Main Ideas Covered in EE205: Circuit II

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CH11: 3-ϕ circuits.

Main ideas:

- Y-Y connected circuit
- Y-Δ connected circuit & +, - sequence
- Parallel loads
- Power calculation
- Power measurement & wattmeter

CH8: Natural and step responses of RLC circuits.

Main ideas:

- Find $v(t)$ & $i(t)$. (do not forget about $V_f$ & $I_f$)
- Series & parallel circuit (the main different is $\alpha$).
- Two stage Amplifier.

Handout: State equations and computer aided circuit analysis.

Main ideas:

- Write the matrix state equation.
- Given then matrix equation & by using $\Delta t$ find $v_L$ & $i_c$.

Handout: Resonant circuits & Circuit analysis in s-domain.

Main ideas:

- Find the resonance frequency
- Quality factor. (Series RLC, Parallel RLC, Practical tank circuit, General form)
- Complex s-domain.
- Poles & zeros
- The type of resonance (over–under-critical damped)
**CH6&9: Mutual inductance and transformers:**

**Main ideas:**

- Physics ($\lambda$, $\phi$...).
- Linear transformers ($Z_{11}$, $Z_{22}$, $Z_{r}$ ...).
- Dot convention and energy storage.
- Ideal transformer (the relation between $V$ & $I$ and sign).
- Impedance Matching.

**CH14 & Appendix E: Filters and Bode plot:**

**Main ideas:**

- ($BW$, $\omega_o$, $\omega_{c1}$, $\omega_{c2}$, $\varphi$, selectivity).
- Transfer and sketch magnitude & phase.
- Filter Types.
- Bode Diagram

**CH18: Two-port networks:**

**Main ideas:**

- Find the $z$, $y$ and other parameters parameter.
- Find $g, h, a, b$ (no need to memorize equations)
- Derive the relation between different parameters and/or Use tables 18.1 & 18.2 to convert from one parameter to another parameter.
- Perform circuit analysis in the presence of a two port network.

To do well in Circuits you need to practice. Understanding the concepts is not sufficient.