

Code No: R17A0402 MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, April 2023

Signals and Systems
(ECE)

(ECE)									
Roll No									

Time:	3 hou	urs Max. Ma	rks: 70
Note:	This	question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE	Ξ
Questi	on fro	om each SECTION and each Question carries 14 marks.	

		<u>SECTION-I</u>	
1	A	What are the types of representation of discrete time signals? Represent a	[8M]
	_	sequence in all types.	
	B	Write the properties of impulse signal.	[6M]
•		OR	
2	A	State and prove any two properties of the Fourier series.	[7M]
	В	Find the relationship between exponential Fourier series coefficients and	[7] M]
		trigonometric Fourier series coefficients.	
2	4	State and Dresse Machaletian the areas	[7]]
3	A	State and Prove Modulation theorem.	
	В	Find the Fourier transform of	
		(1) $x(t) = e^{-\alpha t}$	
		(ii) $x(t) = e^{-j\omega_0 t}u(t)$	
		OR	
4		State and prove sampling theorem.	[14M]
		SECTION-III	
5	A	Obtain the relationship between the bandwidth and rise time of ideal low	[7M]
		pass Filter	
	B	Explain causality and physical reliability of a system and hence give Paley-	[7M]
		Wiener criterion.	
		OR	
6	A	What is an LTI system?. Derive an expression for the Transfer function of an	[7M]
		LTI system.	
	B	Obtain the conditions for the distortion less transmission through a system.	[7M]
7	Δ	Derive Relation between Auto Correlation Function and Energy spectral	[7M]
,	11	density Function	
	R	State the properties of cross-correlation	[7M]
	D	OR	[, ., .]
8	A	Compare energy spectral density (ESD) and power spectral density (PSD)	[7M]
-	B	A signal $x(t)=e^{-2t}u(t)$ is passed through an idle LPF with cut off frequency	[7M]
	-	of one radian /sec.	r1
		(i) Test whether the input is an energy signal.	
		(ii) Find the input and Output Energy	

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SECTION-V

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A	Find the z-transform of $x(n) = (\frac{1}{2})^n u(n) + (\frac{1}{3})^n u(-n-1)$	[7M]
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B Define region of convergence and state the properties of ROC for Laplace [7M] transform.

OR

10	A	Find the Laplace transform of $x(t) = -e^{-at}u(-t) + e^{at}u(-t-1)$	[7M]
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B Define region of convergence and state the properties of ROC for Ztransform. [7M]
