EXPERIMENT

PHASOR ANALYSIS FOR DIFFERENT

R-L-C CIRCUITS

TASKS

1. **R-C Series**
   a. Implement the circuit shown in figure 1 on **Breadboard**.

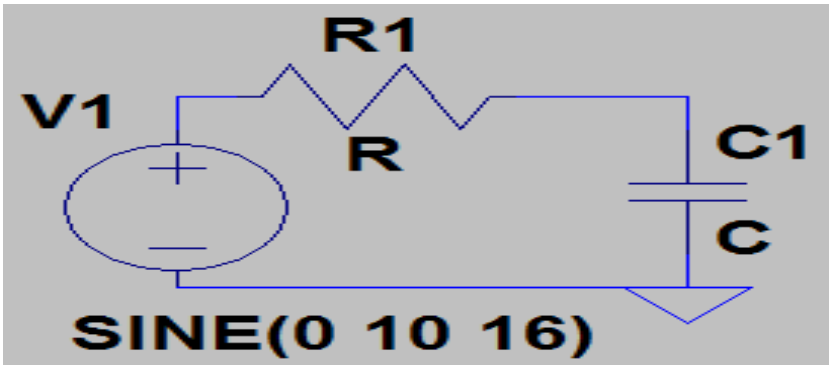

Figure 1.

   b. Case I (R=(1/Xc))
      Set R=10k and C=1uF.
      Measure V_R,V_C,I_R and I_C using CRO. Express the before said voltages and currents as phasors with respect to the input voltage V1.
   c. Case II (R>(1/Xc))
      Set R=33k and C=1uF.
      Measure V_R,V_C,I_R and I_C using CRO. Express the before said voltages and currents as phasors with respect to the input voltage V1.
   d. Case III (R<(1/Xc))
      Set R=1k and C=1uF.
      Measure V_R,V_C,I_R and I_C using CRO. Express the before said voltages and currents as phasors with respect to the input voltage V1.
   e. Implement the circuit shown in figure 1 in **LTSpice** and repeat steps 1(b),(c) and(d).
   f. Do the **hand analysis** for the circuit shown in figure 1 and perform steps 1(b),(c) and(d).

2. **R-C parallel**
    a. Implement the circuit shown in figure 2 on **Breadboard**.

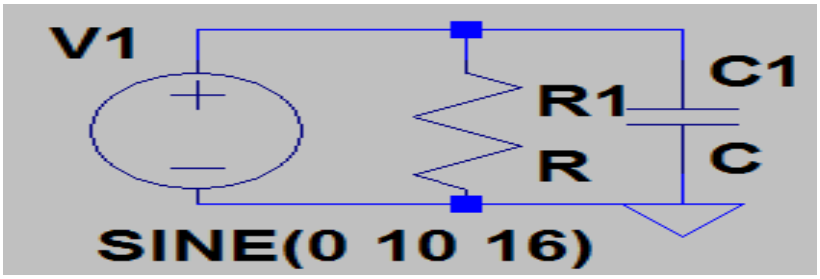

Figure 2.

    b. Set R=10k and C=1uF.
    c. Measure V_R,V_C,I_R and I_C using CRO. Express the before said voltages and currents as phasors with respect to the input voltage V1.
    d. Implement the circuit shown in figure 2 in **LTSpice** and repeat steps 2(c).
    e. Do the **hand analysis** for the circuit shown in figure 2 and perform steps 2(c).

3. **R-L Series**
    a. Implement the circuit shown in figure 3 in **LTSpice**.

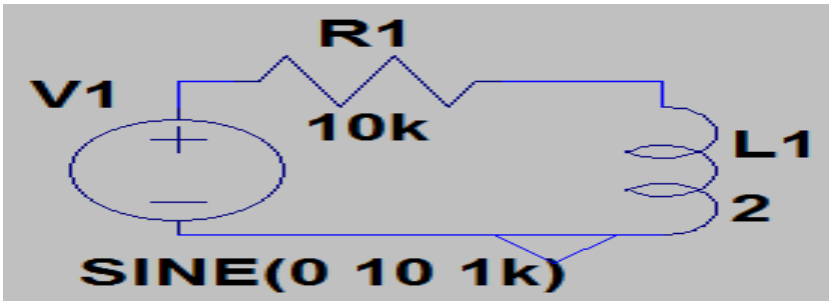

Figure3

    b. Measure V_R,V_C,I_R and I_C. Express the before said voltages and currents as phasors with respect to the input voltage V1.
    c. Do the **hand analysis** for the circuit shown in figure 2 and perform steps 3(b).

4. **R-L Parallel**
    a. Implement the circuit shown in figure 4 in **LTSpice**.

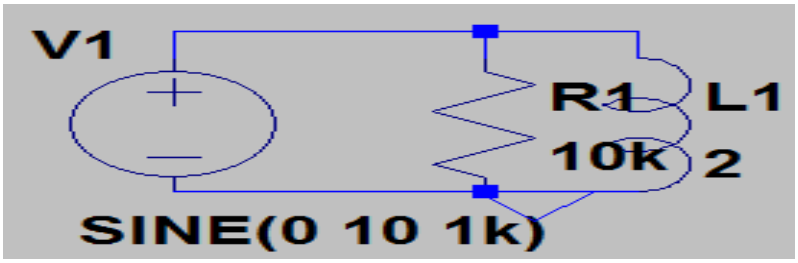

Figure 4

b. Measure V_R,V_C,I_R and I_C. Express the before said voltages and currents as phasors with respect to the input voltage V1.
c. Do the **hand analysis** for the circuit shown in figure 4 and perform steps 4(b).

5. Implement the circuit shown in figure 5 on Breadboard.

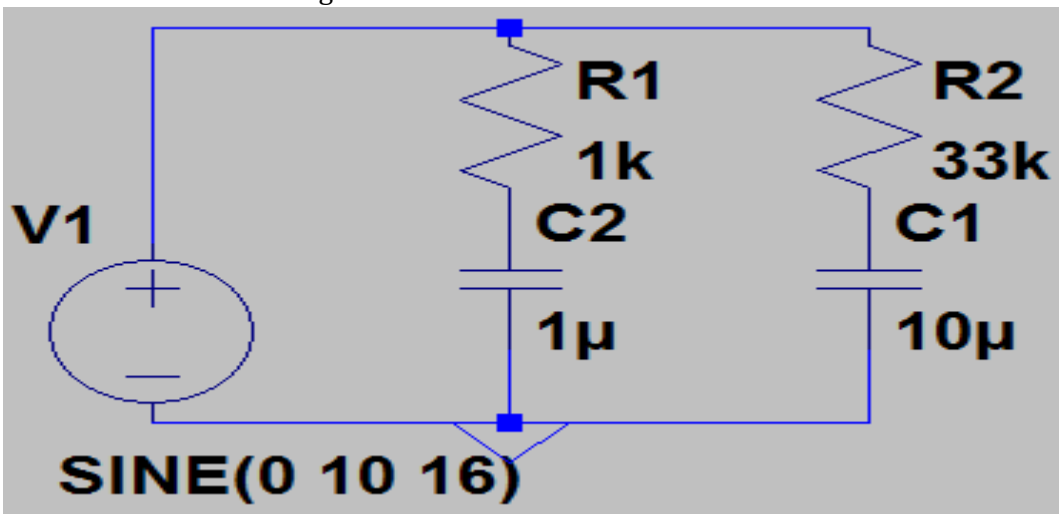

Figure 5

a. Find out V_{R1}, V_{R2}, V_{C1}, V_{C2}, I_1 and I_2 using CRO as phasors with respect to the input voltage V1.
b. Implement the circuit shown in figure 5 in **LTSpice** and repeat steps 5(a).
c. Do the **hand analysis** for the circuit shown in figure 5 and perform steps 5(a).

6. Implement the circuit shown in figure 6 in **LTSpice.**

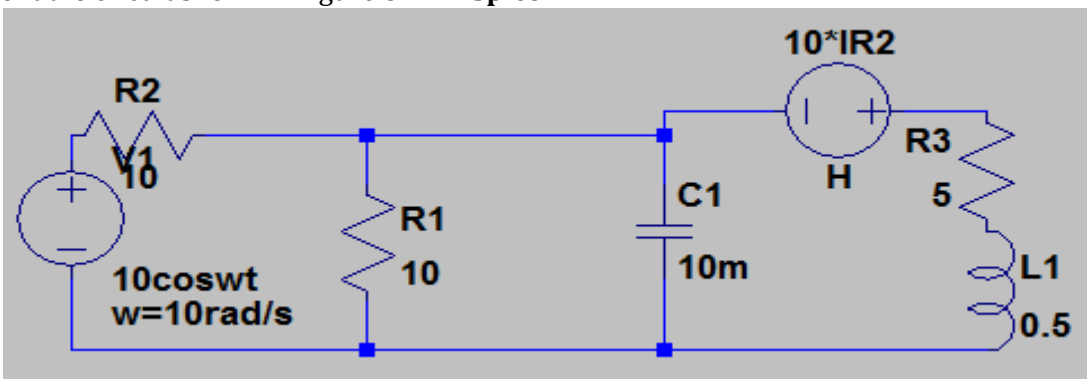

Figure 6

a. Find voltage across and current through all the components and express them as phasors with respect to the input voltage V1.
b. Do the **hand analysis** for the circuit shown in figure 6 and perform steps 6(a).

7. Implement the circuit shown in figure 7 in **LTSpice.**

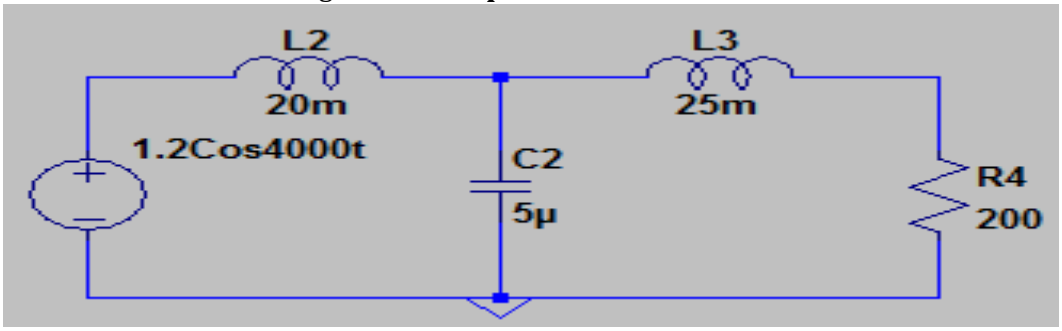

Figure 7

a. Find voltage across and current through all the components and express them as phasors with respect to the input voltage 1.2Cos4000t.
b. Do the **hand analysis** for the circuit shown in figure 7 and perform steps 6(a).

END