Code: 15A04304

R15

B.Tech II Year I Semester (R15) Supplementary Examinations June 2018

PROBABILITY THEORY & STOCHASTIC PROCESSES

(Electronics & 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) What are the different types of sample spaces?
(b) Define Poisson random variable.
(c) Define central limit theorem.
(d) What is linear transformation of random variable?
(e) What is mean ergodic processes?
(f) Define covariance of two random variables.
(g) What is power spectrum density?
(h) Define cross correlation function of two variables.
(i) Define convolution.
(j) Define cross power density spectrum.

PART – B

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

UNIT – I

2 Discuss in detail about the conditional probability with example

OR

3 The number of calls received in a telephone exchange follows a Poisson distribution with an average of 10 calls per minute. What is the probability that in one-minute duration? (i) No call is received. (ii) Exactly 5 calls are received. (iii) More than 3 calls are received.

UNIT – II

4 State and prove any four properties of joint distribution function.

OR

5 Discuss briefly about the linear transformations of random variables.

UNIT – III

6 Explain in detail the wide sense stationary process with necessary expressions.

OR

7 Discuss in detail the deterministic and nondeterministic random processes.

UNIT – IV

8 State and prove the properties of cross power density spectrum.

OR

9 Discuss in detail the relationship between power spectrum and autocorrelation function with necessary expressions.

UNIT – V

10 Explain in detail the cross correlation functions of input and the output of a LTI systems.

OR

11 Explain the properties of power spectral density.

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