

Answer any five questions
All questions carry equal marks

- 1.a) Discuss normal distribution and exponential distributions.
- b) A die is thrown 6 times. Evaluate the probability of getting 2 spots on the upper face 0, 1, 2,.....6 times and draw the probability mass function and probability distribution function. [9+6]
- 2.a) Derive an expression for Expected value of Binomial Distribution.
- b) Draw and explain Bathtub curve with an example. [8+7]
- 3.a) Derive the expression for reliability evaluation of parallel systems.
- b) Explain conditional probability method for reliability evaluation of non-series-parallel systems. [8+7]
- 4.a) Discuss the concept of Event tree and Reduced Event Tree with an example.
- b) A bridge Network is shown in figure 1. Calculate the system reliability if each component has a reliability of a 0.9 value, using minimal tie set method. [7+8]

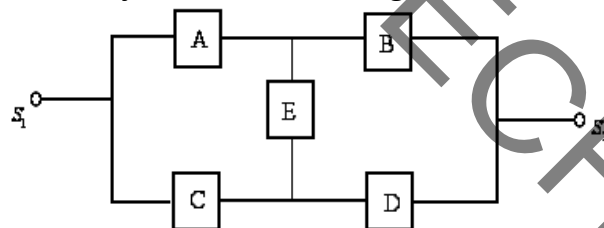


Figure 1

5. Derive the expression for reliability and unreliability of n-component series system in terms of hazard rates. [15]
6. Derive the expression for MTTF of a 2-component parallel system. [15]
- 7.a) Find the stochastic transitional probability matrix of a discrete system shown in Figure 2.

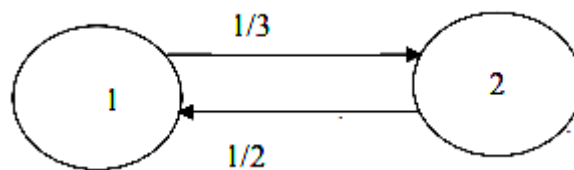


Figure 2

- b) Write the procedure to evaluate the limiting state probability matrix. [8+7]
8. Derive expressions for failure rate, repair time and Unavailability of two component series system. [15]

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