First Semester M.Tech. Degree Examination, December 2011
Computer Systems Performance Analysis

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Why performance evaluation is considered an art? Justify.   (03 Marks)

   b. The measured performance of two database systems on two different workloads is shown below. Compare the performance of the two systems using ratio games and show
      i) System A is better
      ii) System B is better
      iii) System A is equal to the system B.   (05 Marks)

System	Workload 1	Workload 2
A	30	10
B	10	30

   c. Consider the problem of comparing remote pipes with remote procedure calls. Briefly describe the system and list services, metrics, system parameters, workload parameters, factors and their ranges evaluation techniques and work load.   (12 Marks)

2 a. Mention the check list for avoiding common mistakes in performance evaluation.   (10 Marks)

   b. List and explain the criteria for selecting an evaluation technique.   (10 Marks)

3 a. Consider the problem of comparing two different congestion control algorithms for a computer network. List the outcomes and based on the outcomes, list the time – rate – resource metrics.   (10 Marks)

   b. Considering the problem of comparing a high speed LAN system, set the performance requirements, using the SMART principle.   (10 Marks)

4 a. List and implement the sieve Kernel to generate prime numbers from 1 to n using 'C' programming language.   (10 Marks)

   b. List the four major considerations selecting the workload. Discuss in detail, services exercised and representativeness.   (10 Marks)

5 a. Give the steps for spanning tree algorithm. Using the same, prepare the dendrogram for the given data. Interpret the result of your analysis.   (10 Marks)

Program	CPU time	Disk I/O
A	2	4
B	3	5
C	1	6
D	4	3
E	5	2

   b. Compare and contrast the hardware and software monitors.   (10 Marks)

6 a. Discuss the issues in designing a program execution monitor.   (10 Marks)

   b. With a block diagram, explain the process of capacity planning.   (10 Marks)

7 a. List three variants of experimental design. Explain the full factorial design.   (10 Marks)

   b. Describe the different types of stochastic processes used in queuing theory.   (10 Marks)

8 a. A monitor on a disk driver showed that the average time to satisfy an I/O request was 100 millisconds. The I/O rate was about 100 requests per second. What is the mean number of requests at the disk server?   (05 Marks)

   b. Give the criteria for BCMP networks.   (05 Marks)

   c. List the steps for mean value analysis.   (05 Marks)

   d. List the steps in Chandy – Herzog – Woo theorem.   (05 Marks)

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