Vasile Stefania Elena | Peșu Mihai Alexandru | 412D | 13/3/2021
Student 1 – nume și prenume | Student 2 – nume și prenume | Grupa | Data/ora

Fișă laborator 1 - online
rev. 2

ID =61

1.a) Verificarea legii lui Ohm

$R_{1\ calc}$ =7.1KΩ $R_{1\ ales}$ = 6.8KΩ tol. = +/-5 [%] U_1=5V I_1=735.29μA

$R_1= U_1/I_1=5/735.29*10^{-6}=6800.03Ω$

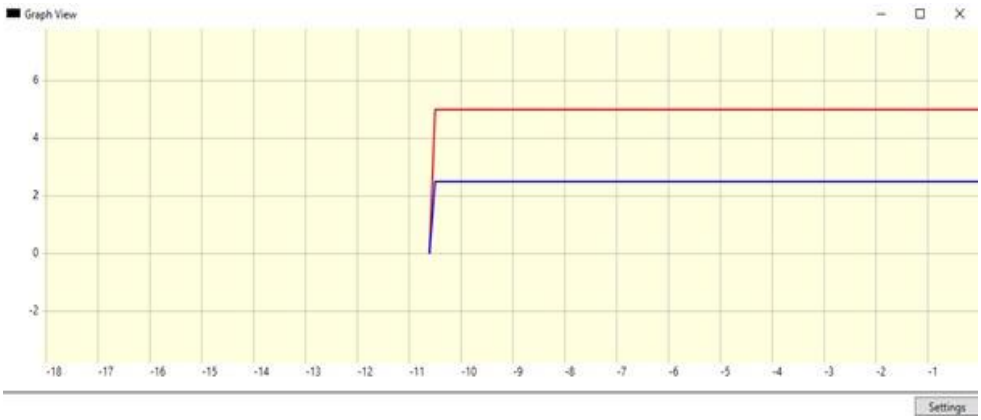
Citire codul culorilor: cifra 1 = 6 cifra 2 = 8 cifra 3 = 2

$R_{2\ calc}$ =9 KΩ $R_{2\ ales}$ = 10 KΩ tol. =+/-5 [%] U_2=5V I_2=500 μA

$R_2= U_2/I_2=5/500*10^{-6}=10.000\ Ω$

Citire codul culorilor: cifra 1 = 1 cifra 2 =0 cifra 3 = 3

2a) Divizor de tensiune format cu două rezistențe cu R_1=R_2=1K



C_Y=2V/div N_{YA}=2.5div N_{YB}=1.25div

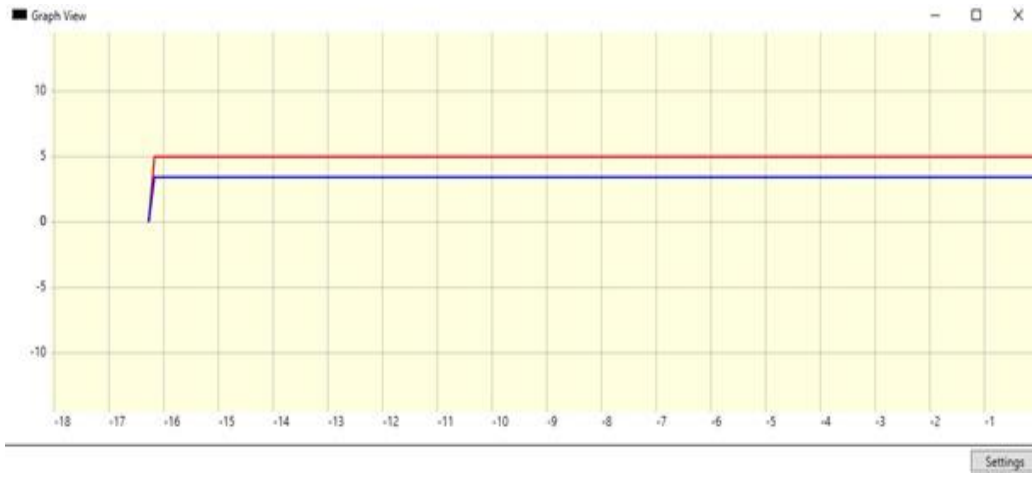
2b) Divizor de tensiune format cu două rezistențe funcție de ID

$R_{11\ calc}$=610 Ω $R_{21\ calc}$=1525 Ω $R_{12\ calc}$=7.26 KΩ $R_{22\ calc}$= 5.75 KΩ

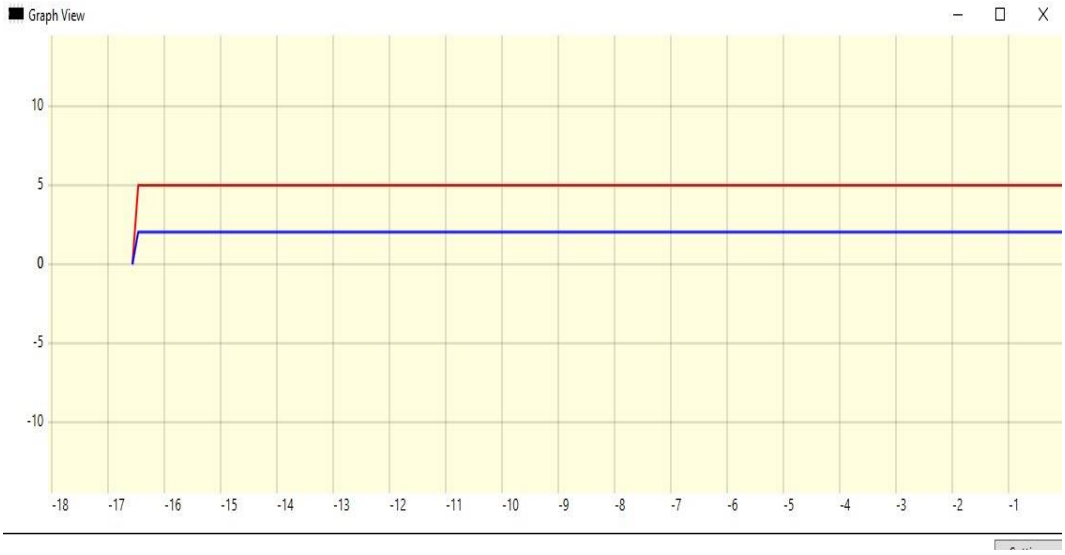
$R_{11\ ales}$ =680 Ω $R_{21\ ales}$ =1500 Ω $R_{12\ ales}$ =6.8 KΩ $R_{22\ ales}$=4.7 KΩ

U_{A1}=5V U_{B1}=3.44V $\frac{U_{B1}}{U_{A1}}$=3.44/5=0.688 $\frac{R_{21}}{R_{11}+R_{21}}$ =1500/2180=0.688

U_{A2}=5V U_{B2}=2.04V $\frac{U_{B2}}{U_{A2}}$=2.04/5=0.408 $\frac{R_{22}}{R_{12}+R_{22}}$ =4.7/11.5=0.408



(2b, 1)



(2b, 2)

set 1: C_Y = 5V/div N_{YB}=0.688div set 2: C_Y =5V/div N_{YB}=0.408div

$U_B = N_Y C_Y \Rightarrow N_Y = U_B/C_Y$=3.44V/5V/div=0.688div (set 1)

$U_B = N_Y C_Y \Rightarrow N_Y = U_B/C_Y$=2.04V/5V/div=0.408div (set 2)

2c) Divizor de tensiune format cu trei rezistențe

$R_{1\ calc}$=7.26 KΩ $R_{2\ calc}$ =5.75 KΩ $R_{3\ calc}$ = 5.5 KΩ
$R_{1\ ales}$=6.8 KΩ $R_{2\ ales}$ =4.7 KΩ $R_{3\ ales}$ = 4.7 KΩ

R_1: tol=+/-5 [%] cifra 1=6 cifra 2 =8 cifra 3 =2

R_2: tol=+/-5 [%] cifra 1 =4 cifra 2 = 7 cifra 3 = 2

R_3: tol=+/-5 [%] cifra 1 =4 cifra 2 = 7 cifra 3 =2

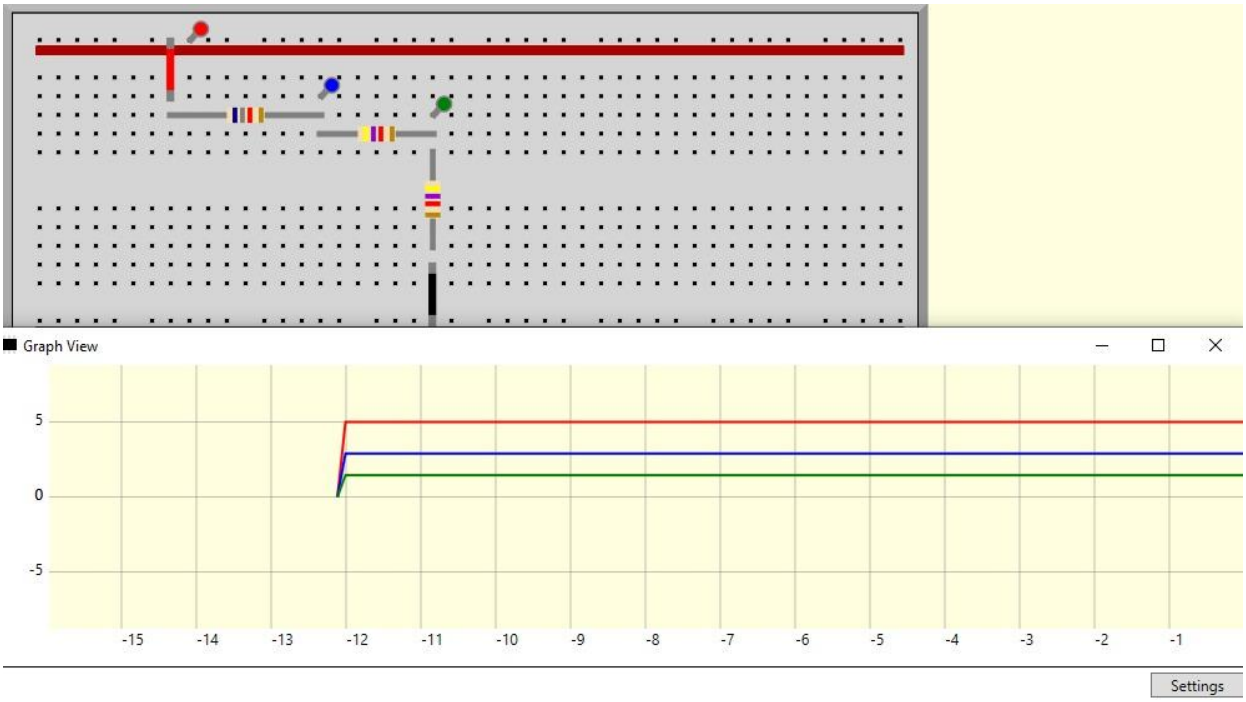
U_A=5V U_B=2.9V U_C=1.45V

$\left\{\frac{U_B}{U_A}\right\}_{mas}$ =2.9/5=0.58

$\left\{\frac{U_B}{U_A}\right\}_{calc}$ = (4.7 +4.7)/(4.7+4.7 +6.8)=0.5875

$\left\{\frac{U_2}{U_A}\right\}_{mas}$ =(U_B-U_C)/U_A=(2.9-1.45)/5=0.29

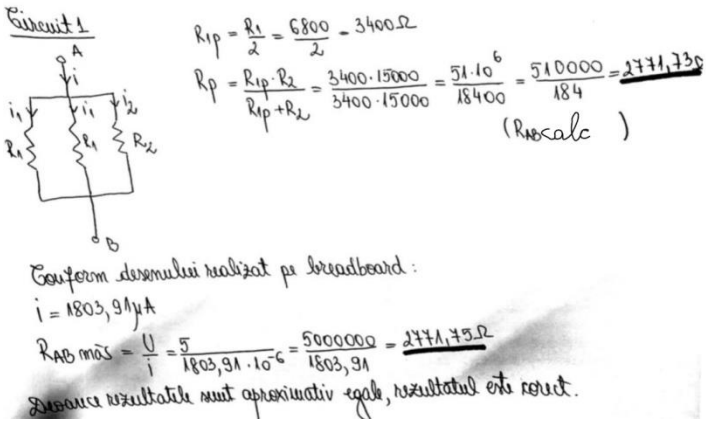
$\left\{\frac{U_2}{U_A}\right\}_{calc}$ =4.7/(6.8+4.7+4.7)=0.2901

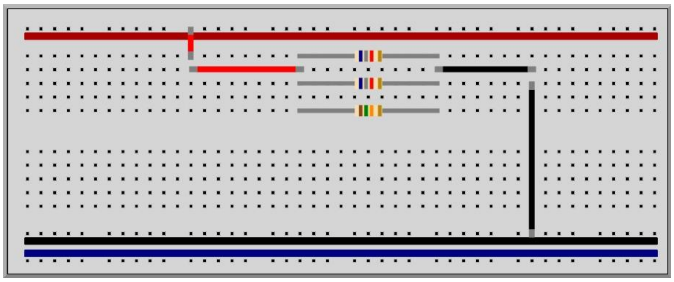


C_Y=5V/div
$N_{Y\,A}$ = U_A/C_Y =5/5=1
$N_{Y\,B}$ = U_B/C_Y =2.9/5=0.58
$N_{Y\,C}$ = U_C/C_Y =1.45/5=0.29

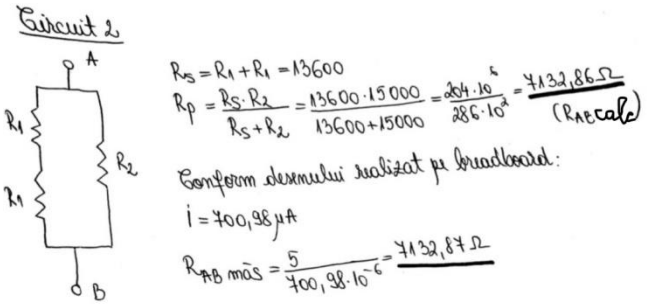
3. Realizarea unor circuite date pe placa de test

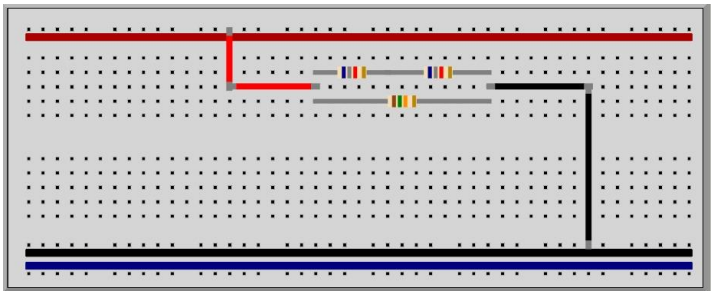
$R_{1\ calc}$= 6.100Ω $R_{1\ ales}$ =6.800Ω $R_{2\ calc}$= 15.250 Ω $R_{2\ ales}$ =15.000Ω



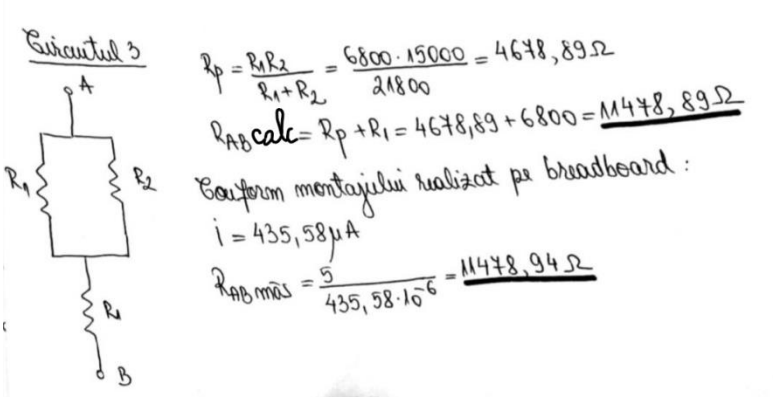


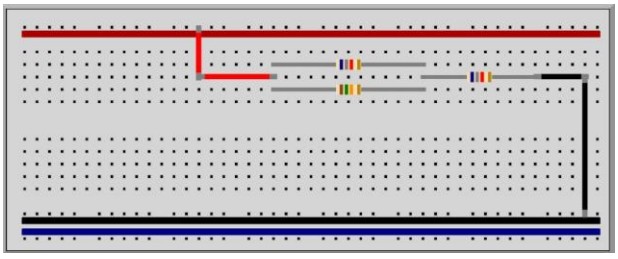
circuit 1 $R_{AB\ calc}$ =2771.73Ω
$R_{AB\ măs}$ = 2771.75Ω



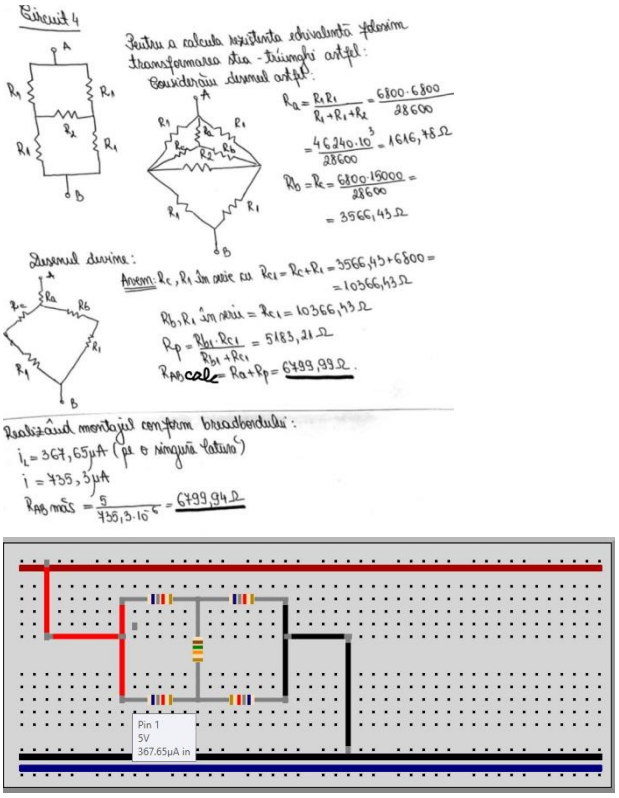


circuit 2 $R_{AB\ calc}$ = 7132, 86Ω
$R_{AB\ măs}$ =7132, 87Ω





circuit 3 $R_{AB\ calc}$ =11478, 89Ω
$R_{AB\ măs}$ = 11478, 94Ω



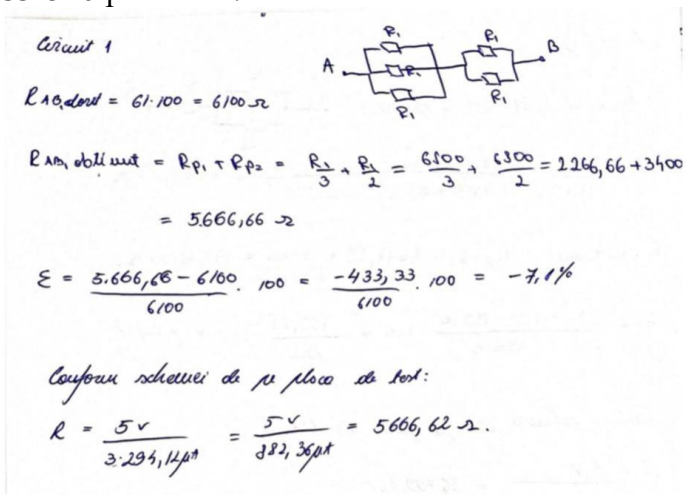
circuit 4 $R_{AB\ calc}$ = 7132, 86 Ω
$R_{AB\ măs}$ = 7132, 87Ω

4. Proiectarea şi realizarea unor circuite rezistive pe placa de test

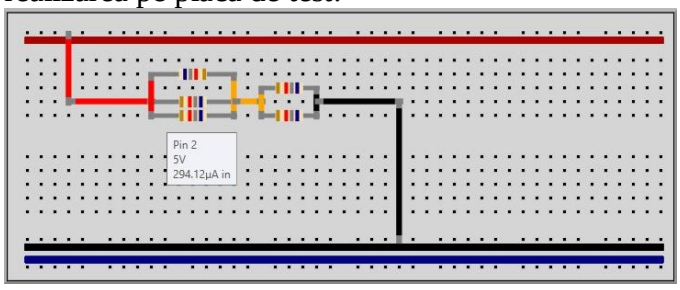
$R_{1\ ales}$= 6800Ω $R_{2\ ales}$ =15000 Ω

$R_{AB\ 1\ dorit}$ =6100Ω $R_{AB\ 2\ dorit}$ =19520Ω $R_{AB\ 3\ dorit}$ =34160Ω

schema proiectată:



realizarea pe placa de test:



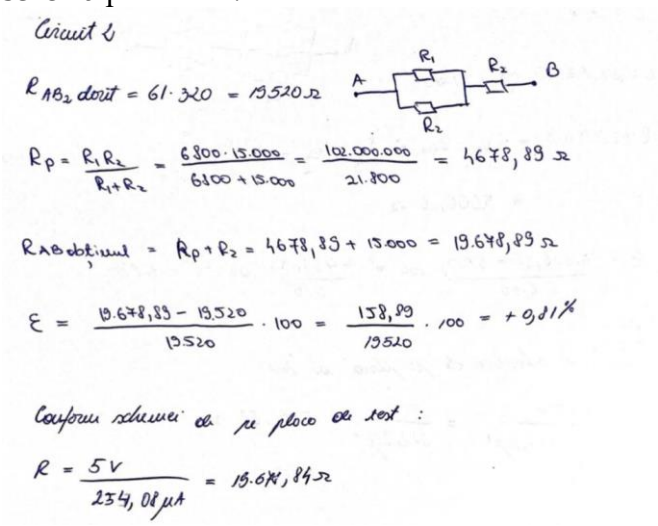
circuit 1

$R_{AB\ calc}$ = 5666, 66 Ω

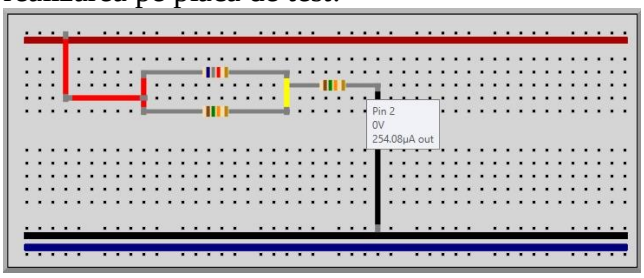
$R_{AB\ măs}$ = 5666, 62 Ω

ε = -7, 1%

schema proiectată:



realizarea pe placa de test:



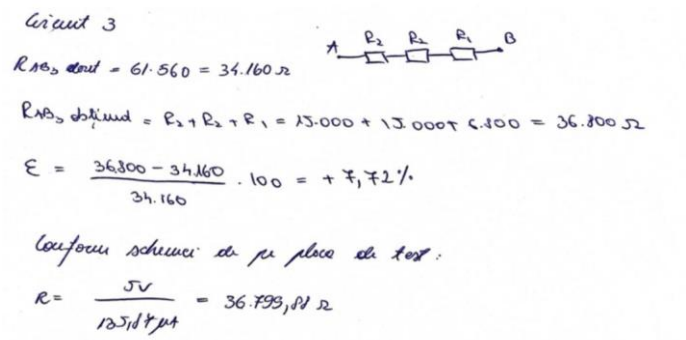
circuit 2

$R_{AB\ calc}$ = 19678, 89 Ω

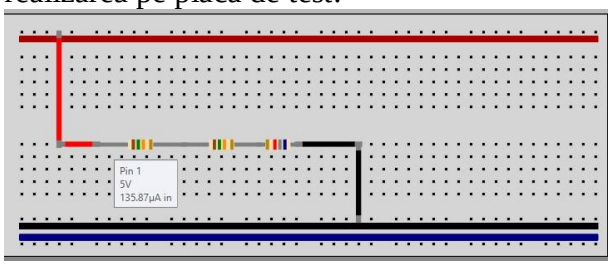
$R_{AB\ măs}$ = 19678, 84

ε =+0, 81%

schema proiectată:



realizarea pe placa de test:



circuit 3

$R_{AB\ calc}$ =36800 Ω

$R_{AB\ măs}$ =36799, 88 Ω

ε =+7, 72%