Code No: RT32042 $\boxed{\text{R13}}$ SET - 1

III B. Tech II Semester Supplementary Examinations, November -2018
DIGITAL SIGNAL PROCESSING
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	Test the given system for time invariance : $y(n) = n\,x(n)$.	[3M]
	b)	State any four properties of DFT	[4M]
	c)	Find the Z-transform of $x(n) = (1/8)^n\ u(n)$ and its ROC.	[4M]
	d)	Draw the direct form structure of $y(n) = \sum_{K=0}^{N-1} h[k]x[n-k]$	[4M]
	e)	What is the significance of Multirate Signal processing? What are the applications	[3M]
	f)	What are the differences between fixed point processors and floating point Processors?	[4M]

PART -B

2	a)	Find the solution to the following linear constant coefficient difference equation with initial conditions $y(-1)=4\ and\ y(-2)=10$ $y(n) - \frac{3}{2}y(n-1) + \frac{1}{2}y(n-2) = \left(\frac{1}{2}\right)^n\ for\ n \geq 0$	[8M]
	b)	Explain the frequency domain representation of Discrete time signals	[8M]
3	a)	Given $x(n) = \{1,2,3,4,4,3,2,1\}$, find $X(k)$ using DIF FFT algorithm.	[8M]
	b)	State and prove time – shifting and time scaling property of DFT.	[8M]
4	a)	Determine the ZT of $x[n] = -na^n\ u\,[-n-1]$.	[8M]
	b)	What are the basic structures of FIR systems? Explain	[8M]
5	a)	What are the effects of windowing? Comparing various windowing techniques.	[8M]
	b)	Design a High Pass FIR filter whose cut-off frequency is 1.2 radians/sec and N = 9 using Hamming Window.	[8M]
6	a)	Derive the frequency domain representation of decimator.	[8M]
	b)	Explain the following terms: i) Up – sampling ii) Down- sampling	[8M]
7	a)	What is MAC? Explain its operation in detail.	[8M]
	b)	Explain about Special addressing modes	[8M]

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