Enroll. No.	
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MARWADI UNIVERSITY

Faculty of Technology

Department of Information & Communication Technology

B.Tech SEM: III **WINTER:2018**

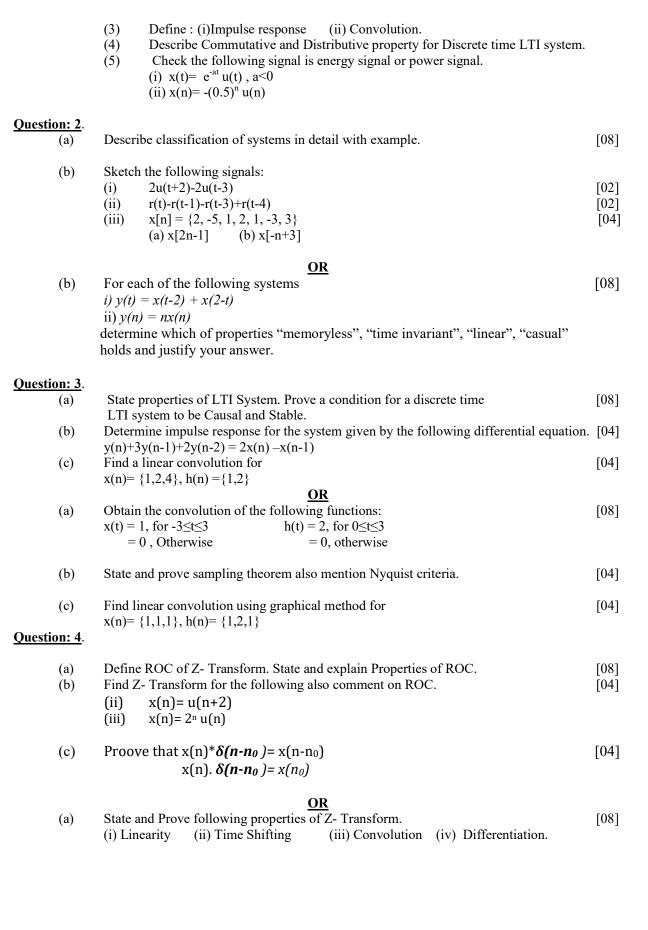
Subject: - Signals & Systems (01CT0302) Total Marks:-100 Date: - 26/10/2018 Time: - 03:00 hours

Instructions:

- 1. All Questions are Compulsory.
- 2. Make suitable assumptions wherever necessary.3. Figures to the right indicate full marks.

Question: 1. (a)	Answer the following:	[10)]
(1)	Discrete time signal is derived from	n continuous time signal by	
	process.		
	a) Addition	b) Multiplying	
4-1	c) Sampling	d) Addition and multiplication	
(2)	•		
(2)	a) True	b) False	
(3)			
	a) Discrete signal	b) Deterministic signal	
(4)	c) Random signal	d) Periodic signal	
(4)			
	a) Electronic amplifier	b) Electronic attenuator	
(5)	c) Both amplifier and attenuator	d) Adder	
(5)		1.) E1-1-i1	
	a) Compressed signal	b) Expanded signal	
(6)	c) Shifted signal What is the value of $\delta[0]$, such that	d) Amplitude scaled signal by a factor of 3	
(6)	a) 0	b) 0.5	
	c) 1.5	d) 1	
(7)	,		
(1)	a) $x[n] + h[n]$	b) $x[n] - h[n]$	
	c) x[n] * h[n]	d) x[n] + h[n]	
(8)	,		
(6)	a) $x(n)*h(n)=h(n)*x(n)$	b) $x(n)+h(n)=h(n)+x(n)$	
(0)	c) $x(n)**h(n)=h(n)**x(n)$	d) $x(n)h(n)=h(n)x(n)$	
(9)			
	a) Frequency Spectrum	b) Fequency	
	c) Wave form	d) None of the above	
(10	Which theorem states that the total	average power of a periodic signal is equal to the	:
	sum of average powers of the indiv	idual Fourier coefficients?	
	a) Parseval's Theorem	b) Rayleigh's Theorem	
	c) Both a & b	d) None of the above	
(b) Att	empt the following: (Two marks each)	[10	ı T
$(0) \qquad \qquad (1)$	· · · · · · · · · · · · · · · · · · ·		J
(1)	a) Sin $13\pi t$ b) $2 + \cos 2$		
(2)			
(2)	$x(n) = \{-2,5,1,3\}$	·· · · · · · · · · · · · · · ·	
	() (-)-)-)		

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(b)	Find the z transform of signal $x(n) = \cos \omega_0 n \ u(n)$	
(c)	Find convolution of $x_1(n)$ and $x_2(n)$ using Z- Transform. $x_1(n) = \{1,2,1,2\}$ $x_2(n) = \{1,1,2,2\}$	[04]
Question:	<u>5</u> .	
(a)	Using the partial fraction expansion technique find the inverse z transform of $X(z) = \frac{z}{2z^2 - 3z + 1}, z < \frac{1}{2}$	[08]
(b)		[04]
(c)	•	[04]
	<u>OR</u>	
(a)	Find inverse Z- Transform by Partial Fraction Expansion for all possible $x(n)$ $X(z)=Z+1/2Z^2-7Z+3$	[80]
(b)	Find Fourier transform of a rectangular pulse 2 seconds long with a magnitude of 10 volts.	[04]
(c)	State Dirichlet condition for Fourier series representation.	
Question:	6	
(a)		[08]
(b)	Describe importance of convolution in analysis of Linear time invariant system.	[04]
(c)	Define discrete Fourier transform and describe difference between DTFT and DFT.	[04]
	<u>OR</u>	
(a)	Derive DFT of the sample data sequence $x(n) = \{1,1,2,2,3,3\}$.	[08]
(b)	State application of signals and systems explain any one in detail.	[04]
(c)	Define: The continuous time Fourier transforms. State and prove Duality properties of continuous time Fourier Transform	[04]

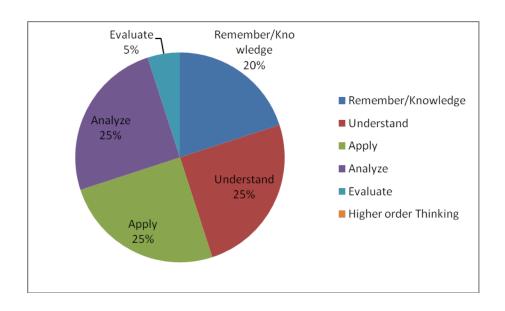
---Best of Luck---

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Que. Paper weight-age as per Bloom's Taxonomy

No.	Que. Level	% of weight-age		
		% of	Que. No.	
		weight -age		
1	Remember/Knowledge	20	Q:2(a)Q:6(b)Q:6(c)(OR)Q:4(a)Q:6(a)	
			Q:3(a)	
2	Understand	25	Q:1(a)Q:2(b)Q:2(b)(OR)Q:3(b)Q:4(c)	
			Q:4(b)	
3	Apply	25	Q:1(b)Q:3(c)(OR)Q:4(b)Q:4(C)(OR)	
			Q:5(b)(OR)	
4	Analyze	25	Q:3(a)(OR),Q:3(b)(OR)Q:4(a)(OR)	
			Q:5(c)Q:3(c)	
5	Evaluate	05	Q:6(b)Q:5(C)(OR)	
6	Higher order Thinking			

GRAPH:



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