

END SEMESTER EXAMINATION, JULY. – 2021-22

Course Name: Signals & Systems, Course Code: 201ETL213

Day and Date:day, .../.../2022

Time: ----- to -----

Seat No:

Max. Marks- 100

Instructions:

- i. Question No. 1 is compulsory.
- ii. Figure to the right indicate full marks.

BT	CO's	Q.No		Marks
		Q.1	Attempt the following	40
L2	C213.1	a	i. Write the different types of signals and explain with mathematical expression and represent with graphical representation. ii. Find out even and odd parts of following equations a) $y(t)=2h(t) + 5h(t-1) + 6h(t+3)$ b) $y(t)=[x(n)]^2+2x(n)+3x(n-1)$	4 6
L2	C213.1 & C213.2	b	i) Describe any three properties of convolution sum. ii) Find out the Convolution of the following signals? $X(t)=e^{-3t} * u(t)$ & $h(t) = u(t-1)$ iii) Find Fourier transform of DT signal $u(n)$.	3 3 4
L3	C213.1	c	i) Compute convolution of $x(n)$ and $h(n)$ signals given below: $x(n) = e^{-n^2}$ and $h(n) = 3n^2$ for all n . ii) What is DFT? Derive an Expression for DFT from CTFT express in exponential form?	5 5
L2	C213.2	d	i) Write and explain different properties of Fourier transform. ii) Find Fourier transform of the signal, $y(t) = e^{-at} u(t)$.	5 5
		Q.2	Attempt the following	20
L3	C213.2	a	Compute 4-point DFT of the sequence, $x(n) = \{1, -1, 2, 2\}$	6
L2	C213.2	b	State and Explain the properties of DFT.	7
L3	C213.2	c	Compute the 4 point DFT of sequence, $X(n)=(2,0,2,0)$	7

		Q.3	Attempt (any four questions)	20
L3	C213.3	a	Compute z-transform of $\delta(n)$.	5
L2	C213.3	b	Describe any five properties of z-transform.	5
L3	C213.3	c	Compute z-transform and ROC of finite duration sequence $x(n) = (1/2)^n u(-n)$.	5
L3	C213.3	d	Compute z transform and ROC of $x(n) = a^n$ for $n \geq 0$ else zero.	5
L2	C213.3	e	Illustrate relation between z-transform and Fourier transform.	5
		Q.4	Attempt the following	20
L2	C213.4	a	Find the transfer function $H(z)$ of the system given by $y(n) = y(n-1) - 0.5 y(n-2) + x(n) + x(n-1)$.	4
L4	C213.4	b	Explain direct form-I realization of DT-LTI system.	4
L2	C213.4	c	Explain direct form-II realization of DT-LTI system.	6
L4	C213.4	d	Determine direct form-I realization for the system described by difference equation, $y(n) = 0.5y(n-1) - 0.25y(n-2) + x(n) + 0.4x(n-1)$	6