ECE 3600    Final Exam Study Guide

Review: Wednesday, 12/14, 3:30 - 5:00 pm in regular classroom

Final Exam: Thursday, 12/15, 1:00 pm in regular classroom

Arn will be in WEB 2230 Tuesday 12/13 1:00 - 3:00 for a ECE 2210 review and Wednesday 8:00am - 10:00 for their Final

The first part will be a closed book, no calculator questions, probably ~ 20 - 60 points.

The second part will be a open book, open notes, with calculator problems. 4 or 5 problems, probably 100 - 140 points.
The whole exam will be worth 160 points.

The exam will cover

Possible questions

1. Material from Exam 1 and Exam 2
   Study the questions from exam 1 and 2

2. HW 1 AC steady-state review, used extensively throughout class

3. HW 2 RMS & Single-phase AC power. Possibly part of 3φ problem
   Basic relationships and units
   P Q S |S| pf correction of pf

4. HW 3 Energy sources, plant efficiencies
   Lots possible

5. HW 4 & 5 3-phase AC power.
   Basic magnitude and phase relationships
   \[
   V_L \ V_{LL} \ V_{LN} \ I_L \ I_{LL} \ I_Y \ S_{3\phi} \ S_{1\phi} \\
   Z_Y = \frac{Z_\Delta}{3} \quad Z_\Delta = 3'Z_Y \quad pf \ correction \ of \ pf
   \]

6. HW 6 Magnetic circuits
   Flux density, Field intensity, Permeability, B-H curve. effects of nonlinearity on some currents (3rd harmonic).
   \[
   B = \mu \cdot H \quad H = \frac{N \cdot i}{l \cdot m}
   \]

7. HW 7 - 9 Transformers
   Calculations
   Impedance transformation
   OC & SC Tests --> model
   \eta \ & \ VR
   Autotransformers
   3φ Transformers Δ & 3rd harmonic
   Autotransformers questions

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8. **HW SG1 & SG2 Synchronous generators and motors**
   Know the phasor diagram!

9. **HW Ind1 - Ind3 Induction motors**
   Know the model!
   Powers $P_{AG}$, $P_{conv}$, $P_{out}$ etc.  $\eta$
   Torque & speeds
   Types & effect of $R_2$
   **Single phase motors**

10. **HW DC1 - DC2 DC motors**
    Know the model!
    Powers $P_{conv}$, $P_{out}$ etc.  $\eta$
    Torque & speeds
    **Series-wound & universal motors**

11. **HW TL1 Transmission Lines**
    Short, Med, Long
    Series impedance $Z_{series}$
    Shunt admittance & $\frac{Y_{shunt}}{2}$
    Shunt impedance & $2 \cdot Z_{shunt}$
    **Common line voltages**
    Short, Med, Long  mi, km
    Surge impedance
    Surge impedance loading
    What is & why use bundling
    **Models and calculations**

12. All Labs

13. All Field trips

**Bolded items are more likely**