Physics 112 Data Sheet 7
Exp.#7: Capacitors and Inductors

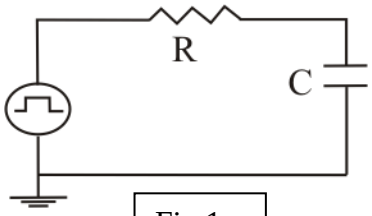

Fig.1

A. 1) Connect the circuit shown in fig.1.(R=1KΩ, C=0.1μF)

2) Display V_C on the DSO screen and measure the time constant τ for charging and discharging

τ (charging)	τ (discharging)

3) Change the places of R and C , display V_R to the DSO screen and measure the time constant τ for charging and discharging

τ (charging)	τ (discharging)

The time constant for RC circuit τ (RC) =

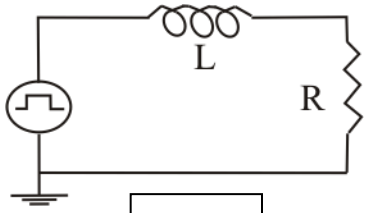

Fig.2

B. 1) Connect the circuit shown in fig.2.

2) Display V_R on the DSO screen and measure the time constant τ while the current raising and decaying.

τ (raising)	τ (decaying)

3) Change the places of R and L, display V_L to the DSO screen and measure the time constant τ for raising and decaying cases.

τ (raising)	τ (decaying)

The time constant for RL circuit τ (RL) =

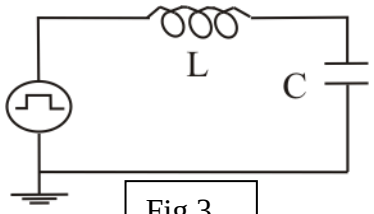

Fig.3

C. 1) Connect the circuit shown in fig.3. (L= 10mH, C=0.22μF)

2) Display V_C on the DSO screen and change the frequency of the driving voltage until the amplitude of the oscillation reaches its maximum value.

3) Measure the amplitude and the frequency.

The amplitude =

Frequency f_0 =

Angular frequency ω_0 (measured)	Angular frequency ω_0 (calculated)