

Premier University

Department of Computer Science and Engineering

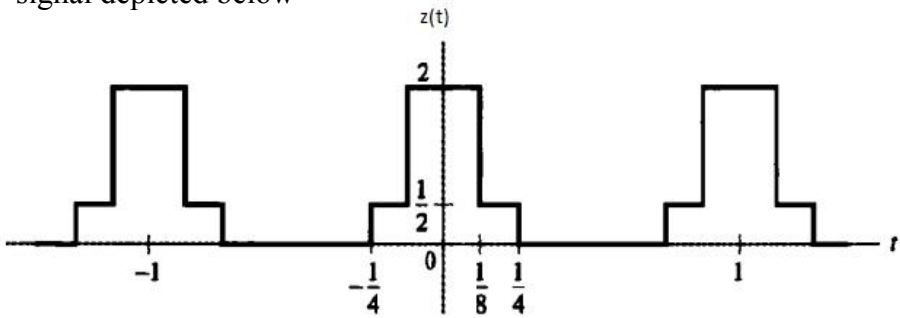
4th Semester Special Retake Examination, September, 2020

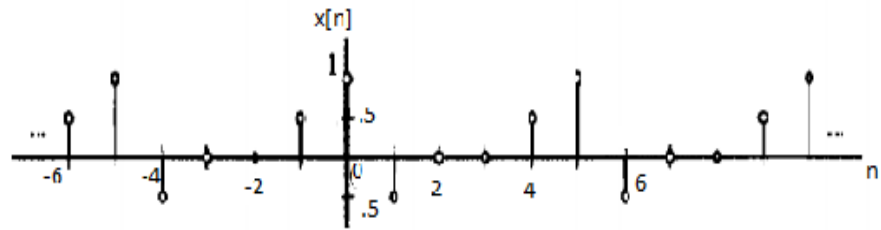
Course Title: Signals and Systems

Course Code: EEE 201

Suggestion

Q-1	a.	Define Signals and Systems.	01
	b.	Write short notes on: i)Odd Signal ii)Energy Signal iii)Memory system	06
Q-2	a.	Given $x[n] = \begin{cases} 1, & n=1,2 \\ -1, & n=-1,-2,-3 \\ 0, & n=0, n>2 \text{ or } n<-3 \end{cases}$ Find $y[n] = x[2n+3]$	3.5
	b.	Categorize the signal $x[n] = \begin{cases} n, & 0 \leq n < 5 \\ 10-n, & 5 \leq n \leq 10 \\ 0, & \text{otherwise} \end{cases}$ as power or energy signal and find the energy/time average power	3.5
Q-3	a.	Write short notes on: i)Impulse Function ii)Ramp Function	02
	b.	Define causal system. Consider a system for which input-output relation is $y(t) = x(t) x(t-1)$. Find out whether the system is linear or non-linear.	05
Q-4	a.	Evaluate the convolutional integral for a system with input $x(t)$ and impulse response $h(t)$, respectively given by $x(t) = u(t-1)-u(t-3)$ and $H(t) = u(t) - u(t-1)$	05
	b.	Describe briefly the initial and final value theorem.	02
Q-5	a.	Find Fourier Transform for the rectangular pulse	04

		$x(t) = 1, -T_0 < t < T_0$ $= 0, \text{ otherwise}$	
	b.	Illustrate block diagram representation for $y[n] + y[n-1] + y[n-2] = x[n] + x[n-1] + x[n-2]$	03
Q-6	a.	Determine the Laplace transform, ROC and locations of poles and zeros of $X(s)$ for $x(t) = \sin(3t)u(t)$	04
	b.	Find the unilateral Laplace Transform of $x(t) = e^{-t}u(t) * \sin(t-2)u(t-2)$	03
Q-7	a.	Use the linearity property to determine FS co-efficients $Z[k]$ for the signal depicted below  Figure: 6(b)	06
	b.	State the convolution property of Fourier Representation	01
Q-8	a.	Explain the difference between causal and memory system.	03
	b.	Determine the Laplace transform, ROC and locations of poles and zeros of $X(s)$ for $x(t) = 3tu(t)$	04
Q-9	a.	The impulse response of a system is given by $h(t) = RC^{-1} * e^{-t/RC} * u(t)$ Find the expression for magnitude and phase response.	05
	b.	Explain whether the function $x(t) = t$ stable or not.	02
Q-10	a.	Find the frequency domain representation of the signal depicted below. Illustrate the amplitude and frequency spectra.	06



b.

State the differentiation property of fourier transform.

01