Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

OCTOBER 2018

Max. Marks: 20 Duration:60 Min

Class: M.Tech. Semester: I

Date:8 October 2018

Course Code: ET911 Branch: Electronics and Telecommunication

Name of the Course: Advanced Digital Signal Processing

Instruction:

(1) All Questions are compulsory

(2) Draw neat diagrams

(3) Assume suitable data if necessary

Q No.		Max. Marks	CO
Q.1 (a)	Explain Signal modeling Least Squares method.State its Applications	6	CO1
Q.1 (b)	Explain Weiner Khitchine relation and Power spectral density.	4	CO1
	OR		
	Explain Spectral Factorization Theorem .	4	CO1
Q.2 (a)	Design a single stage and two stage decimator given the following specification.Which is better and why. D=50 for single stage and D_1=25 and D_2=2 for two stage. Speech signal of bandwidth 4 KHz ,sampled at a rate of 8 KHz. LPF whose passband ranges between $0 \leq F \leq 75$ and a transistion band ranges between $75 \leq F \leq 80$, passband ripple 10^{-2} and stopband ripple 10^{-4}.	6	CO3
	OR		
	Design a single stage and two stage interpolator given the following specification.Which is better and why. I=50 for single stage and I_1=2 and I_2=25 for two stage. Speech signal of bandwidth 4KHz,sampled at a rate of 8KHz. LPF whose passband ranges between $0 \leq F \leq 75$ and a transistion band ranges between $75 \leq F \leq 80$, passband ripple 10^{-2} and stopband ripple 10^{-4}.	6	CO3
Q.2 (b)	Construct a 4 stage subband encoder for a audio signal sampled at a rate of 32 KHz, sketch the spectrum at output of each stage.	4	CO3