PVP 22

Code: 22ECMC1T1

I M.Tech - I Semester – Regular Examinations - MARCH - 2023

ADVANCED DIGITAL SIGNAL PROCESSING
(MICROWAVE & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 60

Note: 1. This paper contains 4 questions from 4 units of Syllabus. Each unit carries 15 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	What is multirate signal processing? Explain any two applications of multirate signal processing.	L2	CO1	8 M
	b)	Derive transfer function of a decimator.	L3	CO1	7 M
OR					
2	a)	Explain the frequency domain description of an Interpolator.	L2	CO1	7 M
	b)	A signal x(n) is given by x(n) = {0,1,2,3,4,5,6,0,1,2,3….} (i) Obtain the decimated signal with a factor of 2. (ii) Obtain the interpolated signal with a factor of 2.	L3	CO1	8 M

UNIT-II					
3	a)	Illustrate the process of sampling rate conversion of band pass signals.	L3	CO2	8 M
	b)	Explain Filter characteristics for Subband Coding of Speech Signals.	L2	CO2	7 M
OR					
4	a)	Explain block diagram of FDM to TDM transmultiplexer.	L2	CO2	8 M
	b)	Illustrate Implementation of Narrowband Low pass Filters.	L3	CO2	7 M
UNIT-III					
5	a)	Illustrate Schur Algorithm with examples.	L3	CO3	8 M
	b)	Explain the process of backward linear prediction.	L2	CO3	7 M
OR					
6	a)	Explain Maximum phase property of the forward prediction error filter.	L2	CO3	8 M
	b)	Determine optimum reflection coefficients for the Lattice Forward Predictors.	L3	CO3	7 M
UNIT-IV					
7	a)	What is the basic principle of parametric methods in power spectral estimation? Discuss various techniques in parametric method.	L2	CO4	7 M
	b)	Illustrate Bartlett method of power spectrum estimation.	L3	CO4	8 M

OR					
8	a)	Obtain the relation between model parameters and the Auto Correlation coefficients in AR model spectral estimation.	L3	CO4	8 M
	b)	Compare Parametric and Non-Parametric methods of spectral estimation.	L4	CO4	7 M