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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
07 THRISSUR CLUSTER

THIRD SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017

Electronics & Communication Engineering
Communication Engineering & Signal Processing

07EC6207 ADVANCED DIGITAL SIGNAL PROCESSING

Time : 3 hours

Max.Marks: 60

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no.	Module 1	Marks
1a	Explain Park McClellan's algorithm	4
	Answer b or c	
b	Explain commonly used windows for FIR filter design	5
c	Design a Chebyshev filter satisfying given constraints using bilinear transformation	5
	$0.8 \leq H(e^{j\omega}) \leq 1$ for $0 \leq \omega \leq 0.2\pi$ $ H(e^{j\omega}) \leq 0.2$ for $0.6\pi \leq \omega \leq \pi$	
Q.no.	Module 2	Marks
2a	Explain polyphase implementation of decimation filter	4
	Answer b or c	
b	Write a note on identities of multirate operation	5
c	Explain polyphase representation of uniform filter banks	5
Q.no.	Module 3	Marks
3a	Derive optimum filter design for forward linear predictor	4

Answer b or c

- b** Determine lattice coefficients corresponding to FIR filter with system function
.
$$H(Z) = 1 + (13/24)Z^{-1} + (5/8)Z^{-2} + (1/3)Z^{-3}$$
5
- c** Explain direct form and lattice form realizations of backward linear predictor **5**

Q.no.	Module 4	Marks
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| 4a | Obtain the expression for reflection coefficients using Schur algorithm | 4 |
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Answer b or c

- b** Derive recursive equations to find prediction error filter coefficients by Levinson Durbin algorithm. **5**
- c** Explain the properties of linear prediction error filter **5**

Q.no.	Module 5	Marks
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| 5a | Compare performance characteristics of different power spectrum estimate | 5 |
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Answer b or c

- b** Describe Blackman and Turkey method in detail. **7**
- c** Explain Welch method for estimating power spectrum **7**

Q.no.	Module 6	Marks
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| 6a | Describe Burg method of AR model parameter estimation | 5 |
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Answer b or c

- b** Explain ARMA model for power spectrum estimation **7**
- c** Write a note on MA model in detail **7**