EE210.02 Quiz 1

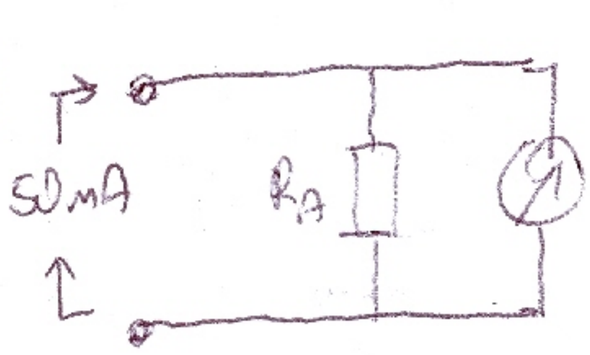
10.03.2010

Q) We have a 100mV, 1mA d'Arsonval meter movement

a) Design an Ammeter circuit by using this d'Arsonval movement with full-scale current of 50mA.

b) Design a Voltmeter circuit by using it with full-scale voltage of 10V.

a)



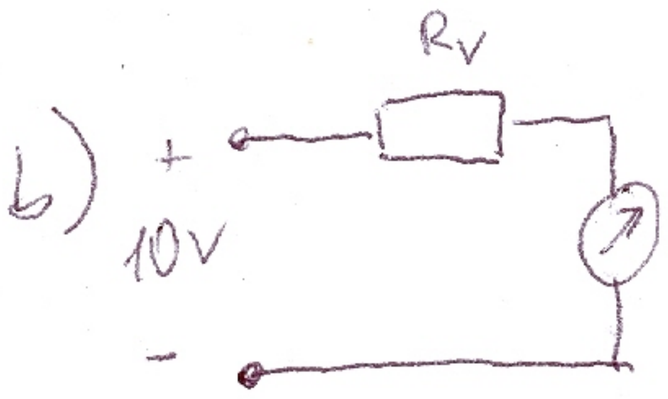
1mA → coil

49mA → R_A

for 1mA ⇒ voltage drop = 100mV

$49\times10^{-3} R_A = 100\times10^{-3} \Rightarrow \underline{R_A \simeq 2.04\,\Omega}$

b)



$R_{d'Ars} = \frac{100mV}{1mA} = 100\,\Omega$

$100\times10^{-3} V = \frac{100}{100+R_V} \times 10V \Rightarrow R_V = \frac{1000}{100\times10^{-3}} - 100$

$\Rightarrow \underline{R_V = 9.9k\Omega}$