

**ECE 202 HW #7**  
**Spring 2007**  
**Due 03/23/07**

- Office Hours: MW 3:30-5:00 p.m.
  - Read Chapters 11.3-11.4 and 11.6-11.7 from the book and the lecture notes.
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1. [20] In the following questions, you are given the input voltage and the impulse response of a circuit and you are asked to find the output voltage. Find the output by computing the convolution integral.
    - a)  $x(t) = e^{-t}u(t), h(t) = e^{-4t}u(t)$
    - b)  $x(t) = u(t), h(t) = e^{-t}u(t)$
    - c)  $x(t) = \sin(t)u(t), h(t) = e^{-10t}u(t)$
    - d)  $x(t) = u(t-1), h(t) = u(t) - u(t-1)$
  
  2. [20] 11.10
  
  3. [20] 11.12
  
  4. [15] The step response for a circuit is given as  $g(t) = [500te^{-250t}]u(t)$ .
    - a) Find the impulse response,  $h(t)$ .
    - b) Find the transfer function,  $H(s)$ .
  
  5. [25] 11.52 Hint: Use a two-stage design with the first stage being an inverting OPAMP and the second stage a voltage divider.