Date:30/07/2024

Experiment No.1.2

Aim: To perform analysis of series RLC circuit.

Software Required: WinSpice.

Theory:

DC ANALYSIS: It is used for analysis of static characteristics like voltage drops , current flows etc. and is important for understanding the overall performance and functionality of a circuit.

AC ANALYSIS: It mainly addresses characteristics related to frequency , including impedance, reactance and resonance which is essential for designing and optimizing filters, amplifiers and communication systems.

TRANSIENT ANALLYSIS: It is used to study the time-dependent behavior of circuits, including their response to sudden changes in inputs, switching events and disturbances ensuring stability, performance and reliability in real world conditions.

Codes:

I. DC ANALYSIS:

```
***DC Analysis***
V1 1 0 5V
R1 1 2 7K
L1 2 3 18m
C1 3 0 12u
.dc V1 0.0 5.0 0.1
.control
run
plot V(1) V(2)
.endc
.end
```

II. AC ANALYSIS:

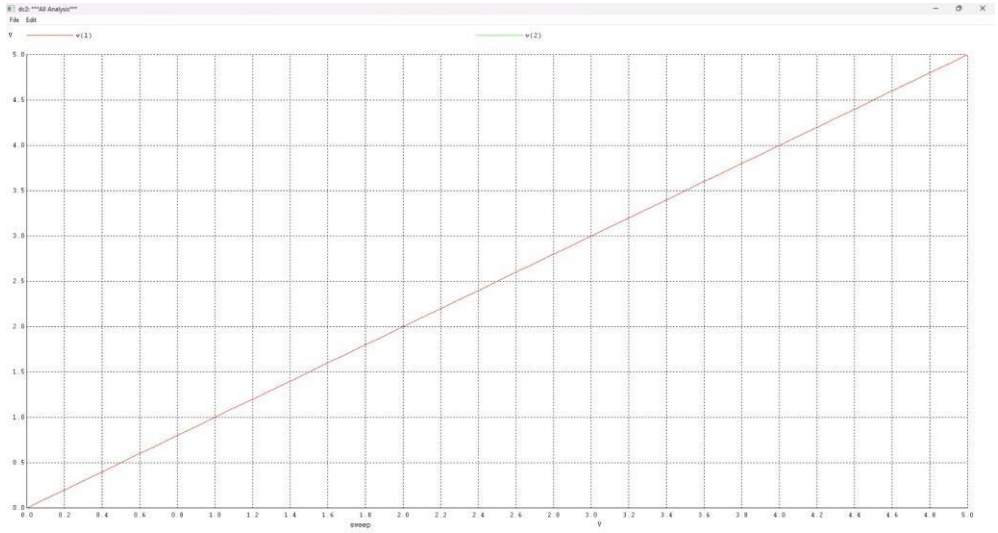
```
**AC Analysis**
V1 1 0 dc 0 ac 5
R1 1 2 7K
L1 2 3 18m
C1 3 0 12u
.ac dec 5 1 5K
.control
run
plot V(1) V(2)
.endc
.end
```

III. TRANSIENT ANALYSIS:

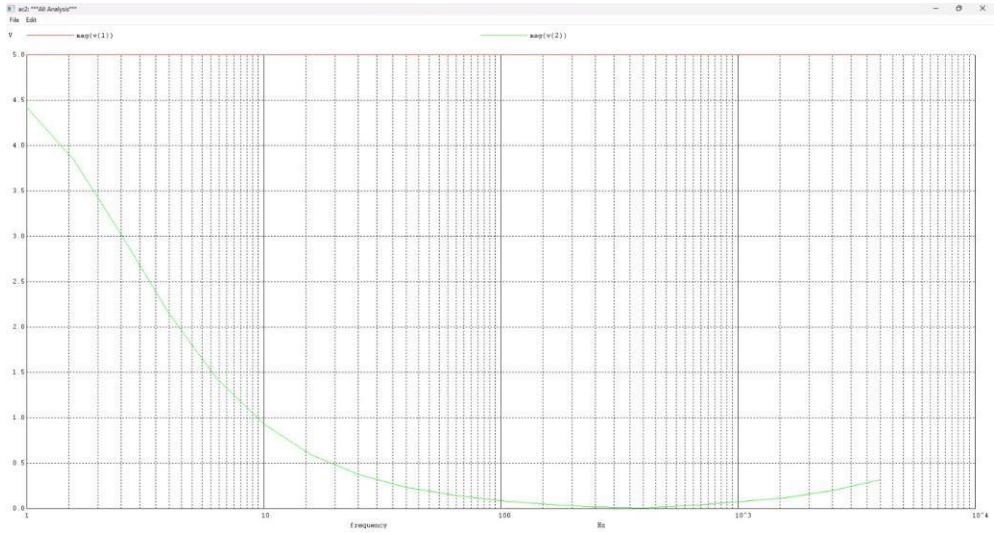
```
**Transient Analysis**
R1 1 2 7K
L1 2 3 18m
C1 3 0 12u
V1 1 0 pulse( 0 5 0 0 0 100m 200m)
.tran 0.1m 400m
.control
run
plot V(1) V(2)
.endc
.end
```

Output:

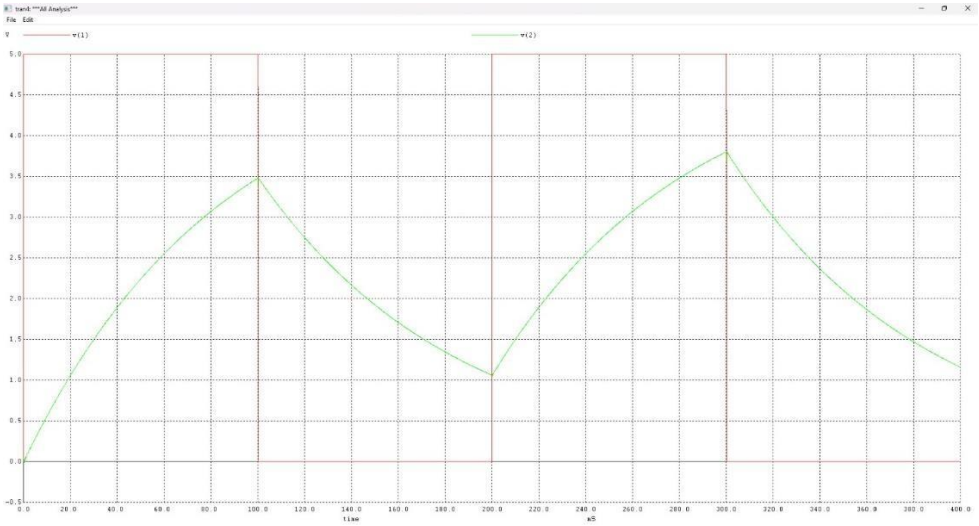
I. DC ANALYSIS:



II. AC ANALYSIS:



III. TRANSIENT ANALYSIS:



Result/ Conclusion:

We have successfully stimulated the series RLC Circuit and performed all types of analysis.