

Student's Name:

## Introduction to circuit analysis

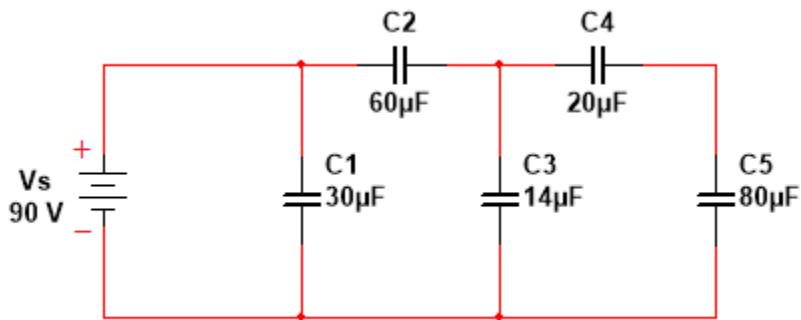
### Homework 9 – Equivalent capacitance and inductance, and RC Transient circuit

#### Instructions:

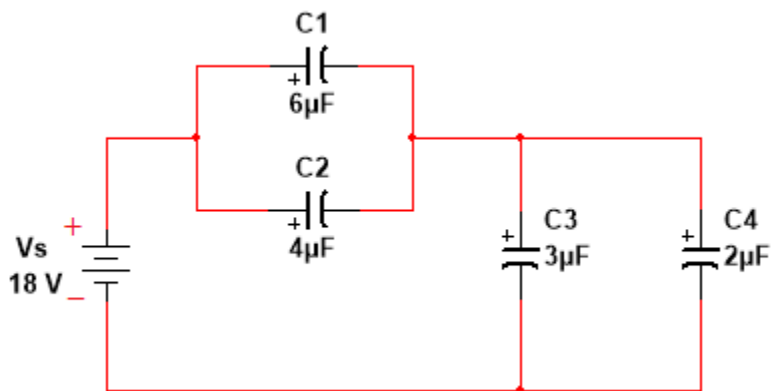
- YOU HAVE TO SHOW ALL WORK IN ORDER TO RECEIVE FULL CREDIT
- All answer must be in engineering notation rounded off to the hundredth

**Question 1)** For the following circuit, find the equivalent capacitance

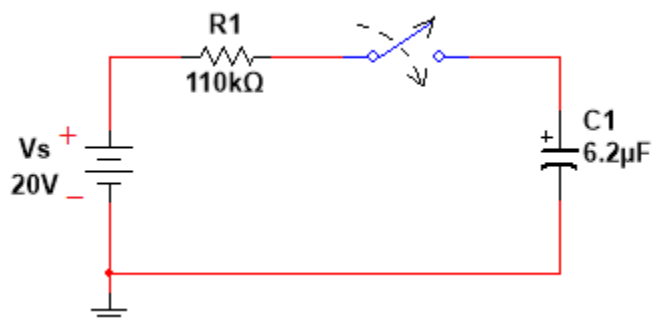
a)



b)

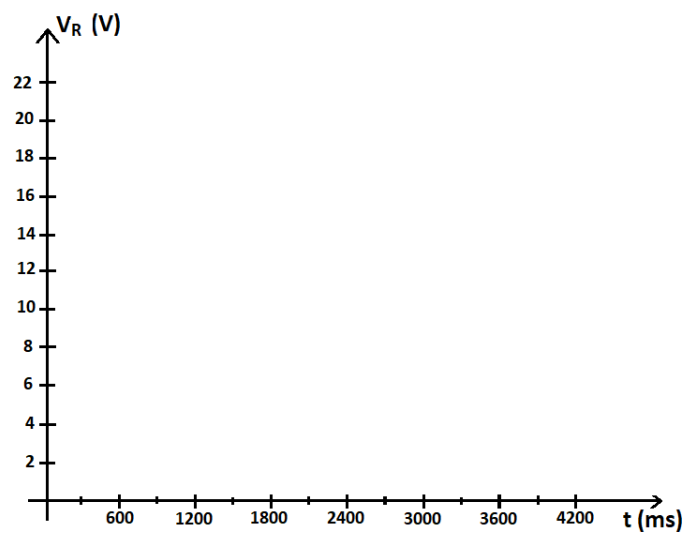
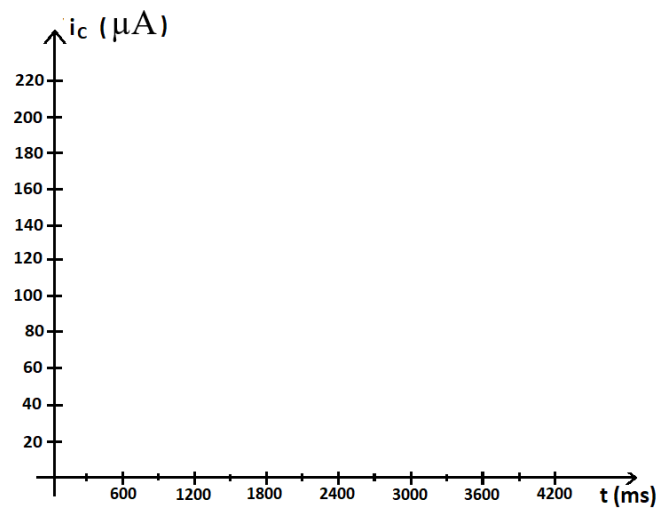
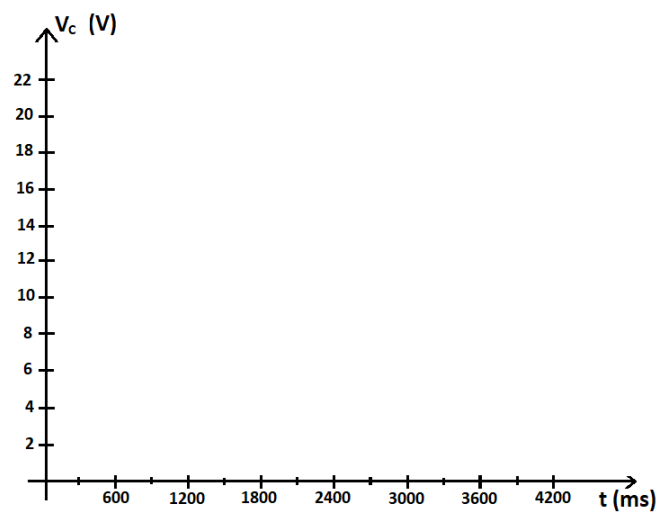


**Question 2)** For the following RC transient circuit, find the voltage and current through the resistor and the voltage drop at the capacitor, according the given time in the table.



RC Transient Circuit			
Time (ms)	$v_C = V_S \left(1 - e^{-\frac{t}{RC}}\right)$	$v_R = V_S \left(e^{-\frac{t}{RC}}\right)$	$i_C = \frac{V_S}{R} \left(e^{-\frac{t}{RC}}\right)$
0			
150			
400			
600			
800			
1000			
2200			
3200			
4200			

Use the table above, sketch  $V_C$ ,  $I_C$ , and  $V_R$



----- Homework Ends Here -----