

SUBJECT CODE:94
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E. (ECT/E&C) Examination Nov/Dec 2015
Applied Digital Signal Processing
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B
- i) Q.1 & 6 are compulsory
 - ii) Solve any two questions from Q.2 to Q.5
 - iii) Solve any two questions from Q.7 to Q.10
 - iv) Assume suitable data, if necessary.

SECTION-A

- Q1. Attempt any two from the following 10
- i) What is interpolation? Why is an anti-imaging filter required
 - ii) Explain in brief characteristic of polyphase filters?
 - iii) Discuss regarding the main limitation of LMS filters.
 - iv) Explain in brief why is the AR model widely used?
- Q.2 a) Consider the discrete time signal, 08
- $X(n) = \{1, 2, 3, 4\}$
- Determine the up sampled version of the signals for the sampling rate multiplication factor,
- i) $I=2$ ii) $I=3$
- b) Draw and explain the polyphase structure of a decimator. 07
- Q.3 a) Explain in detail adaptive equalization. 07
- b) Explain in detail the RLS algorithm. 08
- Q.4 a) Explain the significance of backward Linear prediction. 07
- b) Write in detail autoregressive and moving average process. 08
- Q.5 Write a short notes on (any three) 15
- i) QMF bank
 - ii) LMS algorithm
 - iii) ARMA model
 - iv) Lattice structures

SECTION-B

Q.6	Attempt any two from the following	10
	i) What is known as a power spectrum? What are the two major classes of power spectral estimation techniques of random process?	
	ii) What is known as a periodogram? How is power spectrum estimated in non-parametric methods?	
	iii) Discuss the various special hardware requirements of digital signal processors.	
	iv) What is the difference between fixed point and floating point representations?	
Q.7	a) Give the estimate of autocorrelation function and power density for random signal	08
	b) Explain the welch method of power spectrum estimation	07
Q.8	a) Draw the simplified architecture of TMS 320 CS4XX processors & explain.	08
	b) What is architecture used by SHARC processor? Explain the characteristics of SHARC processor.	07
Q.9	a) Explain application of DSP in image processing.	07
	b) Explain applications of multirate signal processing	08
Q.10	Write short notes on(any three)	15
	i) Bartlett method of power spectrum estimation	
	ii) Selection criteria of DSP processors.	
	iii) Application of DSP in audio system	
	iv) DT random signals.	