

Code No: D4308, D5405

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II - SEMESTER EXAMINATIONS, APRIL/MAY 2012

RELIABILITY ENGINEERING

(COMMON TO POWER ELECTRONICS, POWER ELECTRONICS & ELECTRIC DRIVES)

Time: 3hours

Max. Marks: 60

Answer any five questions
All questions carry equal marks

- - -

- 1.a) Distinguish between continuous and discrete random variable, with examples.
- b) Define the terms probability density and probability distribution function.

2. Derive expression for mean and standard deviation of Binomial Distribution.

3. Derive a general expression for unreliability of the system shown below, and evaluate the unreliability of the system for the component reliabilities shown in the fig 1.

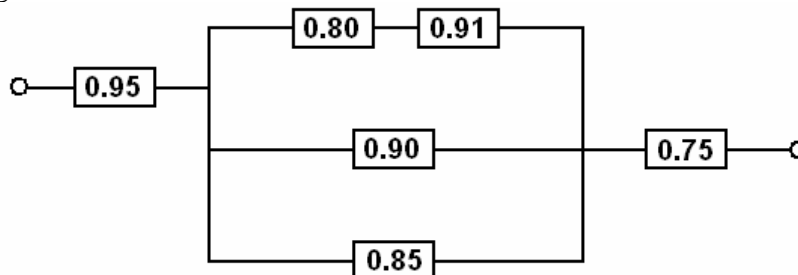


Figure 1

4. Derive an expression for the reliability of the system shown below in Figure 2. Calculate the system reliability if all the individual components have a reliability of 0.9.

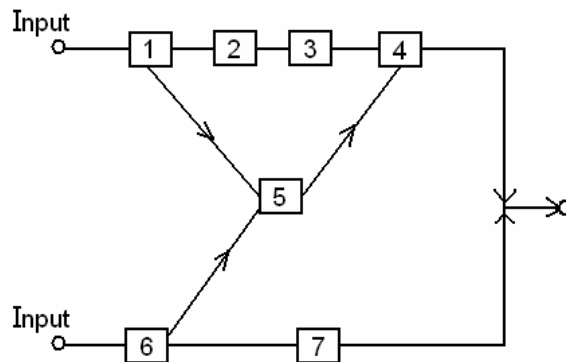


Figure 2

- 5.a) Explain Markov process for reliability evaluation of repairable system.
- b) Give state space diagrams of two component system with adequate repair facility.

- 6.a) Explain conditional probability approach of reliability evaluation of complex system.
- b) Explain cut set method of reliability evaluation of non-series parallel system.

7. For the three system shown below in Figure 3. Evaluate
- The limiting state probability
 - Time dependent probability after three time intervals

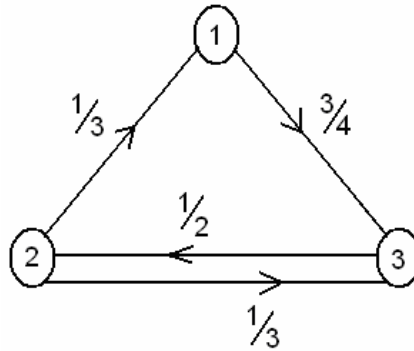


Figure 3

8. Write short notes on
- The normal distribution
 - Stochastic transitional probability matrix
 - Bath-tub curve.
