Code: 13A04801 **R13**

B.Tech IV Year II Semester (R13) Regular Examinations April 2017

ADAPTIVE SIGNAL PROCESSING

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Find the Eigen values of the matrix $A = \begin{bmatrix} 3 & 0 & 0 \\ 5 & 4 & 0 \\ 3 & 6 & 1 \end{bmatrix}$.

(b) Differentiate the open and closed loop adaption.

(c) List the properties of wiener filter.

(d) What are the advantages of kalman filter?

(e) Summarize any two applications of LMS filters.

(f) Write the expression for minimum sum of error squares.

(g) Infer any two points related to convergence behavior of RLS algorithm.

(h) Explain the approaches used in design of order recursive adaptive filters.

(i) State any two applications of SVD method.

(j) What are the practical considerations in blind deconvolution?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Define adaptive system and explain with an example.

(b) Discuss application areas of an adaptive system.

OR

3 How the Gradient operator helps to minimize the mean square error, explain with an example?

UNIT – II

4 Explain briefly the Levinson-Durbin algorithm and its applications.

OR

5 (a) Define and explain minimum mean square error for optimum filter.

(b) Summarize the extended kalman filter algorithm.

UNIT – III

6 (a) Explain the principle operation of LMS algorithm.

(b) Explain the properties of time average correlation matrix.

OR

7 (a) Explain briefly basic idea of the steepest descent algorithm.

(b) Compare the LMS algorithm with steepest descent algorithm.

UNIT – IV

8 (a) Draw and explain the block diagram and signal flow graph of the RLS algorithm.

(b) Discuss the simulation model for adaptive equalizer with neat diagram.

OR

9 Summarize the concept of QR-decomposition least squares lattice filtering with its properties.

UNIT – V

10 (a) State and explain various approaches to blind deconvolution.

(b) Discuss the Sato algorithm.

OR

11 Interpret the concept of Bus Gang algorithm in blind equalization and explain how to solve blind equalization in the channel.