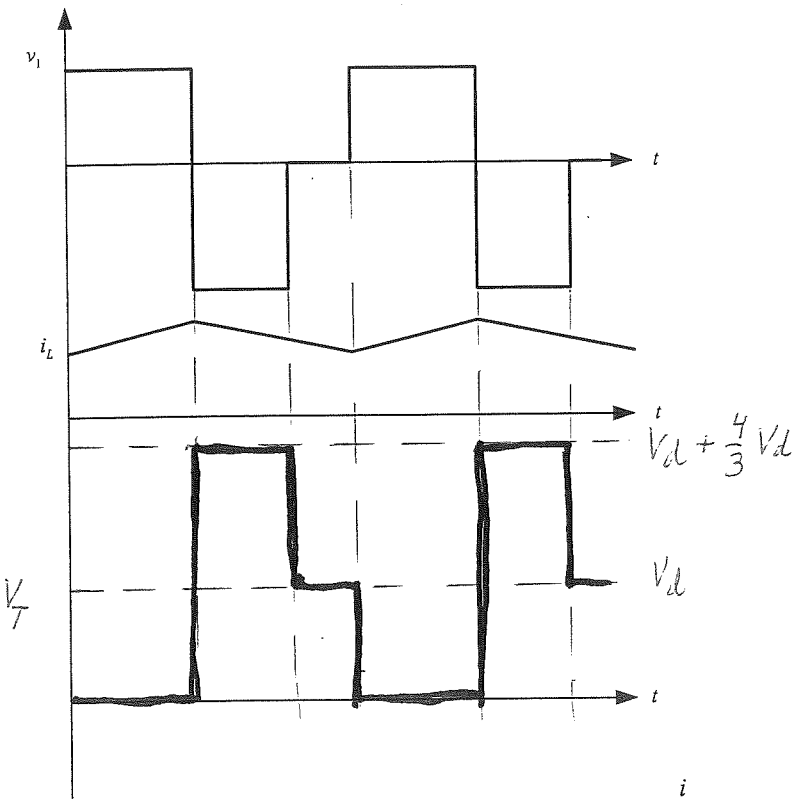
From the graph: T_S : 38 mm ; t_{ON} : 17 mm $\Rightarrow D = \frac{17}{38}$

$V_o = V_d \cdot \frac{N_2}{N_1} \cdot D = 36 \cdot 1 \cdot \frac{17}{38} = 16{,}1$ V

Peer assessment #5 in Power Electronics, *version D*

1. Draw the waveform of v_T in the empty diagram below if v_1 is the voltage across Winding 1 and if $N_1 = N_2 = 40$ and $N_3 = 30$.





2. Estimate the average value of the output voltage if $V_d = 72$ V.

From the graph: T_S: 38 mm; t_{ON}: 17 mm $\Rightarrow D = \frac{17}{38}$

$V_o = V_d \cdot \frac{N_2}{N_1} \cdot D = 72 \cdot 1 \cdot \frac{17}{38} = 32{,}2\ V$