

Code No: C7508

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**  
**M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012**  
**RELIABILITY ENGINEERING**  
**(CONTROL SYSTEMS)**

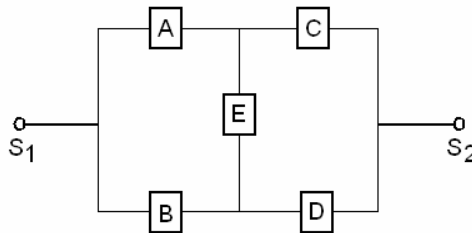
Time: 3hours

Max. Marks: 60

Answer any five questions  
All questions carry equal marks

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- 1.a) Explain with examples, probability density function and probability distribution function.
- b) Justify the use of exponential distribution in reliability evaluation of non-repairable system.
  
- 2.a) Explain the concept of hazard rate with examples.
- b) Derive the expression for reliability in terms of hazard rate.
  
- 3.a) With a neat sketch explain various regions of Bath-Tub-Curve.
- b) Explain the effective of preventive maintenance on reliability.
  
- 4.a) Derive the expression for reliability evaluation of series and parallel systems.
- b) Explain conditional probability method for reliability evaluation of non-series-parallel systems.
  
- 5.a) What do you mean by minimal tie-set?
- b) For the given network obtain reliability expression using minimal tie-sets.



- 6.a) Explain Markov process for reliability evaluation of repairable systems.
- b) How absorbing states are useful in reliability evaluation?
  
- 7.a) Define MTTF and MTBF.
- b) Obtain state space diagram for a two component system with condition that simultaneous failures does not occur.
  
8. Write short notes on:
  - a) Continuous and discrete random variables.
  - b) Limiting state probability.

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