

**EE 150L**  
**Signals and Systems Lab**

**Lab2 System Analysis in Time Domain**

**Student Id:**

**Name:**

1. About system response

- a) Describe the characteristics of zero-input responses and zero-state response briefly. What is the difference between the initial conditions of the two responses?
- b) Consider a linear system whose zero-input response  $y_{zi}(t) = (4e^{-t} - 3e^{-2t})u(t)$  and the system full response  $y(t) = (3e^{-t} - 2e^{-2t} + te^{-t})u(t)$ , what is the zero-state response of the system?

2. Convolve the following two signals and record the result as  $y(n)$ .
- a) Please describe the convolution process in detail (both formulas and schematic are accepted).
- b) What is the relationship between the length of  $y(n)$  and the length of  $x(n)$  and  $h(n)$ ?

