

<input type="checkbox"/> PHYS1050 / <input type="checkbox"/> PHYS1250
Ref. (Staff Use) _____

**Pre-Laboratory Worksheet**  
**Experiment NE05 - LRC Series Circuit**  
**Department of Physics**  
**The University of Hong Kong**

Name: \_\_\_\_\_ Student ID: \_\_\_\_\_ Date: \_\_\_\_\_

Remark: Please submit Pre-Laboratory Worksheet to laboratory technician when you arrive the laboratory
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**Background information:**

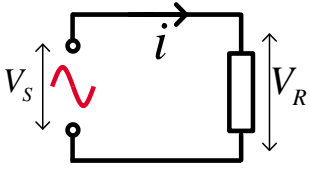
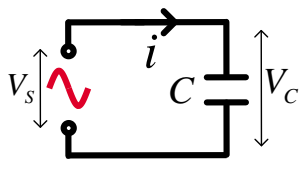
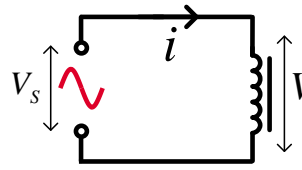
1. In laboratory manual, if  $X_L > X_C$ , the total impedance  $Z_{Total}$  and phase difference  $\phi$  between applied potential difference and current of a LRC circuit are derived. If  $X_L < X_C$ , what is the total impedance  $Z_{Total}$  and phase difference  $\phi$  between applied potential difference  $V_S$  and current  $i$  of a LRC circuit? (Hints: Consider the phase relationships among reference Phasor  $i$ ,  $V_C$ ,  $V_L$ ,  $V_R$  and  $V_S$  and make use of the Phasor diagram; Also, if  $X_L < X_C$ , then,  $V_L < V_C$ )

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Reference Phasor

2. What the root-mean-squared voltage of a sinusoidal a.c. supply ? (Hints:  $P = \frac{V^2}{R}$ )

3. Complete the following table about the pure resistive, pure capacitive and pure inductive circuit ?

(Hints: Read Page 5 – Page 13 in lab manual)

	R	C	L
Circuit			
Impedence, $Z$			
Phase difference with $i$			
Phasor diagram			

4. Calculate the theoretical value of the resonant frequency, phase angle capacitive reactance and inductive reactance of the setup in experiment 1.

Resonant frequency	Capacitive reactance	Inductive reactance

**Phase angle**

5. By considering equation (75) and  $\omega = 2\pi f$ , find out the expression resonant angular frequency

**End of the Pre-Lab Answer Sheet**