

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

MCA III Semester Regular Examinations November/December 2012

Java Programming

Max. Marks: 60

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (12 Marks each)

1. a. Explain briefly the key concepts of object oriented programming? 6M
b. What is recursion? Explain with suitable example? 6M
2. a. Explain polymorphism with suitable example? 6M
b. Compare and contrast overloading and overriding? 6M
3. a. What is a package? Explain access control mechanism implementation in packages? 6M
b. Differentiate Interfaces and Classes? Explain the implementation of Abstract class with example? 6M
4. a. What is Exception? How to create a user defined exception? 6M
b. Describe the Thread life cycle? 6M
5. a. Explain about Delegation Event Model? 6M
b. Explain the Button Class with suitable example? 6M
6. a. Write a program to read and write the contents of one file to another file? 6M
b. Explain about Enumeration with suitable example? 6M
7. a. Differentiate the Applets and Applications? 6M
b. Explain briefly the life cycle of Applets? 6M
8. a. Define a Socket? How a client and server interact with each other using socket? 6M
b. Explain briefly about java.net package? 6M

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Network Programming

Max. Marks: 60

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (12 Marks each)

1. a. What do you mean by process? How to execute the process in background? Explain in detail. 6M
- b. Explain the following command in detail with examples. 6M
 - i. mv ii. time iii. grep iv. cut v. tr vi od
2. a. What do you mean by command substitution and parameter substitution? 6M
- b. Write a shell program to check whether the given string is palindrome or not. 6M
3. a. Explain any three system calls for directory management. 6M
- b. Explain the following system calls for file processing 6M
 - i) chmod
 - ii) chown
 - iii) dup
4. a. What do you mean by process? Explain the Linux/UNIX Kernel support for processes. 6M
- b. Explain the setjmp and longjmp functions in detail. 6M
5. a. Explain the difference between fork and vfork function. 6M
- b. Explain the difference between Process Groups and Sessions. 6M
6. a. What do you mean by signal? Explain in detail. 6M
- b. Explain signal mask in detail. 6M
7. a. What do you mean by Inter process Communication? Explain in detail. 6M
- b. Explain the concept of Semaphore in detail. 6M
8. a. What do you mean by Socket Descriptors? Explain with suitable example. 6M
- b. Explain blocking and asynchronous I/O. 6M

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**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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Operating Systems

Max. Marks: 60

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (12 Marks each)

1. a. How Batch processing systems are different from current multi programmed, Time sharing systems. 6M
- b. Explain the features of Real-time operating systems. 6M
2. a. What are the differences between a process and a thread? 4M
- b. Explain the working of Round robin scheduling algorithm. 8M
3. a. What is the need for process synchronization? How synchronization is achieved using semaphore. 8M
- b. Define semaphore. What are the different types of semaphores? 4M
4. a. What is Virtual memory? What is the need for demand paging? 3M
- b. With the help of an example, explain the working of optimal page replacement algorithm. 9M
5. a. What are the different file types supported by an operating system. 4M
- b. What are the different file access methods? 8M
6. a. What is stable storage? How it is implemented. 5M
- b. Explain any one Disk scheduling algorithm. 7M
7. a. What are the reasons for Deadlock to occur? What are the problems with monitoring for Deadlock? 6M
- b. What are the techniques for recovering from Deadlocks? 6M
8. a. What are the different kinds of network threats? 5M
- b. How firewalls can be used to protect the network. 7M

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**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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***MCA III Semester Regular Examinations November/December 2012
Computer Communications***

Max. Marks: 60

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (12 Marks each)

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|----|---|-----|
| 1. | Discuss about the TCP/IP Reference Model. | 12M |
| 2. | a. What is Multiplexing? Explain Synchronous Time Division Multiplexing. | 6M |
| | b. Describe about Circuit – Switch Networks. | 6M |
| 3. | Write a detail notes on Error Detection and Correction in Data Link Layer | 12M |
| 4. | Discuss about | |
| | a. CSMA/CD | 6M |
| | b. Bit – Map Collision – Free Protocol | 6M |
| 5. | Discuss the Shortest Path Routing Algorithm with an example. | 12M |
| 6. | Discuss about the following Internet Control Protocols | |
| | a. Address Resolution Protocol (ARP) | 6M |
| | b. Border Gateway Protocol (BGP) | 6M |
| 7. | Write a detail notes on TCP | 12M |
| 8. | a. Explain the DES Algorithm in detail | 6M |
| | b. Discuss about PEM | 6M |

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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MCA III Semester Regular Examinations, November/December 2012

Database Management Systems

Max. Marks: 60

Time: 03 Hours

Answer *any five* questions

All Questions carry equal marks (12 Marks each)

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|---|----|
| 1. a. Explain Database Architecture with a neat sketch? | 8M |
| b. Discuss about Database Users? | 4M |
| 2. a. Explain about E-R Extended Features? | 6M |
| b. Explain the importance of constraints and keys? | 6M |
| 3. a. Explain various fundamental Relational Algebraic operations in detail? | 8M |
| b. Discuss about Data log? | 4M |
| 4. a. Explain the usage of select clause in different forms? | 8M |
| b. Explain about views in detail? | 4M |
| 5. a. Explain the need of Normalization in Relational Database Design. | 6M |
| b. Explain 5NF with an Example? | 6M |
| 6. a. Explain about RAID? | 4M |
| b. Write a Short note on Ordered Indices? | 8M |
| 7. a. What is a Transaction? Explain the ACID Properties of Transaction. | 6M |
| b. Explain serial Schedules and Concurrent Schedule with examples and show that serial schedules always put the database to consistent state. | 6M |
| 8. a. Explain about Time Stamp Based Protocol | 6M |
| b. Explain about View Serializability | 6M |

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)M.C.A. III-Semester Regular Examinations, November/December 2012
Design and Analysis of Algorithms

Max. Marks: 60

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (12 Marks each)

1. a. What is pseudo-code? Explain with examples.
b. Show that $f(n) + g(n) = O(n^2)$ where $f(n) = 3n^2 - n + 4$ and $g(n) = n \log n + 5$.
2. a. Explain the control abstraction algorithm of divide and conquer.
b. Apply Quick sort to sort the list.
E, X, A, M, P, L, E
in alphabetical order. Draw the tree of recursive calls made.
3. a. Differentiate the depth first search and breadth first search traversals.
b. Explain heap sort algorithm with a simple example.
4. a. Discuss briefly the solution to the travelling sales person problem using dynamic programming. Can it be solved by using divide and conquer method?
b. Solve the following 0/1 Knapsack problem using dynamic programming $m=6$, $n=3$,
 $(w_1, w_2, w_3) = (2, 3, 3)$, $(p_1, p_2, p_3) = (1, 2, 4)$.
5. a. Define spanning tree. Explain the prim's algorithm with an example.
b. Explain the Dijkstra's algorithm for single source shortest path algorithm.
6. a. Draw the state space tree for m-coloring when $n=3$ and $m=3$.
b. Write a recursive backtracking algorithm.
7. a. Explain how to solve knapsack problem using Branch and Bound.
b. Explain the principles of FIFO Branch and Bound.
8. a. Explain the classes of NP-hard and NP-complete.
b. Describe clique decision problem and write the algorithm for the same.