

[M19PS1108]

**I M. Tech I Semester (R19) Regular Examinations  
 ADVANCED DIGITAL SIGNAL PROCESSING  
 Electrical & Electronics' Engineering Department  
 MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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			CO	KL	M
		<b>UNIT-I</b>			
1.	a)	What is multi rate signal processing? Explain any two applications of multi rate signal processing?	1	K2	8M
	b)	Derive the frequency domain transfer function of a decimator.	1	K3	7M
		<b>OR</b>			
2.	a)	Write a brief notes on lattice structures. Mention the advantages of lattice structures	1	K1	8M
	b)	Draw and explain the lattice ladder structure for realization of pole zero system	1	K1	7M
		<b>UNIT-II</b>			
3.	a)	Give a brief acct of poly phase filter structures.	2	K1	7M
	b)	Discuss clearly the process of sampling rate conversion of band pass signals.	2	K2	8M
		<b>OR</b>			
4.		Explain in detail Bilinear transformation method of IIR filter design	2	K2	15M
		<b>UNIT-III</b>			
5.		Discuss abt the computation of the discrete Frier transform with an example	3	K2	15M
		<b>OR</b>			
6.		Explain in detail abt Tunable digital filters	3	K2	15M
		<b>UNIT-IV</b>			
7.	a)	What are the quantization errors in FFT algorithm? Explain them.	4	K2	15M
	b)	Explain abt the errors result that from the truncation and rnding with an example	4	K2	
		<b>OR</b>			
8.		Discuss the procedure for the design of IIR filters and what are the constraints in the design of IIR filters using analog structures	4	K2	15M
		<b>UNIT-V</b>			
9.	a)	What is the basic principle of parametric methods in power spectral estimation? Discuss varis techniques in	5	K2	8M

		parametric method.			
	<b>b)</b>	Derive the mean and variance of the power spectral estimate of the Blackman Tuckey method.	<b>5</b>	<b>K3</b>	<b>7M</b>
		<b>OR</b>			
<b>10.</b>		Determine the mean and the auto correlation of the sequence $x(n)$ generated by the MA(2) process described by the difference equation. $X(n) = w(n) - 2w(n-1) + w(n-2)$ Where $w(n)$ is the white noise process with variance $\sigma^2$ w.	<b>5</b>	<b>K3</b>	<b>15M</b>

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