Code No: RR411501 **Set No.1**

IV B.Tech. I Semester Regular Examinations, November -2005
PERFORMANCE EVALUATION OF COMPUTER SYSTEMS
(Computer Science & Systems Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain weiball distribution. Draw graph for the failure rate of weibull distribution with various values of α and λ= 1. Explain.
   (b) The lie time x in hours of a component is modeled by a weibull distribution with α =2. Starting with a large number of components, it is observed that 15% the components that have lasted 90 hours fail before 100 hours. Determine the parameter λ. [10+6]
2. (a) State and prove the linearity property of expectation.
   (b) Prove E[xy] = E[x] E[y]. [8+8]
3. (a) Explain the notation F_y/F_x/m to describe the queuing system with examples.
   (b) Define and explain renewal counting process. [8+8]
4. (a) Define Markov chain. Distinguish between discrete parameter Markov chain and continuous parameter Markov chain.
   (b) Derive stochastic matrix for one step transition probabilities. [8+8]
5. (a) Explain the difference between open queue network and closed queue network.
   (b) Define Jackson technique. Draw the open network with feed back final out its equalant network without feedback and also draw the state diagram. [8+8]
6. (a) Differentiate array and associate processors.
   (b) Based on space how array processors are classified. Explain with examples. [8+8]
7. Draw the system architecture of the MPP system and explain. [16]
8. (a) Explain the major architectural characteristics of multi processors.
   (b) Explain the architectural of the C mmp. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR411501 **Set No.2**

IV B.Tech. I Semester Regular Examinations, November -2005
PERFORMANCE EVALUATION OF COMPUTER SYSTEMS
(Computer Science & Systems Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Define CDF of a continuous random variable x. Explain its properties.
   (b) The time (measured in years) x, required to complete a software project has a pdf of the random $f_x(x) = \begin{cases} kx\ (1-x) & 0 \leq x \leq \\ 0 & other\ wise \end{cases}$ find the value of k and the probability that the project will be completed less than 4 months. [8+8]

2. (a) Define expectation of a random variable x and explain.
   (b) Let x be a continuous random variable with an exponential density given by: f(x) = $\lambda.e^{-\lambda x}$ x > 0. [8+8]

3. (a) Define stochastic processes and explain classification of stochastic process.
   (b) Define and explain strictly stationary process. [8+8]

4. (a) Define Markov chain. Distinguish between discrete parameter Markov chain and continuous parameter Markov chain.
   (b) Derive stochastic matrix for one step transition probabilities. [8+8]

5. (a) Draw and explain the state diagram the two stage tandem network.
   (b) A repair facility shared by a large number of machines has two sequential stations with respective rates one per hour and two per hour. The cumulative failure rate of all the machines is 0.5 per hour. Assume the system behavior may be approximated by the two stage tandem queue. Determine the average repair time. [8+8]

6. Explain BSP prime memory system. [16]

7. Define skewing degree. Explain skewed memory allocation scheme for the prime memory. [16]

8. (a) Explain the architecture of IBM 3033 system.
   (b) Compare IBM 370/168 Uniprocessor, AP, MP systems. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR411501 **Set No.3**

IV B.Tech. I Semester Regular Examinations, November -2005
PERFORMANCE EVALUATION OF COMPUTER SYSTEMS
(Computer Science & Systems Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) State the theorem of total probability. Explain.
   (b) Explain Baye's rule.
   (c) A packet takes either link L_1 or L_2 with probabilities P_1, P_2. The links have it error probabilities b_1 and b_2. What is the probability of transferring good packet.

   [4+4+8]

2. (a) Prove that the MTTF of a series system is much smaller than the MTTF of its components.
   (b) Discuss MTTF of a parallel redundant system. [8+8]

3. (a) Define stochastic processes and explain classification of stochastic process.
   (b) Define and explain strictly stationary process. [8+8]

4. Draw the state diagram of the discrete parameter birth – death process and compute the steady state probability vector V. [16]

5. (a) Explain the difference between open queue network and closed queue network.
   (b) Define Jackson technique. Draw the open network with feed back final out its equalant network without feedback and also draw the state diagram. [8+8]

6. (a) Draw the block diagram of unger spatial computer explain its concept.
   (b) Explain vector arithmetic multi processor. [8+8]

7. (a) Derive efficiency ϕ of an array processor.
   (b) Draw the multiple SIMD computer organization and explain. [8+8]

8. (a) Explain Routing mechanism in HEP.
   (b) Explain in detail how protection mechanism is implemented in HEP. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR411501 **Set No.4**

IV B.Tech. I Semester Regular Examinations, November -2005
PERFORMANCE EVALUATION OF COMPUTER SYSTEMS
(Computer Science & Systems Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Define Geometric distribution. Find PGF of Geometric distribution.
   (b) Define modified Geometric distribution. Find PGF of modified Geometric distribution.

   [8+8]

2. (a) State and prove the linearity property of expectation.
   (b) Prove E[xy] = E[x] E[y]. [8+8]

3. (a) Find out variance and MGF of Bernoulli process.
   (b) Find out variance and MGF of Binomial process. [8+8]

4. (a) Define Markov chain. Distinguish between discrete parameter Markov chain and continuous parameter Markov chain.
   (b) Derive stochastic matrix for one step transition probabilities. [8+8]

5. (a) Explain the difference between open queue network and closed queue network.
   (b) Define Jackson technique. Draw the open network with feed back final out its equalant network without feedback and also draw the state diagram. [8+8]

6. (a) Explain Illiac IV I/o system.
   (b) Explain Illiac IV routing network. [8+8]

7. Draw the functional Scheme of PE in MPP explain each component. [16]

8. (a) Explain Routing mechanism in HEP.
   (b) Explain in detail how protection mechanism is implemented in HEP. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆