Name: _____

Student ID: _____

Signature: _____

CITY UNIVERSITY OF HONG KONG

Semester A 2015/2016

## EE3210: Signals and Systems

Quiz 6

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
7. A list of possibly relevant equations is attached at the end of this paper

Problem 1: (6 marks)

Determine the Fourier series coefficients of the continuous-time periodic signal $x(t)$ shown in Figure 1 below.

Figure 1
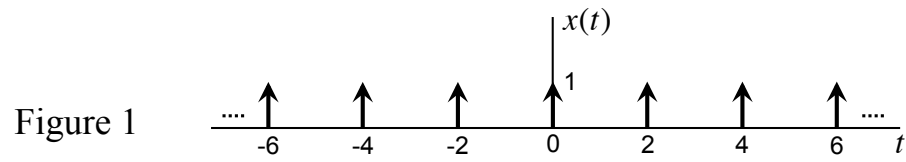
Problem 2: (5 marks)

Consider a continuous-time periodic signal $x(t)$ with period 2 and $x(t) = e^{-t}$ for $-1 < t < 1$. Determine the Fourier series coefficients of $x(t)$.

Appendix – A list of possibly relevant equations

- Continuous-time Fourier series:

    - Formulas: Consider $x(t)$ periodic with fundamental period $T_0 = T$.

        * Synthesis: $x(t) = \displaystyle\sum_{k=-\infty}^{+\infty} a_k e^{jk(2\pi/T)t}$

        * Analysis: $a_k = \dfrac{1}{T} \displaystyle\int_T x(t) e^{-jk(2\pi/T)t} dt$

— End of Paper —