2021/4/15 Quiz: Test 2

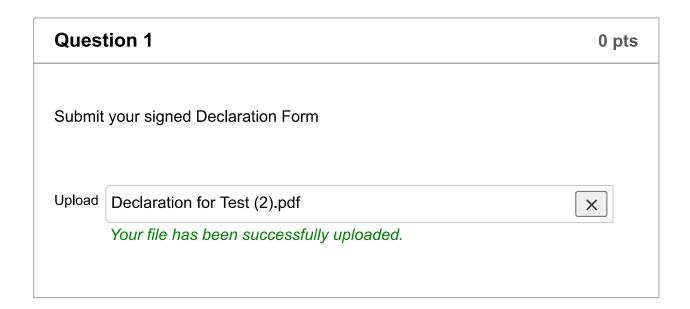
Test 2

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 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

$$h\left(t\right)=u\left(t+1\right)-u\left(t-1\right)$$

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

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Question 4 15 pts

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

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

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

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

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Question 5 20 pts

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

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

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

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Question 6 15 pts

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

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Question 7 20 pts

Consider a system with difference equation given as

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

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

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