Test 2

Started: Apr 15 at 1:02pm

Quiz Instructions

Instructions:

1) Turn on video to show the upper part of your body in the Zoom meeting throughout the test.
(2) The duration of the test is 90 mins. The starting time is 1:00pm and the end time is 2:30pm. The online submission should be done before 2:35pm.
(3) The test paper consists of 6 questions. You need to answer all.
(4) Use a pen of dark ink to write your answers.
(5) Submit your signed Declaration Form to Question 1 and answer Questions 2 to 7. The form can be download from Files Folder
(6) Submit your answers in pdf of good quality. To make an image of good quality, you are advised to turn on good light illumination for capturing images.
(7) Submit the answer of each question in pdf to Canvas.

Question 1 — 0 pts

Submit your signed Declaration Form

Upload Declaration for Test (2).pdf

Your file has been successfully uploaded.

Question 2 — 15 pts

Compute all the values of $y[n] = x[n] * h[n]$

where

$x[n] = 2\delta[n-1] - \delta[n-3]$

$h[n] = u[n] + u[n-1] - 2u[n-3]$

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Question 3

15 pts

Compute the convolution

$$y(t) = x(t) * h(t)$$

where

$h(t) = u(t+1) - u(t-1)$

$$x(t) = \begin{cases} t+2 & -2 < t < -1 \\ 1 & -1 < t < 0 \\ 0 & \text{otherwise} \end{cases}$$

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Question 4

15 pts

Consider an LTI system with impulse response h(t) given as

$$h(t) = 2e^{-t}u(t) + e^{-2t}u(t) \quad .$$

Determine the response of the system in the time domain to the input x(t) given as

$$x(t) = 2\cos(\pi t) + 4\cos\left(10\pi t + \tfrac{\pi}{2}\right)$$

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Question 5

20 pts

(i) Determine the Fourier transform of x(t) given as

$$x\left(t\right)=e^{-|t-3|}\sin(10\pi t)\ .$$

(ii) Evaluate $\int_{-\infty}^{\infty}x\left(t\right)dt$

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Question 6

15 pts

Find the inverse Fourier transform of $X\left(j\omega\right)=\left[\frac{1}{1+j\omega}\right]\left[\frac{2\sin(\omega)}{\omega}\right]$

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Question 7

20 pts

Consider a system with difference equation given as

$$\frac{dy(t)}{dt}+3y\left(t\right)=\frac{dx(t)}{dt}+x\left(t\right)$$

Find the output of the system with $x\left(t\right)=e^{-3t}u\left(t\right)$

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Quiz saved at 1:02pm Submit Quiz