NAME: **25 February 2015**
EE301 Signals and Systems **Exam 1**

Cover Sheet

Test Duration: 75 minutes.
Coverage: Chaps. 1,2
Open Book but Closed Notes.
One 8.5 in. x 11 in. crib sheet
Calculators NOT allowed.
This test contains **TWO** problems with multiple parts.
All work should be done in the space provided.
You must show ALL work or explain answer for each problem to receive full credit.
WRITE YOUR NAME ON EVERY SHEET.

Prob. No.	**Topic(s)**	**Points**
1.	Continuous Time Signals and System Properties	50
2.	Discrete Time Signals and System Properties	50

If you want to refer to the input signal and output signal for one part of a problem when solving a later part, use that part's letter as a subscript, e.g., you can refer to the input signal and corresponding output signal for part (d) of Prob. 1 as $x_d(t)$ and $y_d(t)$, respectively.

For the relevant parts, you must indicate which of the formulas below you are using to solve that particular problem – just list the formula letter, e.g., "Formula A"

Formula A:
$$e^{at}u(t) * e^{bt}u(t) = \frac{1}{a-b}e^{at}u(t) + \frac{1}{b-a}e^{bt}u(t) \tag{1}$$

Formula B:
$$\alpha^n u[n] * \beta^n u[n] = \frac{\alpha}{\alpha-\beta}\alpha^n u[n] + \frac{\beta}{\beta-\alpha}\beta^n u[n] \tag{2}$$

Formula C: if $x(t) * h(t) = y(t)$ then: $a\,x(t-t_1) * b\,h(t-t_2) = ab\,y(t-(t_1+t_2))$ (3)

Formula D: if $x[n] * h[n] = y[n]$ then: $a\,x[n-n_1] * b\,h[n-n_2] = ab\,y[n-(n_1+n_2)]$ (4)