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	(closed book) 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** P Q S $\lvert S \rvert$ pf correction of pf	Basic relationships and units
4. HW 3 Energy sources, plant efficiencies	Lots possible
5. **HW 4 & 5 3-phase AC power.** V_L V_{LL} V_{LN} I_L I_{LL} I_Y $S_{3\phi}$ $S_{1\phi}$ $Z_Y = \frac{Z_\Delta}{3}$ $Z_\Delta = 3 \cdot Z_y$ pf correction of pf	Basic magnitude and phase relationships
6. HW 6 Magnetic circuits $B = \mu \cdot H$ $H = \frac{N \cdot i}{l_m}$	Flux density, Field intensity, Permeability, B-H curve. effects of nonlinearity on some currents (3rd harmonic).
7. HW 7 - 9 Transformers Calculations Impedance transformation **OC & SC Tests --> model** η & VR Autotransformers 3ϕ Transformers Δ & 3rd harmonic	losses, ideal/non construction, ratings, magnetization reactance, core losses, winding losses, leakage reactance. **Autotransformers questions**

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8. **HW SG1 & SG2 Synchronous generators and motors** losses, construction, limits, operation

   Know the phasor diagram!

9. **HW** Ind1 **- Ind3 Induction motors** Poles, slip, why, how

   Know the model! Question 7-11 HW17, p3

   Powers P_{AG} P_{conv} P_{out} etc. η

   Torque & speeds

   Types & effect of R_2 Typ torque-speed curves

   Single phase motors Single phase starting

10. **HW DC1 - DC2 DC motors**

    Know the model! Torque-speed curve

    Powers P_{conv} P_{out} etc. η

    Torque & speeds

    Series-wound & universal motors Torque-speed curve

11. **HW TL1 Transmission Lines**

    Short, **Med**, Long Z_C SIL

    Series impedance $\mathbf{Z_{series}}$ Shunt admittance & $\frac{\mathbf{Y_{shunt}}}{2}$

    Shunt impedance & $2 \cdot \mathbf{Z_{shunt}}$

    Models and calculations

    Common line voltages

    Short, Med, Long mi, km

    Surge impedance

    Surge impedance loading

    What is & why use bundling

12. All Labs **questions**

13. All Field trips **questions**

Bolded items are more likely