Name: _____

Student ID: _____

Signature: _____

CITY UNIVERSITY OF HONG KONG

Semester A 2015/2016

EE3210: Signals and Systems

Quiz 3

1. Time allowed: 15 minutes
2. Total number of problems: 2
3. Total marks available: 11
4. This paper may not be retained by candidates

Special Instructions

5. This is a closed book exam
6. Attempt all questions from each problem

Problem 1: (6 marks)

Consider a discrete-time system whose input $x[n]$ and output $y[n]$ are related by
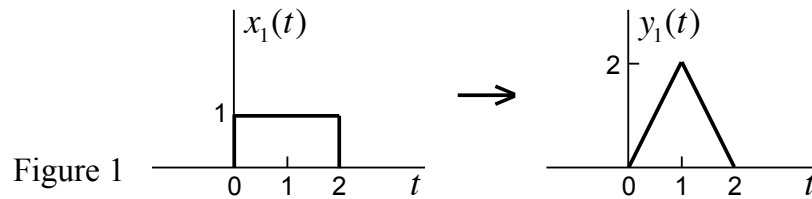
$$y[n] = (-1)^{n-1} x[n].$$

Determine which of the following properties hold for this system:

  (a) Memoryless (2 marks)
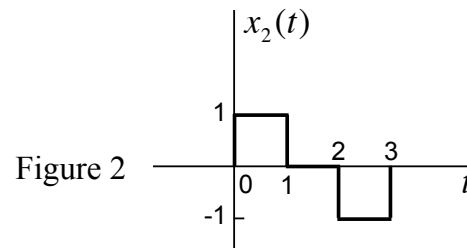
  (b) Causal (2 marks)

  (c) Stable (2 marks)

Justify your answers.

Problem 2: (5 marks)

Consider a continuous-time LTI system whose response to the signal $x_1(t)$ is the signal $y_1(t)$, as shown in Figure 1 below.

Figure 1

$x_1(t)$

1

0 1 2 t

→

$y_1(t)$

2

0 1 2 t

Determine and sketch the response of the system to the input $x_2(t)$ shown in Figure 2 below.

Figure 2

$x_2(t)$

1

0 1   2   3 t

-1

— End of Paper —