

UM-SJTU PHYSICS LABORATORY Vp241  
DATA SHEET (EXERCISE 5)

Name: 唐嘉铭

Student ID: 518021911220

Group: 17

Date: Nov. 22

**NOTICE.** Please remember to show the data sheet to your instructor before leaving the laboratory. The data sheet will not be accepted if the data are recorded with pencil or modified by correction fluid/tape. If a mistake is made in recording a datum item, cancel the wrong value by drawing a fine line through it, record the correct value legibly, and ask your instructor to confirm the correction. Please remember to take a record of the precision of the instruments used. You are required to hand in the original data with your lab report, so please keep the data sheet properly.

2000 4.0V

20mV —

|   |
|---|
| $R$ <u>100.6<math>\Omega</math></u> $\pm$ <u>0.01</u> [ $\Omega$ ], $f$ <u>5200.0<math>\text{Hz}</math></u> $\pm$ <u>0.001</u> [ $\text{Hz}$ ], $\varepsilon$ <u>4.000</u> [ $V_{pp}$ ] $\pm$ <u>0.001</u> [ $V_{pp}$ ] |
| $C$ <u>97.22</u> [ $\text{nF}$ ] $\pm$ <u>0.01</u> [ $\text{nF}$ ], $T_{1/2}$ <u>9.000</u> [ $\mu\text{s}$ ] $\pm$ <u>0.001</u> [ $\mu\text{s}$ ]   |

Table 1.  $T_{1/2}$  measurement data for a RC series circuit.

500 4Vpp

10mV —

|  |
|--|
| $R$ <u>100.6<math>\Omega</math></u> $\pm$ <u>0.01</u> [ $\Omega$ ], $f$ <u>500.000<math>\text{Hz}</math></u> $\pm$ <u>0.001</u> [ $\text{Hz}$ ], $\varepsilon$ <u>4.000</u> [ $V_{pp}$ ] $\pm$ <u>0.001</u> [ $V_{pp}$ ] |
| $L$ <u>0.01</u> [ $\text{H}$ ] $\pm$ <u>0</u> [ $\text{H}$ ], $T_{1/2}$ <u>72.00</u> [ $\mu\text{s}$ ] $\pm$ <u>0.01</u> [ $\mu\text{s}$ ]   |

Table 2.  $T_{1/2}$  measurement data for a RL series circuit.

10mV 1000.0uV 4 Vpp 200

|   |
|---|
| $L$ <u>0.01</u> [ $\text{H}$ ] $\pm$ <u>0</u> [ $\text{H}$ ], $C$ <u>97.22</u> [ $\text{nF}$ ] $\pm$ <u>0.01</u> [ $\text{nF}$ ], $\varepsilon$ <u>4.000</u> [ $V_{pp}$ ] $\pm$ <u>0.001</u> [ $V_{pp}$ ], $f$ <u>700.0<math>\text{Hz}</math></u> $\pm$ <u>0.01</u> [ $\text{Hz}$ ] |
| $\beta t = 1.68$ $T_{1/2} =$ <u>120.0</u> [ $\mu\text{s}$ ] $\pm$ <u>0.1</u> [ $\mu\text{s}$ ]  |

Table 3.  $T_{1/2}$  measurement data for a critically damped RLC series circuit.

已over -  
critically 更快更快

Instructor's signature: 曹

$R = 12.63 \Omega \pm 0.01 \Omega$      $L = 0.21 H \pm 0.001 H$      $C = 99.82 nF \pm 0.01 nF$   
 $f_0 = 500.00 Hz \pm 0.001 Hz$      $\epsilon = 4000$      $V_R \pm 0.001 V$      $V_H \pm 0.001 V$

|    | $U_R$ [V] $\pm 0.02$ | $f$ [Hz] $\pm 0.001$ |
|----|----------------------|----------------------|
| 1  | 2.92                 | 2500.000             |
| 2  | 1.24                 | 3000.000             |
| 3  | 1.64                 | 3500.000             |
| 4  | 2.34 2.04            | 3800 4000.000        |
| 5  | 2.86 2.48            | 4100 4300.000        |
| 6  | 2.86                 | 4300 4600.000        |
| 7  | 3.22                 | 4600.000             |
| 8  | 3.58                 | 4700.000             |
| 9  | 3.70                 | 4800.000             |
| 10 | 3.76                 | 4900.000             |
| 11 | 3.80                 | 5000.000             |
| 12 | 3.78                 | 5100.000             |
| 13 | 3.74                 | 5200.000             |
| 14 | 3.66                 | 5300.000             |
| 15 | 3.38                 | 5400.000             |
| 16 | 3.12                 | 5700.000             |
| 17 | 2.80                 | 5900.000             |
| 18 | 2.42                 | 6200.000             |
| 19 | 2.14                 | 6500.000             |
| 20 | 1.78                 | 7000.000             |
| 21 | 1.50                 | 7500.000             |

Table 4. Measurement data for the  $U_R$  vs.  $f$  dependence for a RLC resonant circuit.

Instructor's signature: \_\_\_\_\_