

SOAL UJIAN AKHIR SEMESTER (UAS)

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	: <i>Open book</i>
Risty Jayanti Yuniar, ST., M.T.			

1. Given that

$$e^{-at}u(t) \xleftrightarrow{\mathcal{L}} \frac{1}{s+a}, \quad \Re\{s\} > \Re\{-a\},$$

$$-e^{-at}u(-t) \xleftrightarrow{\mathcal{L}} \frac{1}{s+a}, \quad \Re\{s\} < \Re\{-a\},$$

Determine the invers Laplace transform of

$$X(s) = \frac{2(s+2)}{s^2+7s+12}$$

$$-4 < \Re(s) < -3$$

Score: 20

2. Consider a causal LTI system with impulse response $h(t) = (3e^{-2t} + 4e^{-t})u(t)$
- Determine the Laplace transform of $h(t)$.
 - Determine a differential equation relating $y(t)$ and $x(t)$.
 - Sketch the pole-zero pattern of $H(s)$
 - Create a block diagram representation of S .
 - Is this system stable?

Score: 50

3. Consider a causal LTI system whose input $x[n]$ and output $y[n]$ are related through the block diagram representation shown in Figure 1.

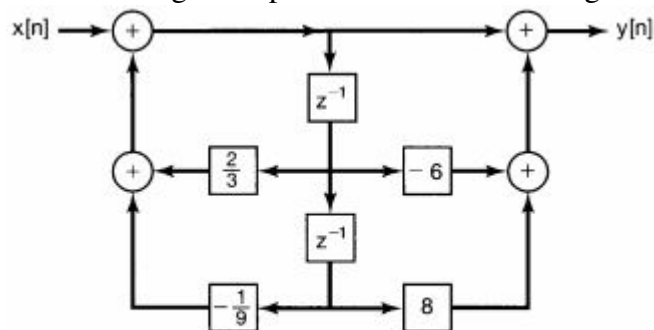


Figure 1

- Determine a difference equation relating $y[n]$ and $x[n]$.
- Determine $H(z)$.
- Is this system stable?

Score: 30

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

~ Selamat Mengerjakan ~