No 1

a. $V_{rms} = 50V$

$V_{mux} = V_{rms} \cdot \sqrt{2}$

$= 50 \cdot \sqrt{2}$

$= 70,71\ V$

$V_L = V_{mux} - V_d$

$= 70,71 - 0,8$

$= 69,91\ V$ ✓

$V_{avg} = \frac{V_L}{\pi} = \frac{69,91}{\pi}$

$= 22,253\ V$ ✓

5

b. $R_L = 200\Omega$

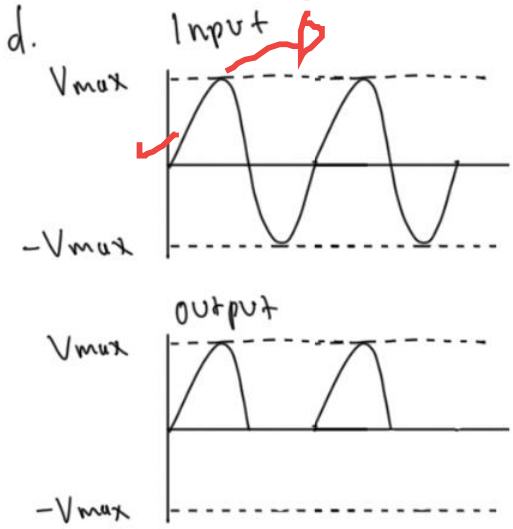
$I_{avg} = \frac{V_{avg}}{R_L} = \frac{22,253}{200} = 0,111A$ ✓ 5

c. $P = V_{avg} I_{avg}$

$= 22,253 \cdot 0,111$

$= 2,47\ W$ ✓ 5

d.



4,5

No 2

$V_d = 0{,}85\ V$

9. $V_{rms} = 220\ V$

$N_p : N_{s1} : N_{s2} = 4 : 1 : 1$

$V_{max} = 220 \cdot \sqrt{2}$

$= 311{,}127\ V$

$\frac{V_p}{V_s} = \frac{N_p}{N_s}$

$\frac{311{,}127}{V_s} = \frac{4}{1}$

$V_s = \frac{311{,}127}{4}$

$V_s = 77{,}781 - 0{,}85 = 76{,}931\ V$

$V_{avg} = \frac{2V_s}{\pi} = \frac{2 \cdot 76{,}931}{\pi} = 48{,}975\ V$ ✓

b. $P = V_{avg} \cdot I_{avg} = \frac{V_{avg}^2}{R_L}$ 5

$= \frac{48{,}975^2}{100}$ 5

$= 23{,}985\ W$ ✓

c. $I_{avg} = 5\ A$

$I_{avg} = \frac{V_{avg}}{R_L}$ 5

$R_L = \frac{V_{avg}}{I_{avg}} = \frac{48{,}975}{5} = 9{,}795\ \Omega$ ✓

No 3

$V_{rms} = 120\,V \rightarrow V_{max} = 120 \cdot \sqrt{2} = 169,7\,V$

$C = 470\,\mu F$

$R_L = 1\,k\Omega$

a. $\frac{V_p}{V_s} = \frac{N_p}{N_s}$

$\frac{169,7}{V_s} = \frac{9}{1}$

$V_s = \frac{169,7}{9} = 18,855\,V$

b. $I_{max} = \frac{V_s}{R_L} = \frac{18,855}{1000} = 0,018885\,A = 18,85\,mA$

$I_{avg} = \frac{2\,I_{max}}{\pi} = \frac{2 \cdot 18,85}{\pi} = 12\,mA$

C. $V_p = 18,855\,V$

$I_p = 18,85\,mA$

$V_R = \frac{I_p}{F \cdot C} = \frac{18,85\,m}{120 \cdot 470\,\mu} = 0,334\,V_{p-p}$

d. $V_p = 18,855 - 1,4 = 17,455\ V$

$I_p = \frac{17,455}{1000} = 17,45\ mA$

$V_R = \frac{17,45m}{120 \cdot 470\Omega} = 0,309\ V_{p-p}$

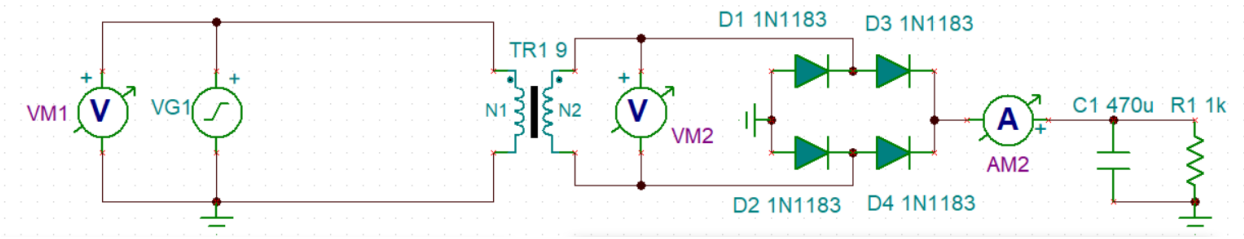
e. $V_{avg} = \frac{2V_s}{\pi} = \frac{2 \cdot 18,855}{\pi} = 12,003\ V$

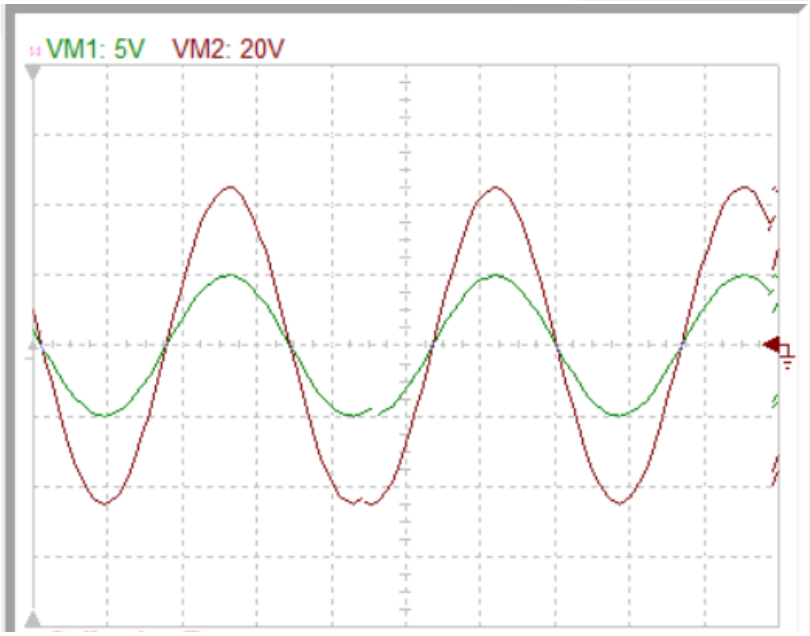
No 4

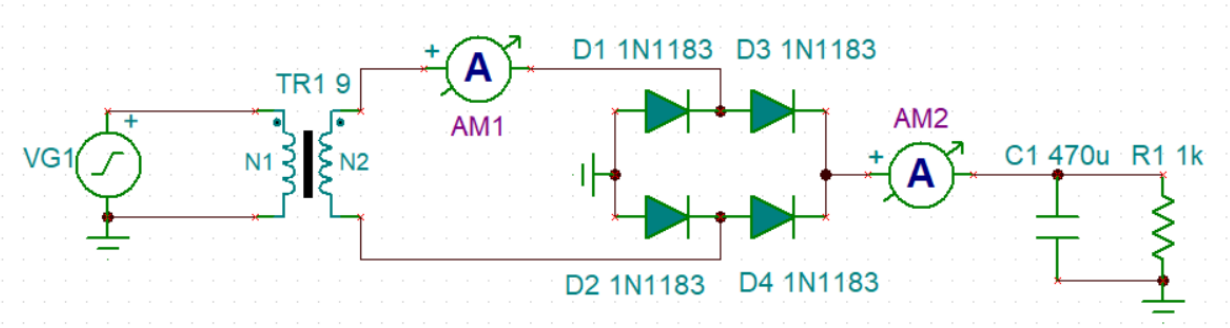
Amplitudo = 5v

Offset voltage = 120v

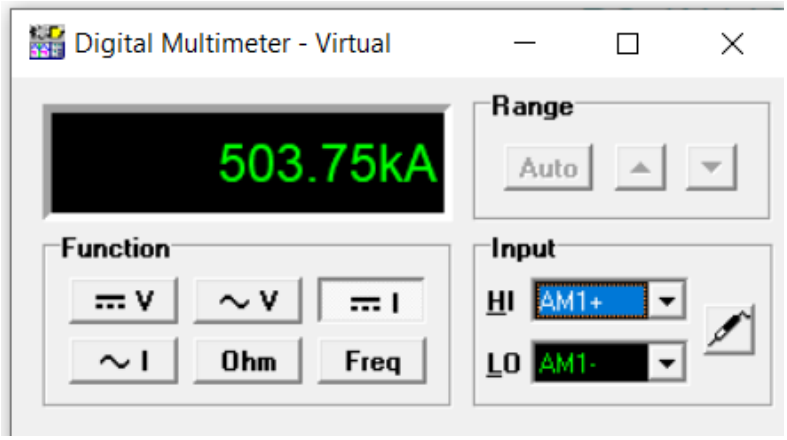
a. Tegangan primer dan sekunder pada tranformator



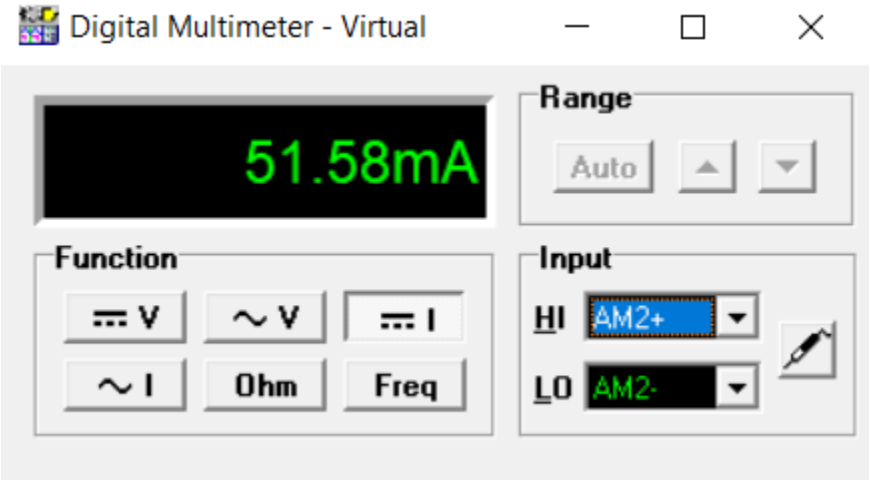




b. Arus pada sisi sekunder transformator



c. Arus pada sisi beban



d. Tegangan pada sisi beban.