PRN:		Course Code :	ECE210R1

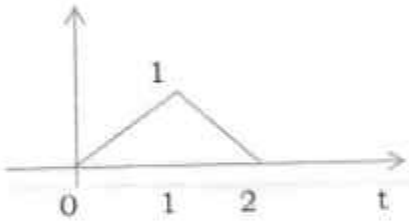
Second Year **B. Tech** End Semester Backlog Examination Winter 2024

Signals & Systems 000199

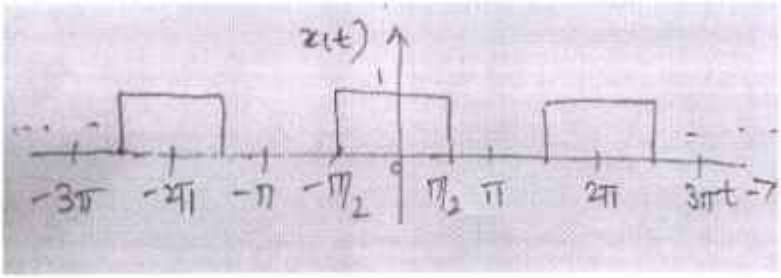
Day and Date: Mon 2 DEC 2024 Max Marks: **100**

Time : 02:00PM To 05:00PM Duration: **03**hrs

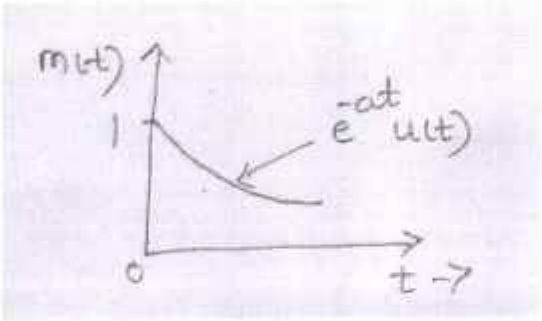
Instructions:All questions are compulsory.

		Marks	Bloom's Level	CO
Q.1	**Attempt the following**			
a)	State and Explain the classification of signals.	08	2	1
b)	Check whether the following systems are causal or non-causal? i) $y(t)=x^2(t)+x(t-2)$ ii) $y[n]=x[n]+1/x[n-1]$.	08	3	1
	OR			
b)	Determine even and odd parts of following signals: i) $x[n]=\{-1,-1,-1,1,1,1,1\}$ ii) $x(t)=$ 	08	3	1
Q.2	**Attempt the following**			
a)	State & explain properties of convolution sum & convolution Integral.	08	2	2
b)	Compute convolution of x1(t) & x2(t) for the following signals. $x1(t)=e^{-at}u(t)$ & $x2(t)=e^{-bt}u(t)$	08	4	2
	OR			
b)	Compute output sequence y(n) for the LTI system whose input sequence and impulse response is given as follows. (Use graphical method of convolution sum) $x(n)=\{1,2,3,1\}$ $h(n)=\{1,2,1,-1\}$	08	4	2
Q.3	**Attempt any two from the following**			
a)	Illustrate relationship between trigonometric and exponential Fourier series	08	2	3
b)	Determine trigonometric Fourier series of the signal shown in the figure below and draw its amplitude & phase spectrum.:	08	4	3

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	c)	State & Explain properties of CT Fourier Series.	08	2	3
Q.4		**Attempt any two from the following**			
	a)	State & explain properties of CT Fourier Transform	08	2	3
	b)	Find the Fourier transform of following standard signals: i)f(t)=u(t) ii)f(t) = δ(t)	08	3	3
	c)	Find the continuous spectrum of non-periodic signal m(t) shown below:	08	4	3



Q.5		**Attempt any Two of the following**			
	a)	State & Explain properties of DT Fourier Transform.	09	2	4
	b)	Illustrate Symmetry properties of DT Fourier Transform.	09	2	4
	c)	Find the Fourier Transform of following signals: i)x(n)= δ(n-k) ii) x(n) = a^n u(n)	09	3	4
Q.6		**Attempt any Two of the following**			
	a)	Explain the properties of z-Transform.	09	2	4
	b)	Determine the z-transform and sketch ROC of the following sequences: i) x(n)= $(0.6)^n$ u(n)+ $(0.4)^n$ u(n) ii) x(n)= u(n)	09	4	4
	c)	Determine Inverse z-transform of given X(z) using long division method. X(z)= z+1/ z^2 -3z + 2	09	4	4

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