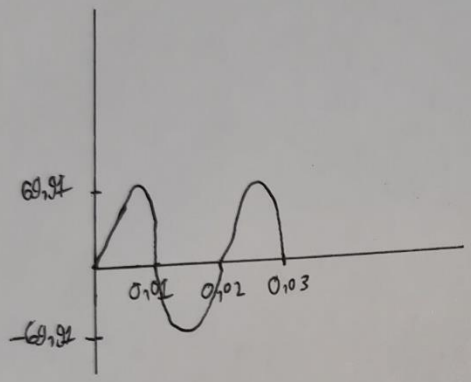
1. $V_{RMS} = 50V$
$V_d = 0{,}8V$
$R_L = 200\Omega$

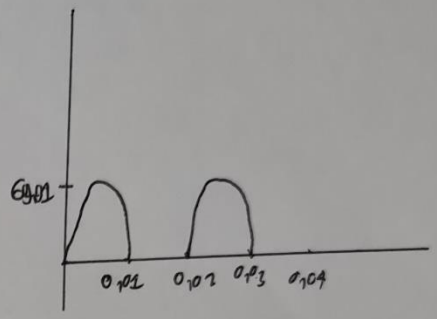
a. $V_{max} = 50 \times \sqrt{2}$
$= 50\sqrt{2} - 0{,}8$
$= 69{,}91\ V$

$V_{avg} = \frac{V_{max}}{\pi} = \frac{69{,}91}{\pi} = 22{,}25\ V$

b. $I_{RL} = \frac{V_{avg}}{R_L} = \frac{22{,}25}{200} = 0{,}111125\ A$

c. $P_{RL} = V_{avg} \times I_{RL}$
$= 22{,}25 \times 0{,}111125$
$= 2{,}475\ W$





2. $V_{RMS} = 220V$
$a = 4:1$
$R_L = 100\Omega$
$V_d = 0{,}85\ V$

a. $V_{S1} = \frac{1}{4} \times V_1$

$V_1 = V_{max}$
$V_{max} = V_{RMS}\sqrt{2}$
$= 220\sqrt{2}$

$V_{S1} = \frac{220\sqrt{2}}{4} - 0{,}85$
$= 76{,}931\ V$

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

b. $I_{RL} = \frac{V_{avg}}{R_L} = \frac{48{,}975}{100} = 0{,}48975\ A$

$P_{RL} = V_{avg} \times I_{RL}$
$= 48{,}975 \times 0{,}48975$
$= 23{,}985\ W$

c. $5 = \frac{48{,}975}{R_L}$

$R_L = 9{,}795\Omega$

3. $V_s = 120V$

$a = 9:1$

$C = 470\,MF$

$R_L = 1k\,\Omega$

a. $V_2 = a \cdot V_s$

$= \frac{1}{9} \cdot 120$

$= 13,3V$ //

b. ~~V_{max}~~ $= 120\sqrt{2}$

$V_{S1} = \frac{120\sqrt{2}}{9} - 1,9$

$= 18,856 - 1,9$

$= 17,956$

$V_{avg} = \frac{2(17,956)}{\pi} = 11,112$

$I_{RL} = \frac{V_{avg}}{R_L} = \frac{11,112}{1000} = 0,0112A$

b. $V_{max} = 120\sqrt{2}$

$V_{S1} = \frac{120\sqrt{2}}{9}$

$= 18,856$

~~$V_{avg} = \frac{2(17,956)}{\pi}$~~ =

$V_{avg} = \frac{18,856 \cdot 2}{\pi} = 12,004\,V$

$I_{RL} = \frac{V_{avg}}{R_L} = \frac{12,004}{1k} = 12004 \times 10^{-6}$

c. $V_{avg} = \frac{2 \cdot 13,3}{\pi}$

$= 8,47V$

$I = \frac{8,47}{1k} = 8,47mA$

$V_R = \frac{8,47 \times 10^{-3}}{470 \times 10^{-6}}$

d. $V_{max} = 120\sqrt{2}$

$V_{S1} = \frac{120\sqrt{2}}{9} - 1,9$

$= 18,856 - 1,9$

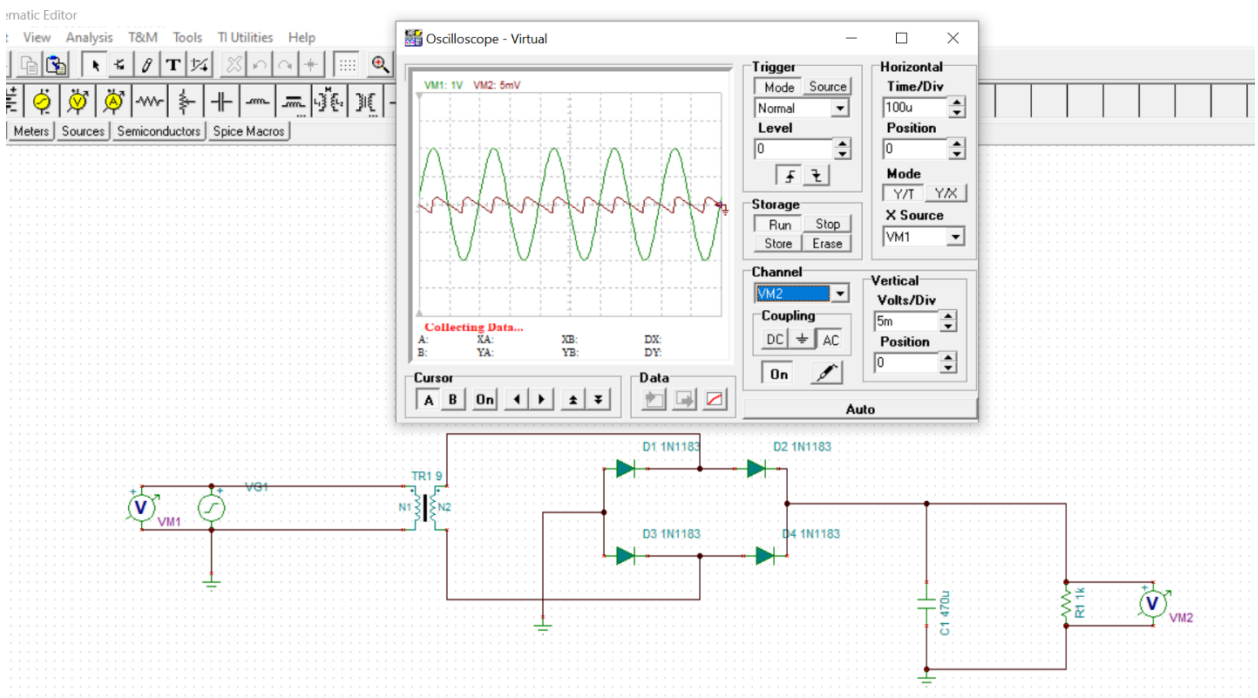
$= 17,956$ //

~~V_{avg}~~

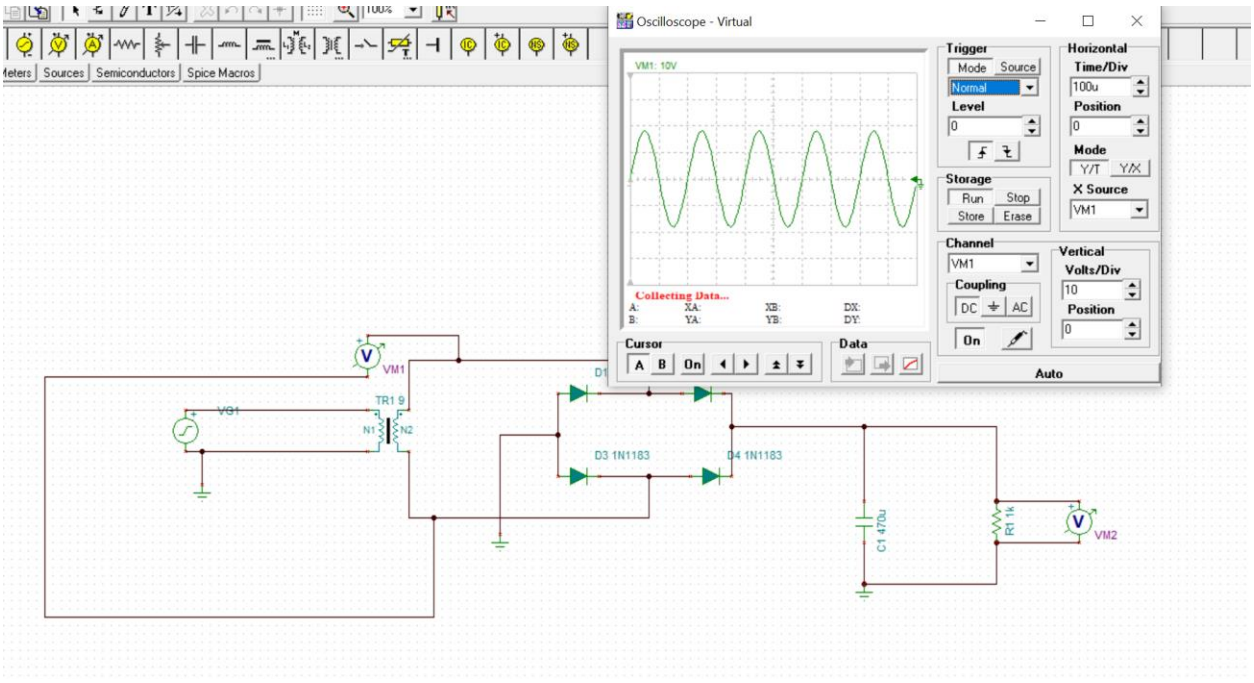
e. $V_{avg} = \frac{2(17,956)}{\pi} = 11,112\,V$ //

~~$I_{RL} = V_{avg}$~~

Soal bonus

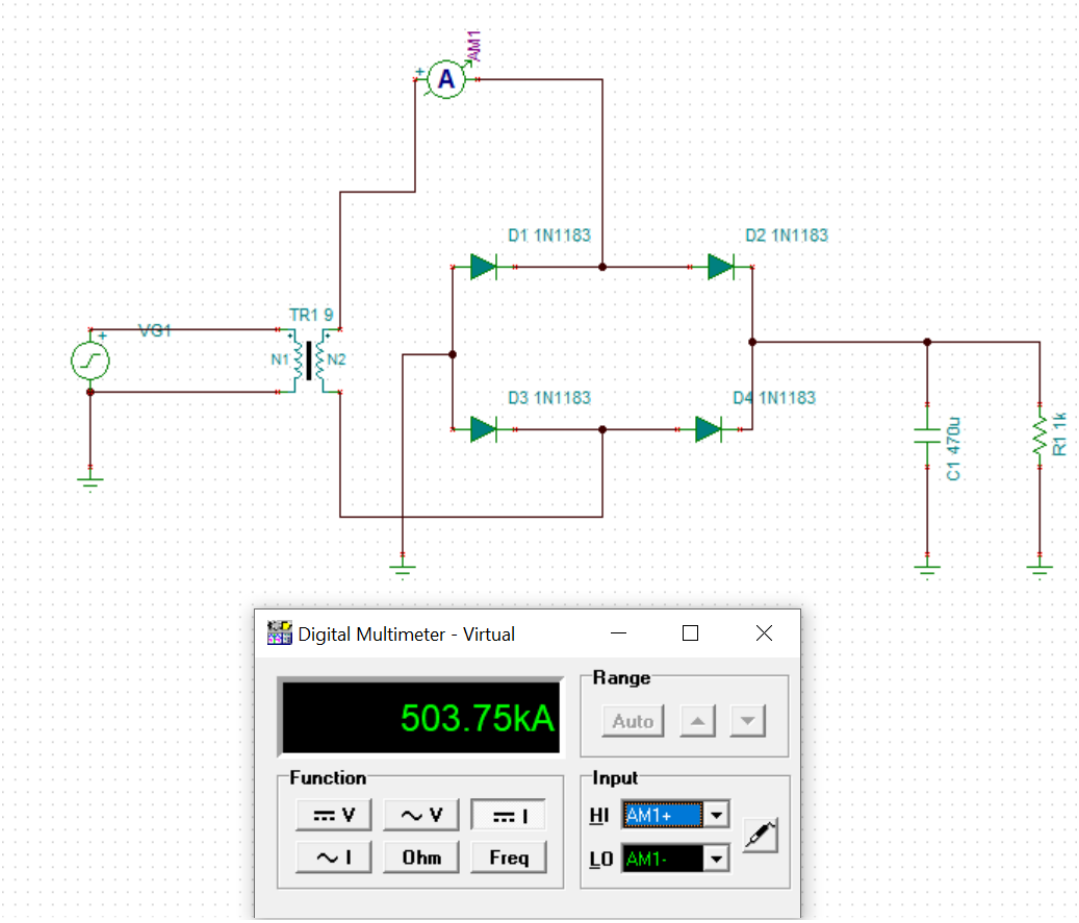
1. 

Gelombang channel 1 (tegangan primer)

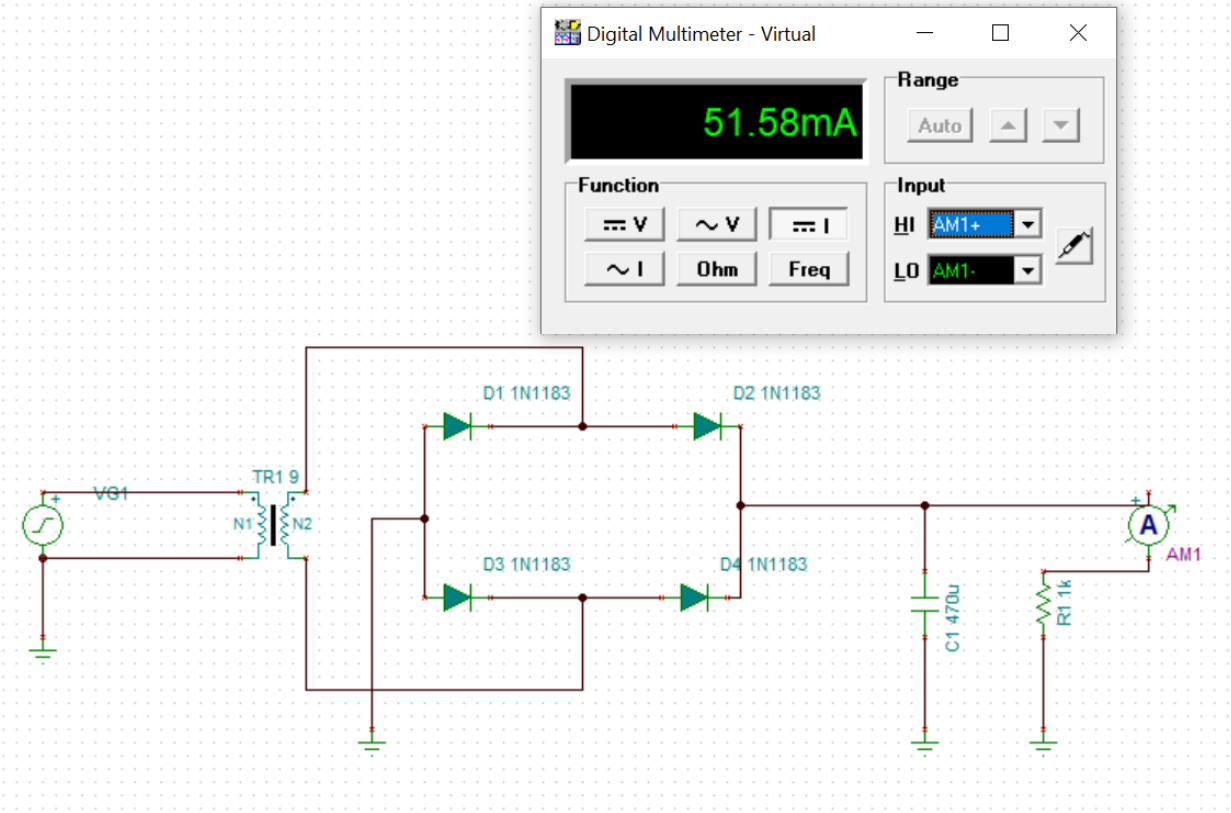


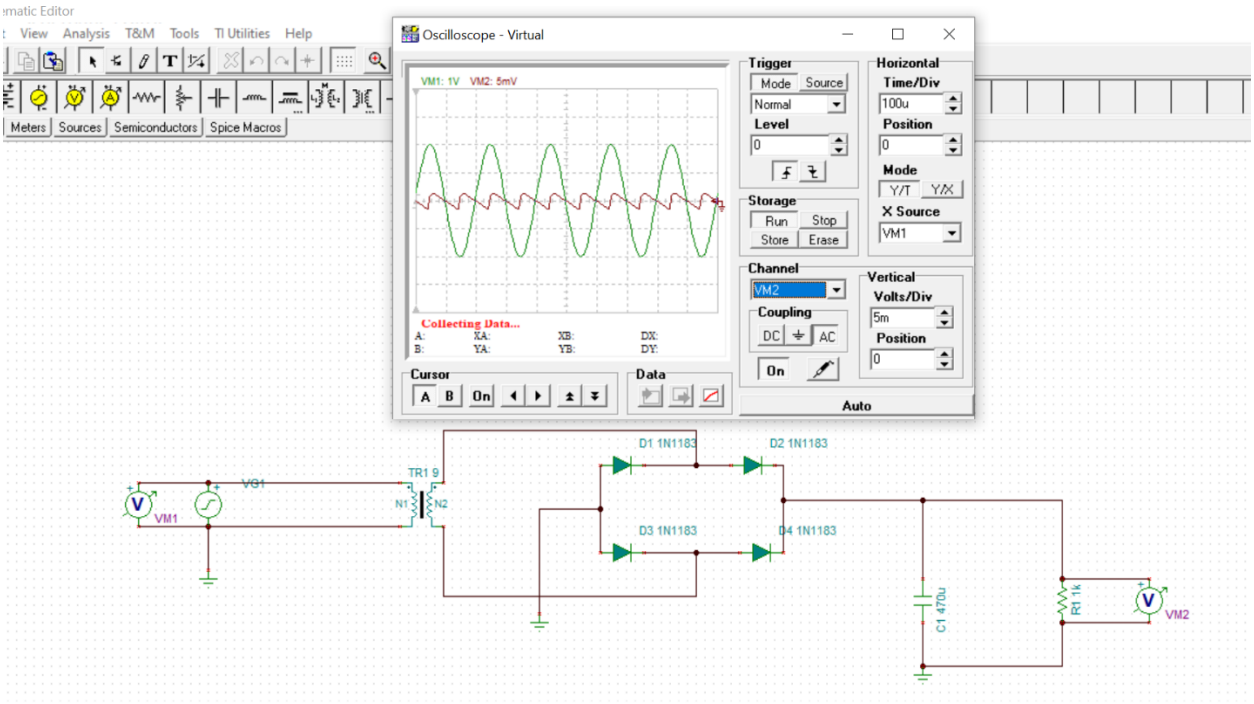
Tegangan sekuder

2.


AM1
A
D1 1N1183
D2 1N1183
TR1 9
VG1
N1
N2
D3 1N1183
D4 1N1183
C1 470u
R1 1k
Digital Multimeter - Virtual
503.75kA
Range
Auto
Function
V
V
I
I
Ohm
Freq
Input
HI
AM1+
LO
AM1-

3.


Digital Multimeter - Virtual
51.58mA
Range
Auto
Function
V
V
I
I
Ohm
Freq
Input
HI
AM1+
LO
AM1-
D1 1N1183
D2 1N1183
TR1 9
VG1
N1
N2
D3 1N1183
D4 1N1183
C1 470u
R1 1k
A
AM1

4. 

Tegangan pada sisi beban (gelombang channel 2)