CONTINUOUS INTERNAL EVALUATION-1

Dept: EC	Sem / Div: IV A&B	Sub: Signals and Systems	S Code: 18EC45
Date: 26/05/2021	Time: 9:30-11:00 AM	Max Marks: 50	Elective:N
Note: Answer any 2 full questions, choosing one full question from each part.			

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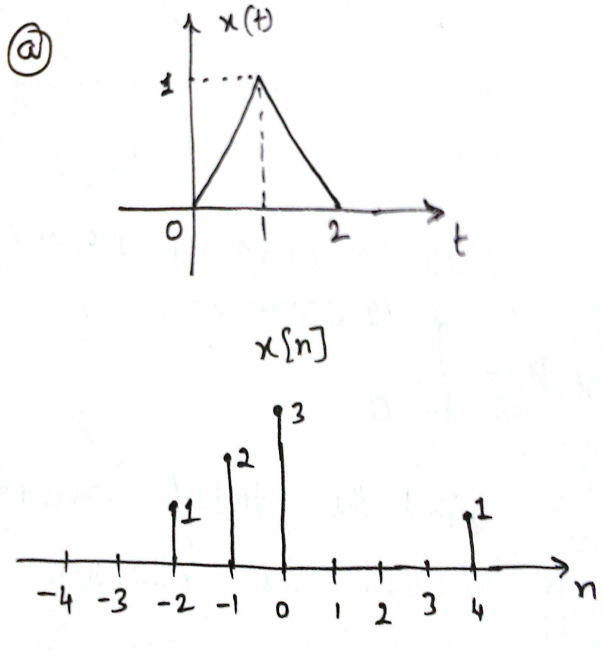
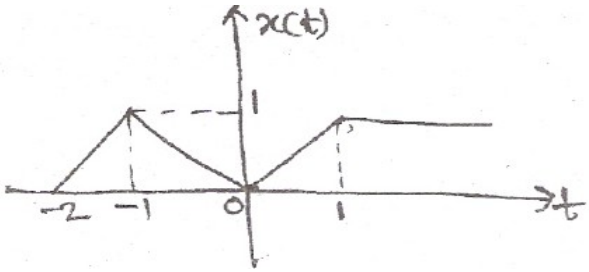
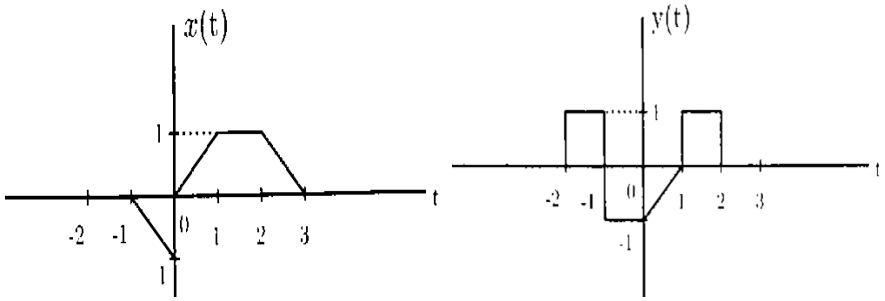
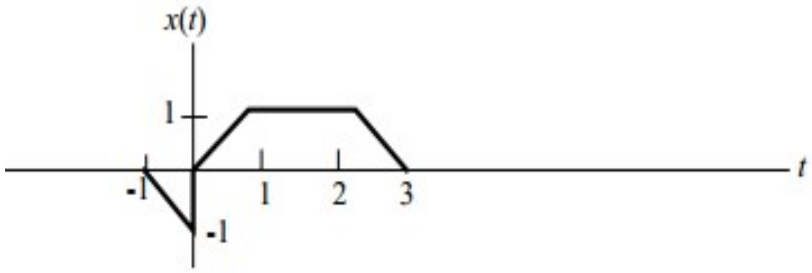
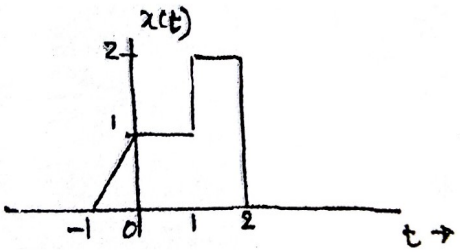
QN		Questions	Marks	RBT	COs
		PART A			
1	a	Determine and sketch the even and odd components of the signal which is shown in a figure 	10	L2	CO1
	b	Sketch the following signals i) x(t) = -u(t + 3) + 2u(t +1) -2u(t - 1) + u(t - 3) ii) y(t) = r(t + 2) - r(t + 1) - r(t - 1)+ r(t - 2)	7	L2	CO1
	c	Check whether the given signals is periodic or non-periodic. If it is periodic then find its fundamental period i) x[n]=cos[πn/5]*sin[πn/3] ii) x(t)= $\cos^2(2\pi t)$	8	L2	CO1
		OR			
2	a	Explain the properties of system.	10	L1	CO2
	b	Determine and sketch the even and odd part of the signals which is shown in a below figure 	7	L2	CO1

CONTINUOUS INTERNAL EVALUATION-1

	c	Two continuous signal x(t) and y(t) is given in figure; Draw Z(t)= x(2t) y(2t+1) 	8	L2	CO1
		PART B			
3	a	Define a signal and a system. Derive an even-odd decomposition for an arbitrary signal x(t)	7	L2	CO1
	b	For a given signal x(t) shown in a figure, sketch the following  i) x(-2t+3) ii) x ($\frac{t}{2}$ - 2)	6	L2	CO1
	c	Distinguish between i) Energy and Power signals ii) Deterministic and Random signals	6	L2	CO1
	d	Check whether the given signals is periodic or non-periodic. If it is periodic then find its fundamental period i) x(t) = cos($\sqrt{2}$ t) + cos(t) ii) x(t) = 3+t^2	6	L2	CO1
		OR			
4	a	Find odd and even components of the following signals. i) x(t) = 1 + t cost+ t^2 sint + t^3 $\cos^2$t sint ii) x(t) = 1 + t^2 $\cos^2$t + t^3 $\sin^3$t + t^4 cost.	7	L2	CO1
	b	Check whether the following signals is Energy or Power and find its corresponding value. i. x(t) = A ; -T/2 ≤ t ≤ T/2 0 ; otherwise ii. x[n] = $[1/4]^n$ u[n]	6	L2	CO1
	c	Check whether the given signals is periodic or non-periodic. If it is periodic then find its fundamental period.	6	L2	CO1

CONTINUOUS INTERNAL EVALUATION–1

		i) $x[n] = \cos[n\pi/3] + \sin[\pi n/4]$ ii) $x(t) = e^{jIIt} + e^{-j2t}$			
	d	A continuous time signal x(t) is shown in figure. Sketch and label for the following: i. x(t) u(1 – t) ii. x(t) [u(t) - u(t-2)] 	6	L2	CO1