SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year I Semester Regular & Supplementary Examinations February 2018
ADAPTIVE SIGNAL PROCESSING
(DECS)

Time: 3 hours   Max. Marks:60

(Answer all Five Units **5 X 12 =60** Marks)

UNIT-I

1	a.	Discuss the Eigen value problem.	6M
	b.	Explain the principle of operation of an Eigen filters.	6M

OR

2	a.	Define an adaptive system. List out its various characteristics.	8M
	b.	Write about the gradient and minimum mean-square error.	4M

UNIT-II

3	a.	Explain the linear optimum filtering.	6M
	b.	Explain stability and rate of convergence.	6M

OR

4	a.	Derive an expression for Wiener-Hopf equations.	6M
	b.	Write about the gradient search algorithm and its solution.	6M

UNIT-III

5	a.	Write short note on gradient search by Newton's method.	6M
	b.	Explain the method of steepest descent algorithm.	6M

OR

6	a.	With the help of neat block diagram, Explain LMS algorithm.	6M
	b.	Draw the block diagram for adaptive noise canceller and explain its working operation.	6M

UNIT-IV

7	a.	Explain exponentially weighted RLS algorithm.	8M
	b.	What is matrix inversion lemma and explain it?	4M

OR

8	a.	Explain how RLS algorithm is used in adaptive equalization.	8M
	b.	Write comparison between LMS and RLS algorithms.	4M

UNIT-V

9	a.	With a neat diagram explain the statement of Kalman filtering problem..	6M
	b.	Explain how Kalman gain vector is computed in LMS algorithm.	6M

OR

10	a.	Discuss about the recursive mean square estimation for random variables.	6M
	b.	List out the real applications of the Kalman filter and compare with wiener filter.	6M

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