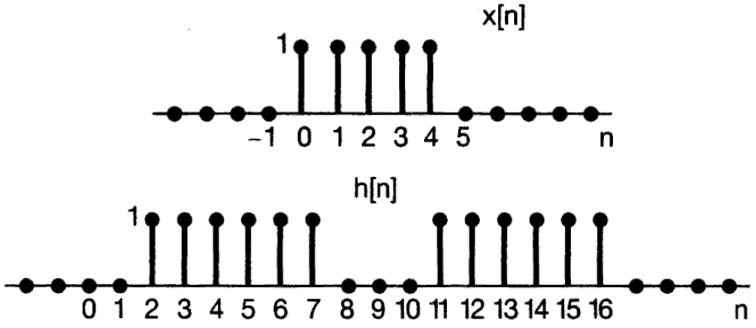
INFORMATION TECHNOLOGY UNIVERSITY
Department of Electrical Engineering

Signal and Systems
Fall 2021

Assignment 2

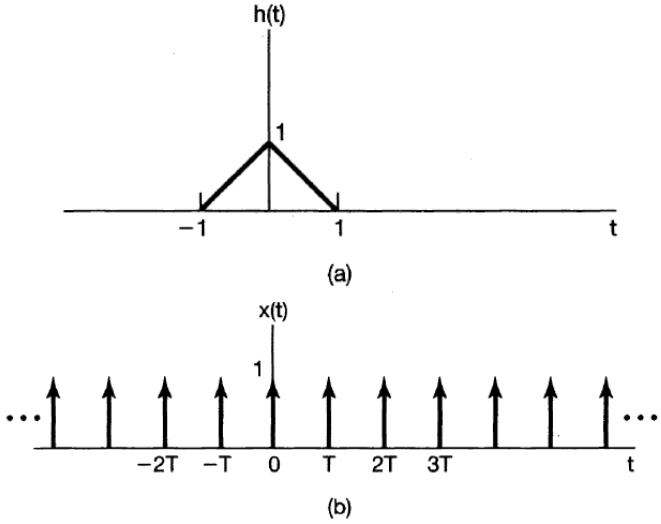
Deadline: 8-11-2021 **Total Points: 40**

Question 1 (10 points) (CLO 2)
Compute the **convolution** y[n] = x[n] * h[n] of the following signals:



Question 2 (5+5+5+5 points) (CLO 2)
Let h(t) be the triangular pulse shown in Figure (a), and let x(t) be the impulse train depicted in Figure (b). That is,

$$x(t) = \sum_{k=-\infty}^{+\infty} \delta(t - kT)$$



Sketch y(t) = x(t) * h(t) for the following values of T:

(a) T = 4
(b) T = 2
(c) T = 3/2
(d) T = 1

Question 3 (5+5 Points) (CLO 2)
The following is the impulse responses of continuous-time LTI system.

$$h(t) = \mathrm{e}^{-4t}\, u(t-2)$$

(a) Determine whether the system is **causal**.
(b) Determine whether the system is **stable**.