

# *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.

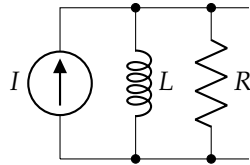
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1. RC or RL circuit with input that can be either linear, SSS, or exponential. ×

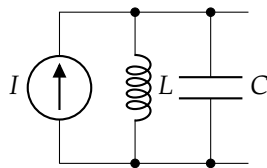
Example:



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. ×