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Grupa 412D
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Data/ora 21.03.2021/15:30

Fişă laborator 1 - online

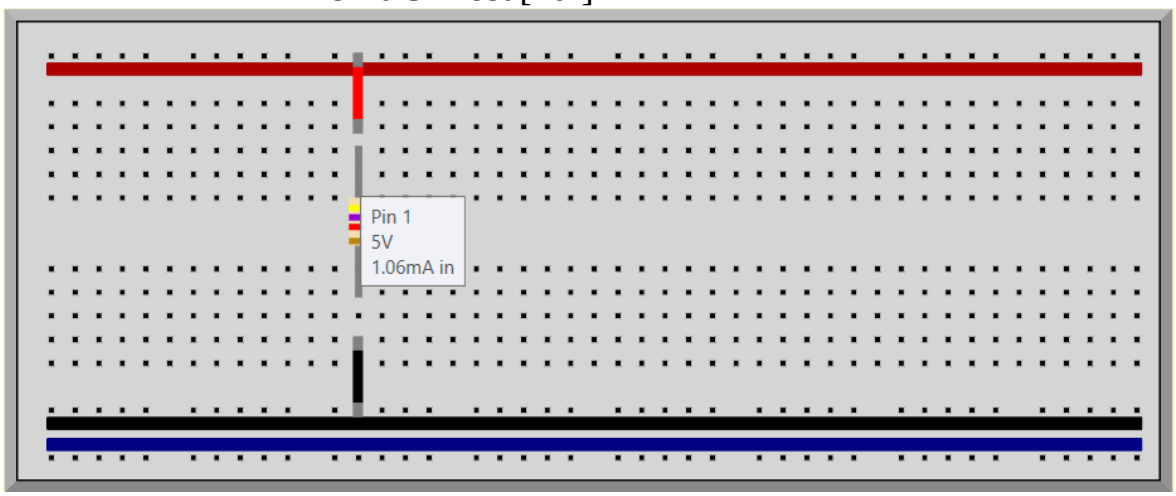
ID =43

1.a) Verificarea legii lui Ohm

$R_{1\ calc}$ =5,3KΩ $R_{1\ ales}$ = 4,7KΩ tol. = 5 [%] U_1= 5V I_1=1,06mA

$R_1= U_1/I_1=5V/1,06*10^{-3}A=4,7169*10^3Ω=4,7169\ KΩ$

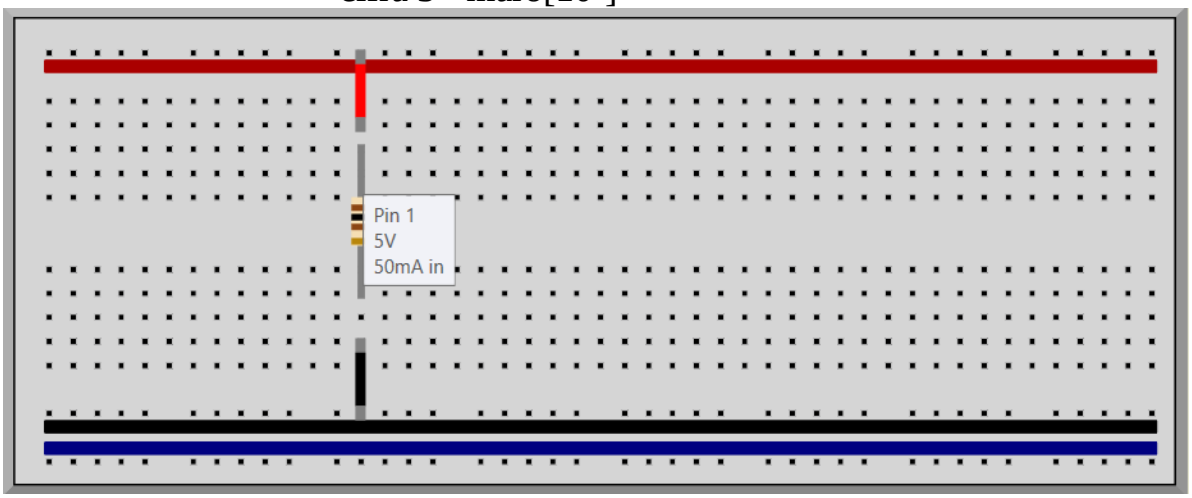
Citire codul culorilor: cifra 1 =galben[4]
cifra 2 = mov[7]
cifra 3 =rosu[10^2]



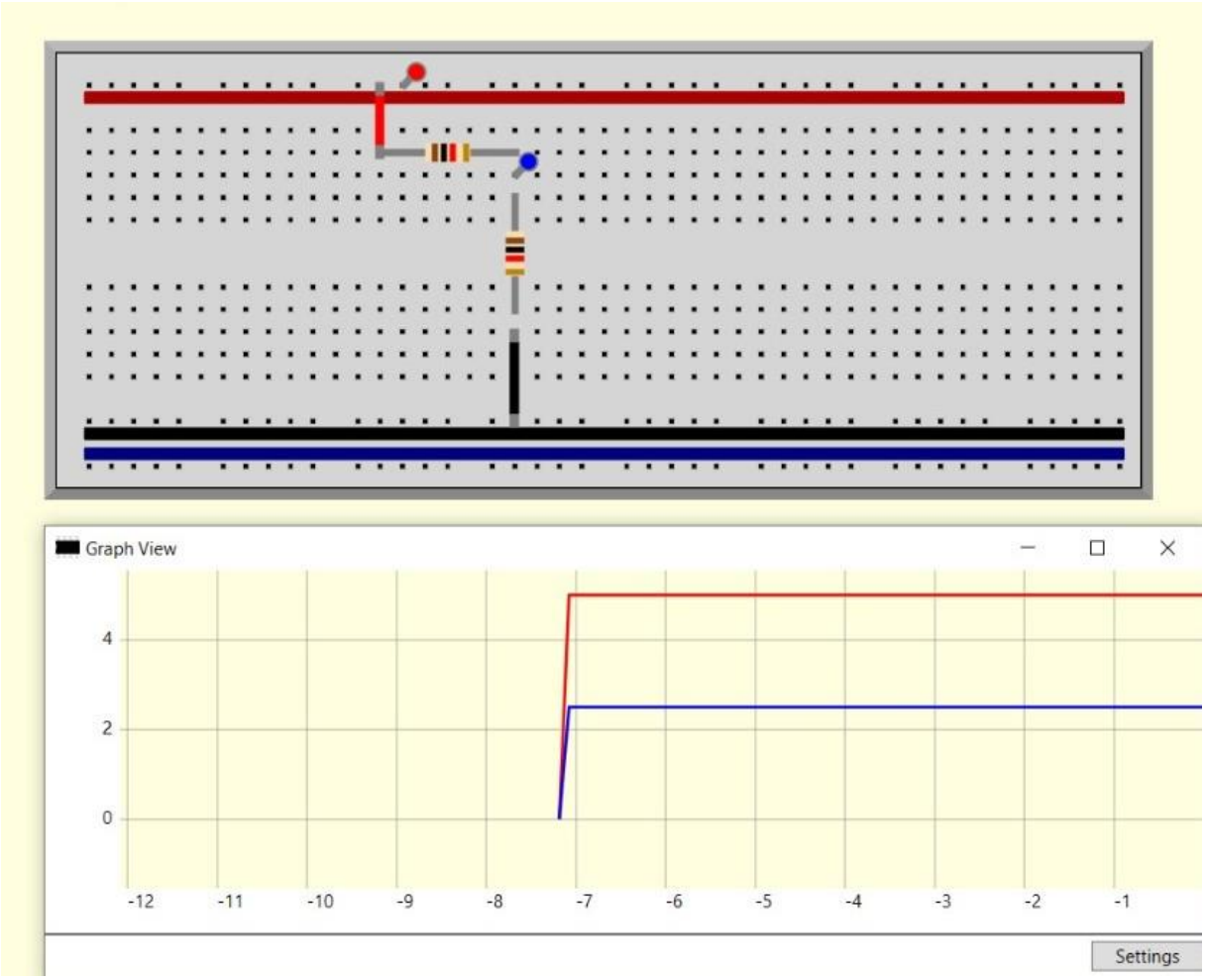
$R_{2\ calc}$ =90Ω $R_{2\ ales}$ = 100Ω tol. = 5 [%] U_2=5V I_2=50mA

$R_2= U_2/I_2=5V/50*10^{-3}A=0,1*10^3Ω=100Ω$

Citire codul culorilor: cifra 1 = maro[1]
cifra 2 =negru[0]
cifra 3 =maro[10^1]



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



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

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

$R_{11\ calc}$=430Ω $R_{21\ calc}$=1075Ω $R_{12\ calc}$=8,46kΩ $R_{22\ calc}$=7,25kΩ

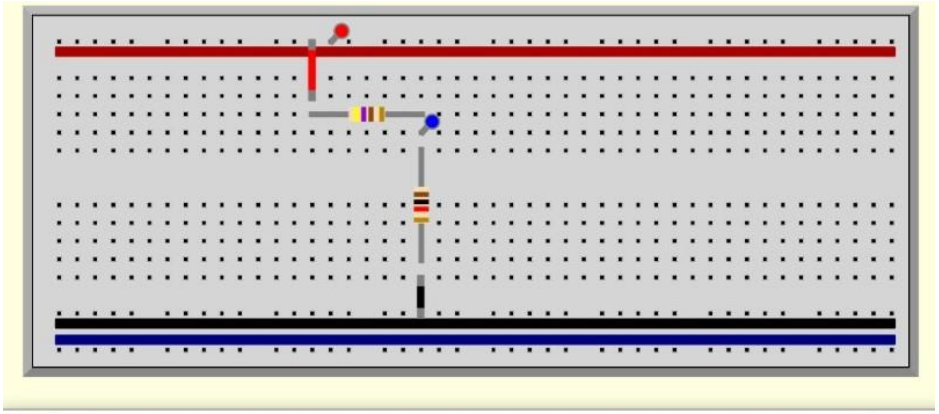
$R_{11\ ales}$ =470Ω $R_{21\ ales}$ =1000Ω $R_{12\ ales}$ =10kΩ $R_{22\ ales}$=6,8kΩ

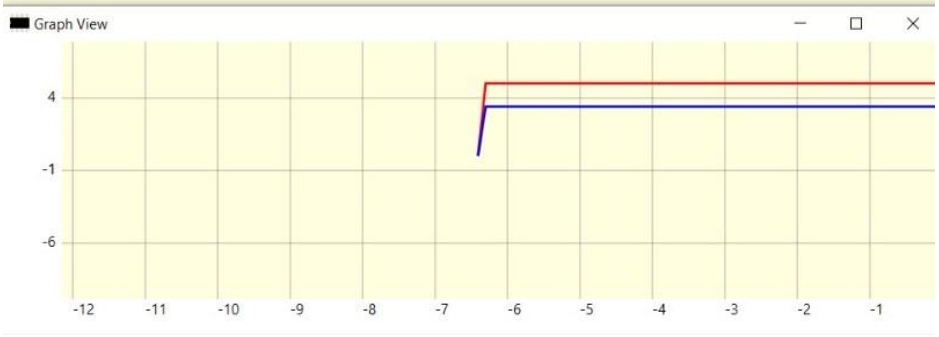
U_{A1}=5 U_{B1}=3,4 $\frac{U_{B1}}{U_{A1}}$=3,4/5=0,68

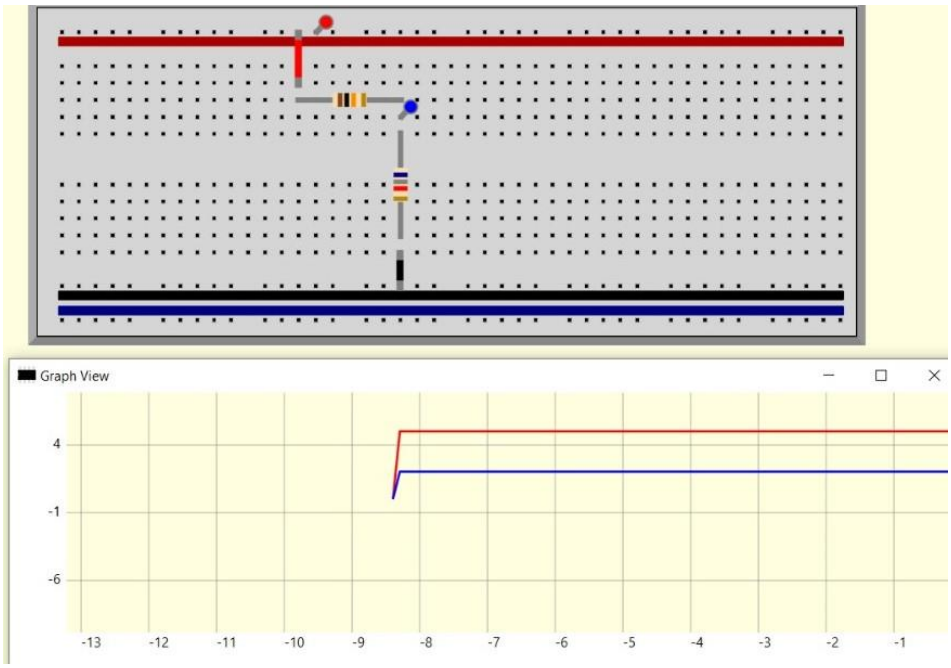
$\frac{R_{21}}{R_{11}+R_{21}}$ =1000/(470+1000)=0,6802

U_{A2}=5V U_{B2}=2.02 $\frac{U_{B2}}{U_{A2}}$=2,02/5=0,404

$\frac{R_{22}}{R_{12}+R_{22}}$ =6,8*10^3/(10+6,8)*10^3=0,4047







set 1: $C_Y = 5$ $N_{YB}=0,68$ set 2: $C_Y = 5$ $N_{YB}=0,404$

2c) Divizor de tensiune format cu trei rezistențe

$R_{1\ calc}=8,46k\Omega$ $R_{2\ calc}=7,25k\Omega$ $R_{3\ calc}=7,75k\Omega$
$R_{1\ ales}=10\ k\Omega$ $R_{2\ ales}=6,8k\Omega$ $R_{3\ ales}=6,8k\Omega$

R_1: tol= 5 [%] cifra 1 = maro[1]
cifra 2 = negru[0]
cifra 3= portocaliu[10^3]

R_2: tol = 5 [%] cifra 1 = albastru[6]
cifra 2 = gri [8] cifra 3 = rosu [10^2]

R_3: tol = 5 [%] cifra 1 = albastru[6]
cifra 2 = gri[8]
cifra 3 = rosu [10^2]

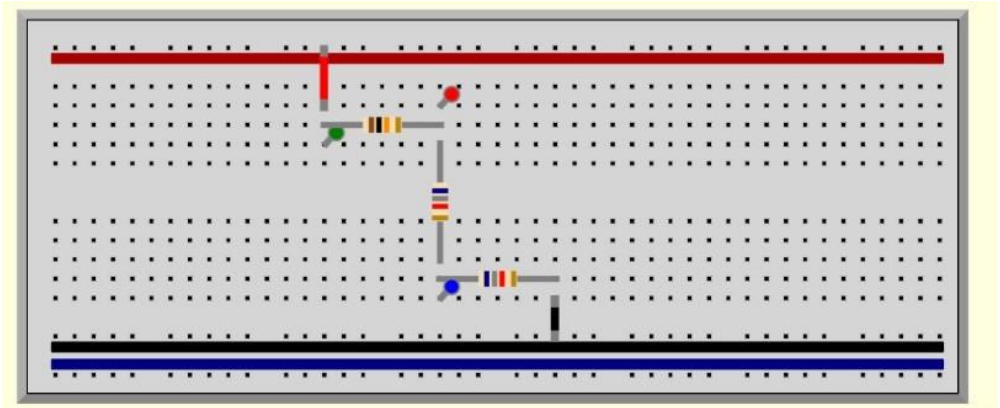
U_A=5V U_B= 2,88 V U_C=1,44V

$\left\{\frac{U_B}{U_A}\right\}_{mas}$ =0,576

$\left\{\frac{U_B}{U_A}\right\}_{calc}$ =(R2+R3)/(R1+R2+R3)=(6,8+6,8)/(10+6,8+6,8)=13,6/23,6=0,576

$\left\{\frac{U_2}{U_A}\right\}_{mas}$ =(U_B-U_C)/U_A=(2,88-1,44)/5=1,44/5=0,288

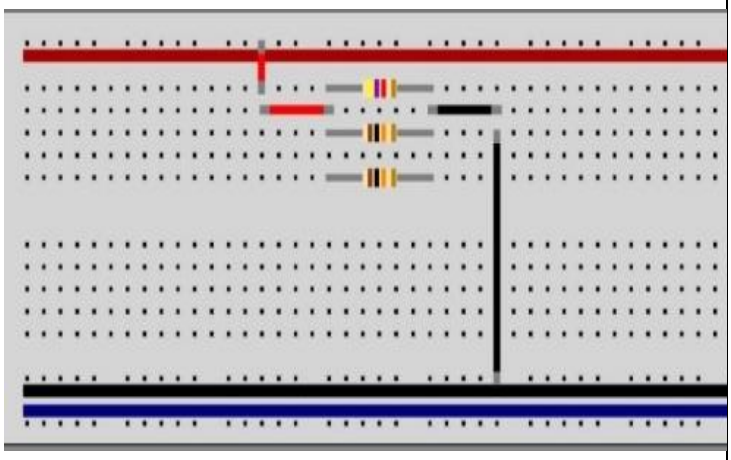
$\left\{\frac{U_2}{U_A}\right\}_{calc}$ =R_2/(R_1+R_2+R_3)=6,8/(10+6,8+6,8)=6,8/23,6=0,288



C_Y= 2 $N_{Y\,A}$ = 2,5 $N_{Y\,B}$ =1,44 $N_{Y\,C}$ =0,72

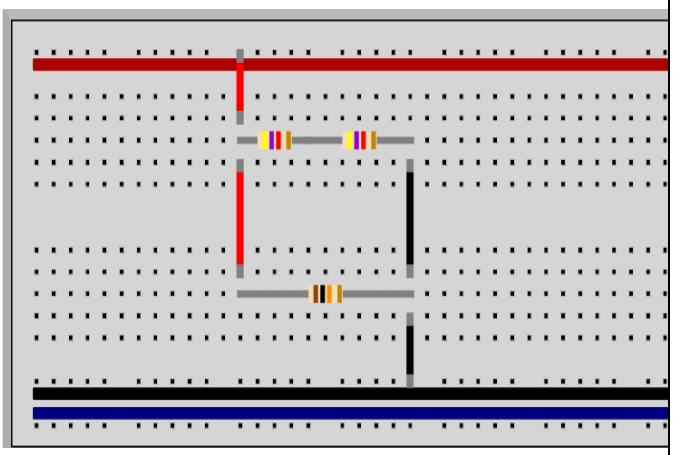
3. Realizarea unor circuite date pe placa de test

$R_{1\ calc}$= 4,3kΩ $R_{1\ ales}$ =4,7kΩ $R_{2\ calc}$= 10,750kΩ $R_{2\ ales}$ = 10kΩ



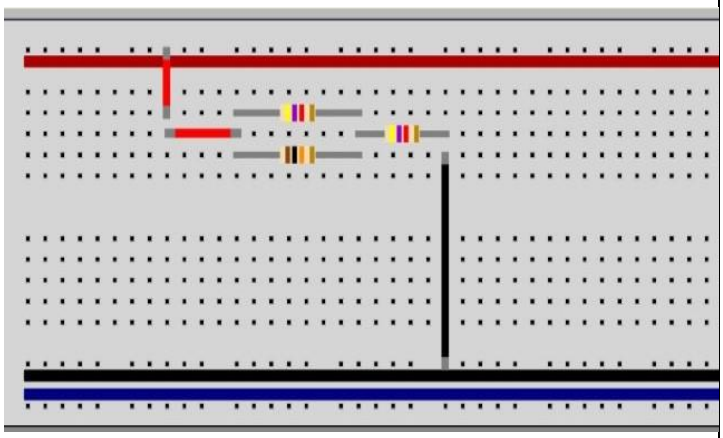
circuit 1

$R_{AB\ calc}$ =2,422kΩ $R_{AB\ măs}$ = 2,427k



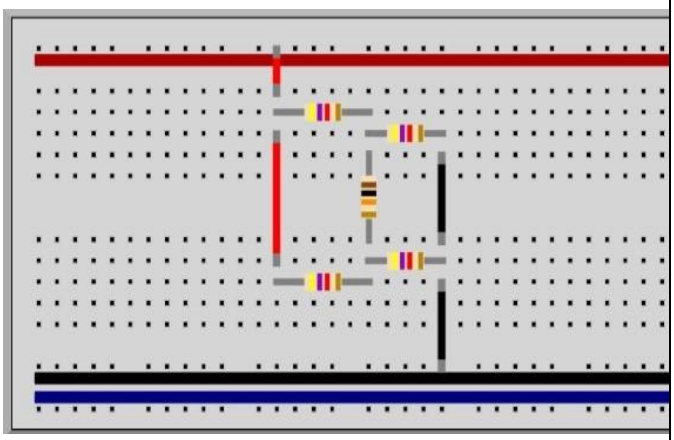
circuit 2

$R_{AB\ calc}$ =4,8453kΩ $R_{AB\ măs}$ = 4,85004 kΩ



circuit 3

$R_{AB\ calc}$ =7,8927kΩ $R_{AB\ măs}$ =7,8972 kΩ



circuit 4

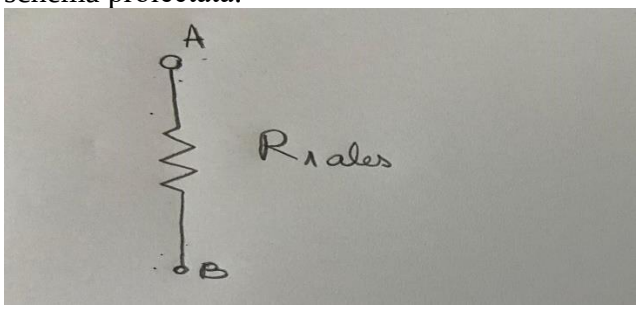
$R_{AB\ calc}$ = 4,7kΩ $R_{AB\ măs}$ = 4,699 kΩ

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

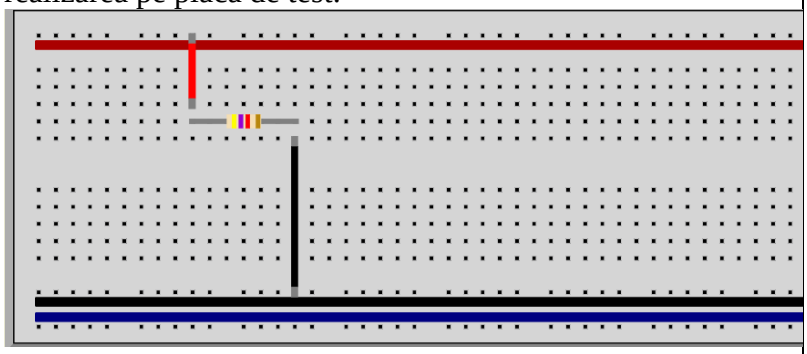
$R_{1\ ales}$= 4,7kΩ $R_{2\ ales}$ =10k Ω $R_{AB\ 1\ dorit}$ = 4300Ω=4,3kΩ

$R_{AB\ 2\ dorit}$ =13 760=13,76kΩ $R_{AB\ 3\ dorit}$ =24 080=24,08 kΩ

schema proiectată:



realizarea pe placa de test:



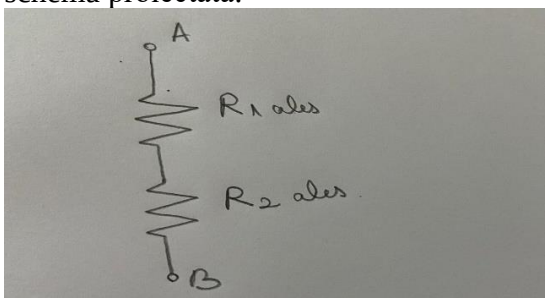
circuit 1

$R_{AB1\ calc}$ =4,7kΩ $R_{AB1\ măs}$ = 4,716kΩ

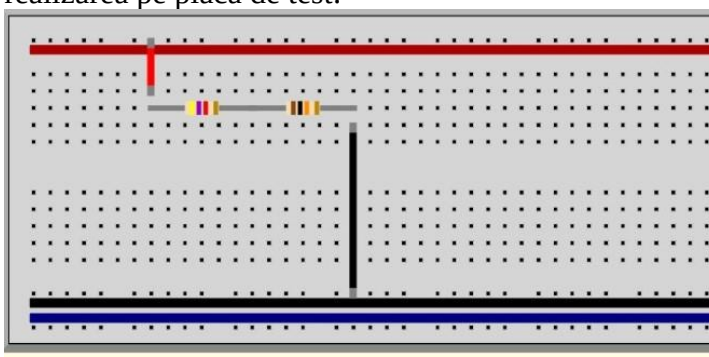
$\varepsilon = \frac{RAB1\ măs - RAB1\ dorit}{RAB1\ dorit} * 100$

ε =9,6744

schema proiectată:



realizarea pe placa de test:



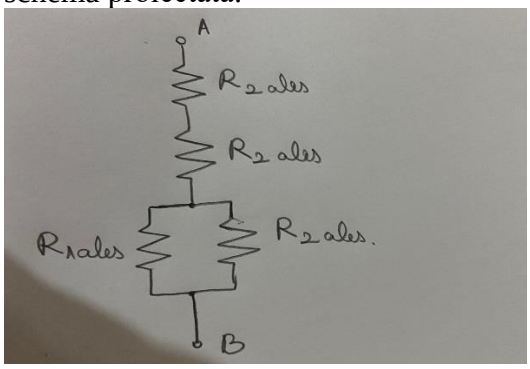
circuit 2

$R_{AB2\ calc}$ =14,7kΩ $R_{AB2\ măs}$ = 14,6999 kΩ

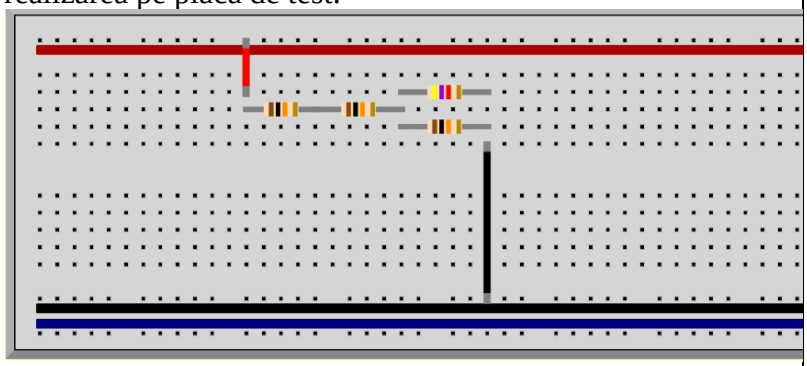
$\varepsilon = \frac{RAB2\ măs - RAB2\ dorit}{RAB2\ dorit} * 100$

ε =6,8306

schema proiectată:



realizarea pe placa de test:



circuit 3

$R_{AB3\ calc}$ =23,197kΩ $R_{AB3\ măs}$ = 23,197kΩ

$\varepsilon = \frac{RAB3\ măs - RAB3\ dorit}{RAB3\ dorit} * 100$

ε =-3,6669