CONTINUOUS INTERNAL EVALUATION- 1

Dept:EC	Sem: V	Sub:DSP	S Code:18EC52
Date:19/10/2020	Time: 2:30-4:00 pm	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks	RBT	COs
	PART A			
1 a	Prove properties of DFT 1. Circular convolution and product of DFT's 2. Parseval's Theorem 3. Circular time shift	9	L2	CO1
b	Find the N point DFT of x(n)= 0.5n , 0<=n<=N-1.	6	L3	CO1
c	Derive the Radix-2 DIT-FFT algorithm for N=8. Draw the complete signal flow graph for the same.	10	L2	CO2
	OR			
2 a	Find the 4 point DFT of the non causal sequence x(n)={-1,2,-3,4}, -2<=n<=1. Find its magnitude and phase response.	5	L3	CO1
b	If x1(n)={1,2,3,4} and X1(k)={10,-2+2j,-2,-2-2j}. Find DFT of x2(n)={1,0,2,0,3,0,4,0}using minimum number of operations. (Hint:Observe even and odd sequence of x2(n), relate it to x1(n))	6	L3	CO1
c	Use overlap save method to find convolution of x(n)=(1,2,0,-3,4,2,-1,1,-2,3,2,1,-3) and h(n)=(1,-1,1) . Use N=5 point circular convolution.	7	L3	CO2
d	Find the 8 point DFT of the sequence x(n)={1,2,3,4,5,4,3,2} using Radix-2 DIF-FFT algorithm.	7	L3	CO2
	PART B			
3 a	Find the circular convolution of two sequences x(n)={1,2,1,2} and h(n)={2,1,2,1} using DFT and IDFT.	7	L3	CO1
b	Find the N point DFT of x(n) = cosh(an)	6	L3	CO1
c	For the sequences g(n)={1,2,3,4} and h(n)={1,1,1,1}. Find the DFT's G(k) and H(k) using single point DFT.	7	L3	CO2
d	Find the number of complex multiplier, complex adder, real multiplier and real adder for N point DFT using direct computation.	5	L3	CO2
	OR			
4 a	For the given 4 point DFT X(k)={10,-2+2j,-2,-2-2j} find its energy.	4	L3	CO1
b	Derive the expression for reconstructing a periodic sequence xp(n) in terms samples of the spectrum X(w)	6	L2	CO1
c	Find the circular convolution of two sequences x(n)={1,2,1,2} and h(n)={2,1,2,1} using radix-2 DIT-FFT algorithm	7	L3	CO2
d	Derive the Inverse Radix-2 DIT-FFT algorithm for N=8. Draw the complete signal flow graph for the same.	8	L2	CO2

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HOD