SOAL UJIAN TENGAH SEMESTER (UTS)

SEMESTER GENAP 2020/2021

PROGRAM STUDI TEKNIK ELEKTRO

Mata Kuliah	:	Sinyal dan Sistem	Waktu	:	120 Menit
Kredit	:	3 sks	Hari/Tanggal	:	Senin / 14-04-2021
Nama Dosen	:	Mifta Nur Farid, S.T., M.T.	Sifat	:	Open book
		Risty Jayanti Yuniar, ST., M.T.			

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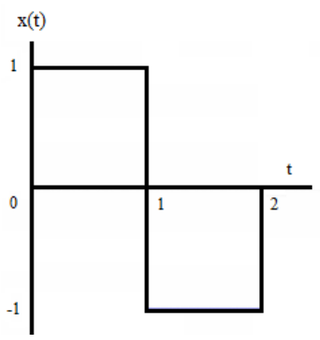
1. Use the Fourier series analysis equation to calculate the coefficients a_k for the continuous-time periodic signal.



Score: 40

2. The input and the output of a stable and causal LTI system are related by the differential equation

$$\frac{d^2y(t)}{dt^2} + 6\frac{dy(t)}{dt} + 8y(t) = 2x(t)$$

   a. Find the impulse response *h(t)* of this system.
   b. What is the response *y(t)* of this system if $x(t) = t\,e^{-2t}u(t)$.

   Score: 60

Signal	Fourier Transform
$\delta(t)$	1
$u(t)$	$\frac{1}{j\omega} + \pi\delta(\omega)$
$\delta(t - t_0)$	$e^{-j\omega t_0}$
$e^{-at}u(t), \mathcal{R}e\{a\} > 0$	$\frac{1}{a + j\omega}$
$te^{-at}u(t), \mathcal{R}e\{a\} > 0$	$\frac{1}{(a + j\omega)^2}$
$\frac{t^{n-1}}{(n-1)!}e^{-at}u(t), \mathcal{R}e\{a\} > 0$	$\frac{1}{(a + j\omega)^n}$

------- "" Life is like riding a bicyle. To keep your balance, you must keep moving - Albert Einstein------