Code: 5G379

IV B.Tech. I Semester Supplementary Examinations May/June 2022
Digital Signal Processing
(Electrical and Electronics Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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			Marks	CO	Blooms Level

UNIT–I

1. a) Test the following systems for Time Invariant and Stability:
   i) $y(n)=3\{x(n)\}$ ii) $y(n)=x^2(n)+1/x^2(n+1)$ — 4M, 1, L3

   b) Perform linear convolution of given two sequences using DFT: $x(n)=\{2,2,3\}$ and $h(n)=\{2,1\}$ — 10M, 1, L3

OR

2. a) Perform Circular Convolution for following sequences
   if $x_1(n)=\{1,2,3,4\}$ & $x_2(n)=\{2,1,2,1\}$ — 9M, 1, L3

   b) Explain Discrete Fourier Series with properties of Discrete Fourier series. — 5M, 1, L2

UNIT–II

3. a) Why we need FFT over DFT. Explain it with applications in DSP. — 7M, 1, L5

   b) Discuss Linear filtering operation under DFT. — 7M, 1, L2

OR

4. a) Compute 8-point DFT of the sequence $x(n)=\{0,1,2,3,4,5,6,7\}$ using DIT-FFT algorithm. — 7M, 1, L3

   b) Discuss DIF-FFT & DIT-FFT algorithms. — 7M, 1, L2

UNIT–III

5. a) Give brief note about design of digital filters from analog filters. — 7M, 2, L2

   b) Draw SFG & Matrix representation of IInd Order discrete time system. — 7M, 2, L4

OR

6. a) Determine canonic form Realization for following system.
   $Y(n)=-5\,y(n-1)+7\,y(n-2)+x(n)-0.25\,x(n-1)$ — 8M, 2, L3

   b) Explain the phenomenon of analog and digital frequency transformation. — 6M, 2, L2

UNIT–IV

7. a) List out the important properties of linear phase FIR filters. — 7M, 2, L1

   b) What are limitations of FIR filter designing by Fourier series method? — 7M, 2, L1

OR

8. a) Design a Filter if $Hd(e^{jw})= \; e^{-jw} ; \; -\pi/4 \le w \le \pi/4$
                          $0 ; \quad \pi/4 \le w$

   Using rectangular Window for N=5 — 8M, 2, L3

   b) Explain finite word length effects of Digital filters. — 6M, 2, L2

UNIT–V

9. a) Explain about Oversampling A/D conversion in signal processing applications. — 7M, 3, L2

   b) What is need of spectral analysis with their applications? — 7M, 3, L5

OR

10. a) Write Short notes on signal compression technique. — 8M, 3, L1

    b) Draw block diagram of Digital signal processing. — 6M, 3, L3

END

R-15

Code: 5G272

IV B.Tech. I Semester Supplementary Examinations May/June 2022
Distribution of Electric Power
(Electrical and Electronics Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Briefly discuss different types of distribution systems	7M	1	2
	b)	A 2 wires dc distributor cable AB is 2 km long and supplies loads of 100A, 150A, 200A and 50A situated 500m, 1000m, 1600m and 2000m from the feeding point A. Each conductor has a resistance of 0.01 ohm per 1000m. calculate potential difference at each load point if a potential difference of 300V is maintained at point A.	7M	2	3
		OR			
2.		Discuss different types of loads present in distribution system and explain their characteristics?	14M	1	2
		UNIT-II			
3.	a)	Derive the relationship for voltage drop and power loss for uniformly radial type distribution load	7M	2	6
	b)	Explain objectives of distribution system protection in detail	7M	2	2
		OR			
4.	a)	Describe the principle of operation of (i) line sectionalizers (ii) circuit breaker	7M	3	2
	b)	Compare the radial and loop type primary feeders	7M	2	5
		UNIT-III			
5.		Explain different busbar arrangement with neat sketch.	14M	3	2
		OR			
6.	a)	Draw the substation layout by showing the location of all substation equipment and outline each of them	8M	3	4
	b)	Explain the single bus bar arrangement in substation?	6M	2	2
		UNIT-IV			
7.		Briefly write the various methods adopted for voltage control and write the merits and demerits of it	14M	4	2
		OR			
8.	a)	Compare and explain the role of shunt and series capacitors for power factor correction	7M	4	5
	b)	A single phase motor connected to a 230V, 50Hz supply takes 25A at p.f. of 0.7 lag. A capacitor is shunted across the motor terminals to improve the p.f. to 0.9 lag. Determine the capacitance of the capacitor to be used.	7M	4	5
		UNIT-V			
9.		Draw a block diagram and explain for a typical distribution system planning process	14M	5	2
		OR			
10.		What is meant by load forecasting and classify types of load forecasting.	14M	5	1

END