(3 Hours) **[Total Marks : 75**

Section Name: 1

N.B:

1. Attempt any three questions from each section
2. Answers to the two sections must be written in same answer sheet.
3. Figures to the right indicate full marks.
4. Assume additional data if necessary but state the same clearly.
5. Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
6. Use of Simple calculators and statistical tables is allowed.

Section I

1	A	Define twiddle. factor. Also Find .-..	6
		i. IDFT of a sequence { 10,-2+2 j, -2, -2-2j}	
		ii. DFT of a sequence {2,1,1,2}	
	B	Define Z-transform. Assume two finite duration sequences x1(n) and x2(n) are linearly 6 combined. Let x3(n)=a x1(n)+ bx2(n). What is Z-transform of x3(n)? Establish relation between DFT and Z-transform.Explain the relation between the Z-transform and fourier transform	6
2	A	Give advantages and disadvantages of FIR filters. State and explain at least three characteristics of FIR filters	6
	B	Explain in brief the Remez Exchange Algorithm in the design of optimal FIR filter	6
3	A	Explain the Types of Quantization in digital filter. Explain each.	6
	B	Explain the forward difference method for mapping of differential	6
4	A	Draw the 4-point DITFFT butterfly diagram Calculate the DFT of x(n)=[2,1,0,2]	6
	B	Write the short note of the chirp- Z transform algorithm and write its advantage.	6
5	A	Write Short note on Blueinstiens Algorithm	6
	B	Write the short note of decimation in frequency Algorithm	6

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Section II

6	A	Design the eight bit parity tree by generating a logical one for even parity and a logical zero for odd parity	6
	B	What is fan-in and fan out ? Design a system to determine largest of two -3 bit numbers . Assume the number system deals with only positive numbers	7
7	A	Discuss implementation of FIR filter using Booth algorithm.	6
	B	Differentiate between TTL and CMOS logic Family	7
8	A	What are the advantages and disadvantage of FDP structure	6
	B	Write a note on MOS Chip	7
9	A	Explain how real time convolution is carried by FFT using a Single RAM and One Arithmetic Element	6
	B	Explain FFT indexing with respect to bit reversal and digital reversal of fixed indices	7
10	A	Write a note on Radar Application: Air Traffic Control(ATC) Radar System	6
	B	Explain with neat labeled diagram pitch period estimation algorithm. Write a note on Pitch measurements for extreme conditions.	7

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