

## Main Ideas Covered in EE205: Circuit II

Dr. Ali Muqaibel

### CH11: 3- $\phi$ circuits.

#### Main ideas:

- ❖ Y-Y connected circuit
- ❖ Y- $\Delta$  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,  $\omega_o$ ,  $\omega_{c1}$ ,  $\omega_{c2}$ ,  $\phi$ , 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.
- ❖ For practice solve Ex 18.4 & P18.13 & P18.15 & P18.19 & P18.31. All question from eight edition.

---

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