B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

June, 2015

00281

BIEEE-015 : STOCHASTIC CONTROL SYSTEMS

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **five** questions. Each question carries equal marks.*

1. (a) What is a random process ? Explain about Statistical Gaussian Distribution.   2+5=7

   (b) What is Gauss-Markov sequence model ? How is it different from Gauss-Markov process model ?   7

2. What is the difference between estimation and prediction ? Name various techniques used to do the estimation. Explain any one of them in detail.   4+2+8=14

3. (a) Explain the difference between linear and discrete linear systems, with suitable examples.   7

   (b) Explain the method used for optimal filtering for discrete linear system.   7

4. (a) Explain Optimal-Fixed-Lag-Smoothing. 7

(b) Explain single stage and double stage optimal smoothing. 7

5. Explain Kalman filtering with the help of a block diagram. Discuss its functioning, design and control. *14*

6. (a) Describe stochastic optimal control for a discrete linear system. 7

(b) Discuss discrete filtering in optimal control systems. Explain a special case of discrete filtering by expressions. 7

7. Write short notes on any *two* of the following : *2×7=14*

(a) Wiener filters

(b) Time correlated disturbances and measurement errors

(c) The stochastic linear regulator problem