

Exam Topics for ECE 20002 - Electrical Engineering Fundamentals II

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These are exam topics for spring 2024 ECE 20002 at Purdue as taught by Professor Byunghoo Jung alongside recordings by Professor Michael Capano. Modify, use, and distribute as you please.

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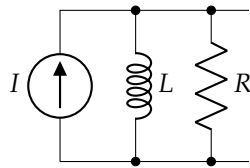
Exam 1 2

Exam 2 2

Exam 1

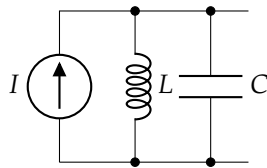
1. RC or RL circuit with input that can be either linear, SSS, or exponential. ×

Example:



With $I = 4e^{-3t}$, $L = 0.1H$, $R = 20\Omega$.

2. LC circuit with either linear or SSS input. ×
- Example:



With $I = \cos(3t)$, $L = 0.1H$, $C = 0.02F$.

3. RLC circuit with linear input, only need to solve a part of the full thing, such as determining conditions for certain kinds of damping, or finding the equation from a midpoint solve. ×
4. Switched RL or RC circuit with around 3 time intervals or two switches. ×
5. Convolution with unit step function, like $[f(t)u(t)] * u(t)$.
6. Convolution with integration by parts once.
7. Unit step response/Impulse response. ×
8. Laplace Transform with time shift. ×
9. Inverse Laplace with real distinct solutions. ×
10. Inverse Laplace with either repeated, or complex conjugate. ×

Exam 2

1. 1 or 2 circuits with 2nd or 3rd order zero initial condition circuits.
2. Non-zero initial condition, 1st or 2nd order
3. Decomposition in 1st or 2nd order

4. s domain analysis to find transfer function of a 2nd or 3rd order circuit
5. Stability of a circuit