

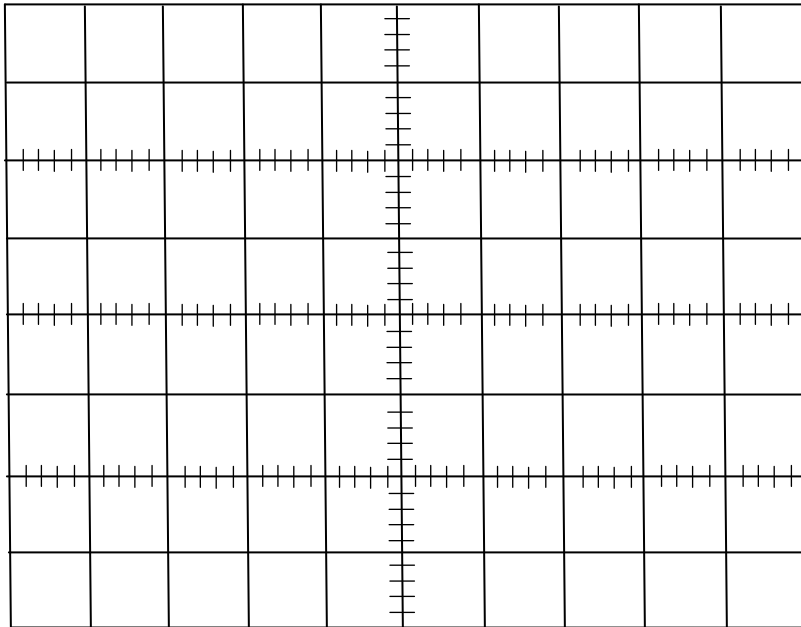
# PHY 122/124 EXPERIMENT 5 AC circuits - Worksheet

**The capacitor voltage  $V_C(t)$ :**

**Quantities/Settings for the measurement**

	Capacitance	Resistance	Frequency	Volt/Div(CH1)	Volt/Div(CH2)	Time/Div
Unit						
Value						

**Sketch** your observed voltage traces for the RC circuit,  $V_{AC}(t)$  and  $V_C(t)$ , on the graph paper below. **Label the axes** including **units** and indicate which trace is which voltage. Further indicate the **range** in voltage and range in time you used for the calculation of the **time constant  $\tau_C$** .



The measured  $\tau_C$  with an estimate of the uncertainty is:

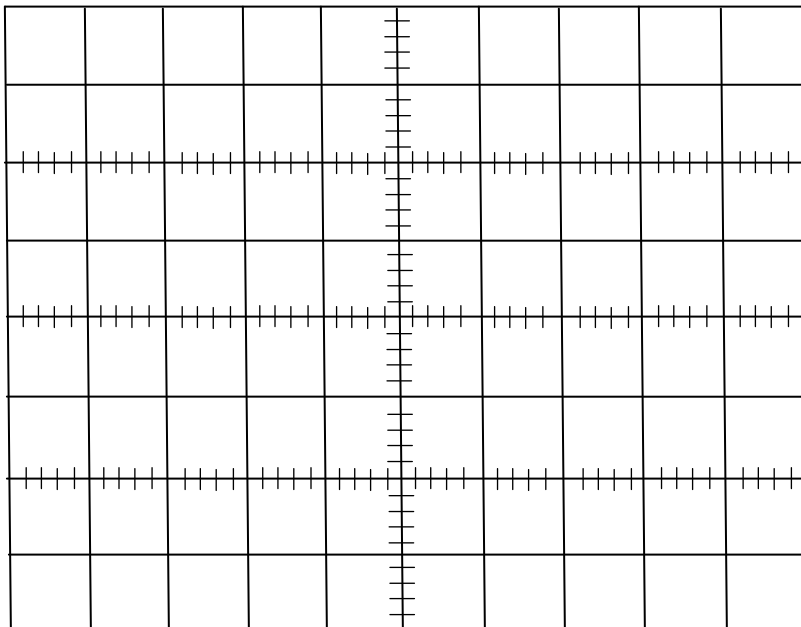
\_\_\_\_\_ +/- \_\_\_\_\_.

**The resistor voltage  $V_R(t)$ :**

**Quantities/Settings for the measurement**

	Capacitance	Resistance	Frequency	Volt/Div(CH1)	Volt/Div(CH2)	Time/Div
Unit						
Value						

**Sketch** your observed voltage traces for the RC circuit,  $V_{AC}(t)$  and  $V_R(t)$ , on the graph paper below. **Label the axes** including **units** and indicate which trace is which voltage. Further indicate the **range** in voltage and range in time you used for the calculation of the **time constant  $\tau_C$** .



The measured  $\tau_C$  with an estimate of the uncertainty is:

\_\_\_\_\_ +/- \_\_\_\_\_.

**Part II: Resonant AC Circuits:**

**Quantities/Settings for the measurement**

	Capacitance	Resistance	Inductance	Frequency	Volt/Div(CH1)	Time/Div
Unit						
Value						

Calculated value of resonance frequency from lab-preparation work: \_\_\_\_\_ [     ]

First estimate for resonance frequency from the frequency generator dial: \_\_\_\_\_ [     ]

First estimate for resonance frequency (1/period) from the oscilloscope screen: \_\_\_\_\_ [     ]

The **ratio  $r$**  of the more accurate frequency measured with the oscilloscope over the estimated FREQUENCY setting from the generator is (**no error**) \_\_\_\_\_.

Enter the values for the **voltage  $V_R$  across the resistor** in Fig 6 and the **FREQUENCY settings** of the generator for the 10 frequency steps into the table below:

step	FREQUENCY [     ]	Voltage $V_R$ [     ]
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		