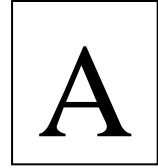Reg.No: [ ][ ][ ][ ][ ][ ][ ]

SNS College of Technology, Coimbatore-35.
(Autonomous)
B.E/B.Tech Internal Assessment - I
Academic Year 2023-2024 (Even)
Fourth Semester
Electronics and Communication Engineering
19ECB212 – Digital Signal Processing

A

Time: 1$^{1/2}$ Hours   **Maximum Marks: 50**
Answer All Questions
PART - A (5 x 2 = 10 Marks)

		CO	Blooms
1.	Build the 2 Point DIT FFT.	CO1	App
2.	If X(K) = {5,3}. Find x(n) of the given sequence.	CO1	Rem
3.	Compare Overlap save and Overlap add method.	CO1	Und
4.	Define IIR Filter and mention its features.	CO2	Rem
5.	Define Bilinear transformation.	CO2	Rem

PART – B (2 x 13 = 26 Marks) (1 x 14 = 14 Marks)

				CO	Blooms
6.	(a)	State and prove the properties of DFT	13	CO1	Und
		(or)			
	(b)	(i) Find the Circular convolution of the given sequences $X_1(n) = \{2,1,2,1\}$ and $X_2(n) = \{1,2,3,4\}$	7	CO1	Rem
		(ii) Find the DFT of the sequence if **x(n) =1, 0 ≤ n ≤ 3**	6		
7.	(a)	Analyze Butterworth digital IIR low pass filter satisfying the following constraints using Bilinear transformation. T = 0.1 Sec $0.6 \leq \left|H(e^{j\omega})\right| \leq 1.0$; for $0 \leq \omega \leq 0.35\pi$ $\left|H(e^{j\omega})\right| \leq 0.1$; for $0.7\pi \leq \omega \leq \pi$	13	CO2	Ana

		(or)			
	(b)	(i) Find H(z) using impulse invariant technique for the analog filter design. H(s)=10/(S^2 + 3S+2) **(T = 0.1sec)** (ii) Find H(z) using bilinear transformation when H(s) = 2/(S+1) (S+2), **T=1 Sec**	7 6	CO2	Rem
8.	(a)	Examine Discrete Fourier Transform for the given sequence x(n)={0,1,2,3,4,5,6,7} using radix-2 DIT - FFT algorithm	14	CO1	Ana
		(or)			
	(b)	(i) Apply circular convolution by using Overlap Save Method if x(n)={1,2,3,4,4,3,2,1} and h(n) ={-1,1} (ii) Solve DFT for the given sequence x(n)={2,1,2,1} using radix-2 DIF - FFT algorithm	7 7	CO1	App App
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Abbreviations:

CO – Course Outcomes; **Rem-** Remembering; **Und –** Understanding; **App –** Applying;
Ana – Analyzing; **E –** Evaluating; **C**- Creating