**Exercise #13 : Passive elements**

 *Chem 6614 Chemical Instrumentation*

**13.1. Terms, abbreviations, symbols and units**

a) What are the full names of the three traditional passive elements

b) What are the usual letters assigned to these elements ?

c) What are the circuit element symbols (`icons’) assigned to these elements ?

d) What are the units and unit abbreviations for the three circuit elements?

**2. Basic Calculations and Trends**

a) For a series resistor network composed of R1 =10Ω,R2=20Ω and R3=30 Ω, what is the equivalent series resistance ?

 Req (series) = \_\_\_\_\_\_\_\_\_\_ Ω

b) For a parallel series network composed of R1 =10Ω,R2=20Ω and R3=30 Ω, what is the equivalent

 series resistance ?

 Req (parallel) = \_\_\_\_\_\_\_\_\_\_ Ω

c) Increasing the number of R in a series circuit causes the total current, I, to:

 increase decrease stay the same

d) Increasing the number of R in a parallel circuit causes the total current, I, to:

 increase decrease stay the same

e) For a series resistor network composed of R1 =10Ω,R2=20Ω and R3=30 Ω which has a 10 VDC voltage applied across the entire circuit, the voltage drop across R2 is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ volts

f)For a parallel resistor network compose of R1 =10Ω,R2=20Ω and R3=30 Ω which has a 10 VDC voltage applied across the entire circuit, the voltage drop across R2 is: \_\_\_\_\_\_\_\_\_ volts

g)what is the current traversing R2 in the parallel circuit ? \_\_\_\_\_\_\_\_\_\_\_\_ A

**3) Time dependencies**

For each component shown, sketch the expected time variation of the voltage

across the indicated component

**VA = applied voltage describe time effect**

 **On I or V in words below:**

 0 τ



 VR

 IR

 VRC



 IRC



 VRL

 IRL