Code : 1P2B32

R-11

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

MCA III Semester Supplementary Examinations April/May – 2013

Computer Communications

Max. Marks: 60 **Time: 03 Hours**

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Answer *any five* questions
All Questions carry equal marks (12 Marks each)

1.		Discuss about the different types of Computer Networks in detail.	12M
2.	a.	What is Multiplexing? Explain Synchronous Time Division Multiplexing.	6M
	b.	Describe about Circuit – Switch Networks.	6M
3.		How does Hamming Code work to correct errors, explain with suitable example.	12M
4.		Discuss about	
		a. Pure ALOHA	6M
		b. Manchester Encoding.	6M
5.		Write a detail notes on Distance Vector Routing Algorithm.	12M
6.		Explain the following	
		a. Tunneling	6M
		b. Internetwork Routing	6M
7.		Write short notes on	
		a. CDMA	6M
		b. IP Subnet	6M
8.	a.	Describe about Kerberos Authentication Protocol	6M
	b.	Discuss about PGP	6M

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

MCA III Semester Supplementary Examinations April/May – 2013

Database Management Systems

Max. Marks: 60 **Time: 03 Hours**

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Answer *any five* questions
All Questions carry equal marks (12 Marks each)

1.	a.	Explain the purpose of Data base Systems?	6M
	b.	Explain various data models of DBMs?	6M
2.	a.	What is Entity Relationship model? Draw an E-R Model for a Banking System?	8M
	b.	Discuss about Keys?	4M
3.	a.	Distinguish between Tuple Relational Calculus and Domain Relational Calculus?	6M
	b.	Discuss about QBE?	6M
4.	a.	What do you mean by a Query? Explain Structured Query Language in brief?	6M
	b.	Explain the importance of sub Queries and Nested Queries?	6M
5.	a.	What is Normalization? Distinguish about 3NF and BCNF in detail	8M
	b.	Explain 4NF with an Example.	4M
6.	a.	What is Hashing? Explain about Dynamic Hashing with an Example?	8M
	b.	Give a brief note on Bitmap indices?	4M
7.	a.	What do you mean by Serializabilty ? Explain about conflict Serializabilty?	6M
	b.	Explain about Multiple Granularity?	6M
8.	a.	Explain about Buffer Management	6M
	b.	Explain about Log Based recovery	6M

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

MCA III Semester Supplementary Examinations April/May – 2013

Design and Analysis of Algorithms

Max. Marks: 60 **Time: 03 Hours**

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Answer *any five* questions
All Questions carry equal marks (12 Marks each)

1. a. Define time complexity. Describe different notations used to represent these complexities.
   b. Derive the function $f(n)= 11n^2+5n$ is $0(n^3)$ and $w(n)$.
2. a. If K is a non-negative constant then show that the solution to given recurrence equation for n, a power of 2 is $T(n) = 5Kn^{\log 3}-4Kn$

   $T(n) = K$ where $n = 1$ $= 5T(n/2) + Kn$ where $n > 1$
   b. Design Divide and conquer algorithm for computing the number of levels in a binary tree.
3. a. Differentiate the depth first search and breadth first search traversals.
   b. Explain insertion sort algorithm with an example.
4. a. What is the principle difference between dynamic programming and Divide and conquer technique.
   b. Show that the time complexity of TSP is $O(n^2 2^n)$ and space complexity is $O(n2^n)$.
   c. List the applications of Travelling Sales Person problem.
5. Compute a minimum cost spanning tree for the graph using as shown in figure 1

   a) Prims algorithm b) Kruskals algorithm.

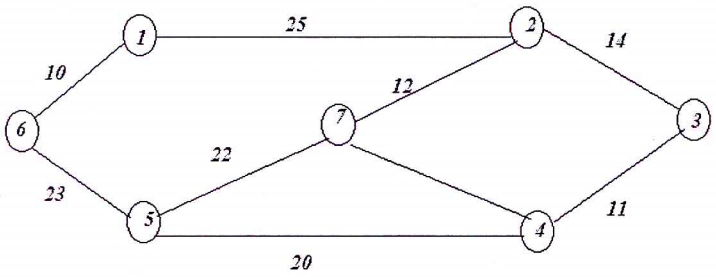

Figure-1

6. Enumerate and solve the following problems using Backtracking

   a) 8-Queens problem b) Hamiltonian circuit problem.
7. a. Write FIFOBB algorithm for the 0/1 knapsack problem.
   b. Explain the general method of Branch and Bound.
8. a. Show that the job sequencing with deadlines problem is NP-hard.
   b. Show that optimal code generation is NP-hard for leaf days on an infinite register machine.

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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MCA III Semester Supplementary Examinations April/May – 2013

Network Programming

Max. Marks: 60 **Time: 03 Hours**

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Answer *any five* questions
All Questions carry equal marks (12 Marks each)

1. a. What do you mean by POSIX standard? Explain in detail. 6M
   b. What do you mean Filters? Explain grep and egrep with example. 6M
2. a. Write a shell program to count the vowel and consonant in a given string. 6M
   b. Explain pipes and tee with example. 6M
3. a. Explain the following directory management system calls 6M
      i) opendir
      ii) closedir
      iii) telldir
   b. Explain any three system calls for file processing. 6M
4. a. Explain the Environment of a Process in detail. 6M
   b. Explain setrlimit and getrlimit functions in detail. 6M
5. a. What do you mean by controlling terminal? Explain in detail. 6M
   b. Explain the difference between wait, waitpid and waitid functions. 6M
6. a. Explain the different types of signals in detail. 6M
   b. Explain Kill and alarm function with example. 6M
7. a. Explain the different ways of interprocess communication. 6M
   b. Explain Message Queues and Shared Memory in detail. 6M
8. a. What do you mean by Non blocking and asynchronous I/O. 6M
   b. Explain the concept of Out-of-band data. 6M

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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MCA III Semester Supplementary Examinations April/May – 2013

Operating Systems

Max. Marks: 60 **Time: 03 Hours**

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Answer *any five* questions
All Questions carry equal marks (12 Marks each)

1.	a.	What is the difference between system calls and system programs? What are the different types of system calls?	8M
	b.	How Distributed system is different from normal operating system?	4M
2.	a.	Give the format of process control block. With the help of a diagram explain the different process states.	7M
	b.	What are the different types of schedulers? How do you evaluate the scheduling algorithms?	5M
3.	a.	Define critical section. What is the significance of it?	3M
	b.	How monitors can be used for process synchronization.	9M
4.	a.	What is contiguous memory? Why swapping is required.	2M
	b.	How paging can be used for memory management.	10M
5.	a.	How Free space is managed.	5M
	b.	How Directory is implemented.	7M
6.		Explain the different RAID levels.	12M
7.	a.	What are the necessary conditions for Deadlock?	5M
	b.	With the help of an example, explain the working of Bankers algorithm.	7M
8.	a.	What are the goals of protection? How access matrix can be used to achieve protection.	8M
	b.	How access rights are revoked.	4M

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