MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
Sponsored by CMR Educational Society
(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade - ISO 9001:2008 Certified)
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MASTER OF TECHNOLOGY
COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING

ACADEMIC REGULATIONS
COURSE STRUCTURE AND SYLLABUS
(Batches admitted from the academic year 2016 - 2017)

Note: The regulations hereunder are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already pursuing the program) as may be decided by the Academic Council.

CONTENTS

M.Tech - I year I semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R15D5801	Advanced Data Structures and Algorithms	4	-	3	25	75
2	R15D5802	Advanced Operating Systems	4	-	3	25	75
3	R15D5803	Computer System Design	4	-	3	25	75
4	R15D5804 R15D5805 R15D5806	**Core Elective-I** 1) Software Process and Project Management. 2) Natural Language Processing 3) Internet of Things	4	-	3	25	75
5	R15D5807 R15D5808 R15D5809	**Core Elective-II** 1) Machine Learning 2) Software Architecture and Design Patterns 3) Parallel and Distributed Algorithms	4	-	3	25	75
6	**R15D9310** **R15D9302** **R15D9303**	**Open Elective-I** 1) Adhoc-Wireless Networks 2) Multimedia Processing 3) Embedded Systems Design	4	-	3	25	75
7	R15D5881	Advanced Data Structures and Algorithms Lab	0	3	2	25	75
8	R15D5883	Technical Seminar-I	-	-	2	50	-
Total			**24**	**3**	**22**	**225**	**525**

M.Tech - I year II semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R15D5810	Advanced Network Programming	4	-	3	25	75
2	R15D5811	Advanced Databases	4	-	3	25	75
3	R15D5812	Web Services and Service Oriented Architecture	4	-	3	25	75
4	R15D5813 R15D5814 R15D5815	**Core Elective-III** 1) Advanced Data Mining 2) Storage Area Networks 3) Database Security	4	-	3	25	75
5	R15D5816 R15D5817 R15D5818	**Core Elective-IV** 1) Grid and Cloud Computing 2) Wireless Networks and Mobile Computing 3) Information Retrieval Systems	4	-	3	25	75
6	R15D9314 R15D9313 R15D9316	**Open Elective-II** 1) Embedded RTOS 2) Hardware Software Co-design 3) Mobile Computing Technologies	4	-	3	25	75
7	R15D5882	Web Services Lab	-	3	2	25	75
8	R15D5884	Technical Seminar-II	-	-	2	50	-
Total			**24**	**3**	**22**	**225**	**525**

M.Tech - II year I semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R15D5885	**Project Review Seminars**	**-**	**-**	**4**	**-**	**-**
2	R15D5886	**Project Work**	**-**	**-**	**18**	**-**	**-**
Total			**-**	**-**	**22**	**-**	**-**

M.Tech - II year II semester

S.NO.	SUBJECT CODE	SUBJECT	L	T/P/D	C	MAX MARKS	
						INT	EXT
1	R15D5887	**Project Work & Viva Voce**	**-**	**-**	**22**	**-**	**-**
Total			**-**	**-**	**22**	**-**	**-**

I- SEMESTER

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5801) ADVANCED DATA STRUCTURES AND ALGORITHMS

Objectives:

- The fundamental design, analysis, and implementation of basic data structures. Basic concepts in the specification and analysis of programs.
- Principles for good program design, especially the uses of data abstraction. Significance of algorithms in the computer field
- Various aspects of algorithm development Qualities of a good solution

UNIT I

Algorithms, Performance analysis- time complexity and space complexity, Asymptotic Notation-Big Oh, Omega and Theta notations, Complexity Analysis Examples. Data structures-Linear and non linear data structures, ADT concept, Linear List ADT, Array representation, Linked representation, Vector representation, singly linked lists -insertion, deletion, search operations, doubly linked lists-insertion, deletion operations, circular lists. Representation of single, two dimensional arrays, Sparse matrices and their representation.

UNIT II

Stack and Queue ADTs, array and linked list representations, infix to postfix conversion using stack, implementation of recursion, Circular queue-insertion and deletion, Dequeue ADT, array and linked list representations, Priority queue ADT, implementation using Heaps, Insertion into a Max Heap, Deletion from a Max Heap, java.util package-ArrayList, Linked List, Vector classes, Stacks and Queues in java.util, Iterators in java.util.

UNIT III

Searching–Linear and binary search methods, Hashing-Hash functions, Collision Resolution methods-Open Addressing, Chaining, Hashing in java.util-HashMap, HashSet, Hashtable. Sorting –Bubble sort, Insertion sort, Quick sort, Merge sort, Heap sort, Radix sort, comparison of sorting methods.

UNIT IV

Trees- Ordinary and Binary trees terminology, Properties of Binary trees, Binary tree ADT, representations, recursive and non recursive traversals, Java code for traversals, Threaded binary trees. Graphs- Graphs terminology, Graph ADT, representations, graph traversals/search methods-dfs and bfs, Java code for graph traversals, Applications of Graphs-Minimum cost spanning tree using Kruskal's algorithm, Dijkstra's algorithm for Single Source Shortest Path Problem.

UNIT V

Search trees- Binary search tree-Binary search tree ADT, insertion, deletion and searching operations, Balanced search trees, AVL trees-Definition and examples only, Red Black trees – Definition and examples only, B-Trees-definition, insertion and searching operations, Trees in java.util- TreeSet, Tree Map Classes, Tries(examples only),Comparison of Search trees. Text compression-Huffman coding and decoding, Pattern matching-KMP algorithm.

TEXT BOOKS:

1. Data structures, Algorithms and Applications in Java, S.Sahni, Universities Press.
2. Data structures and Algorithms in Java, Adam Drozdek, 3rd edition, Cengage Learning.
3. Data structures and Algorithm Analysis in Java, M.A.Weiss, 2nd edition,
4. Addison-Wesley (Pearson Education).

REFERENCE BOOKS:

1. Java for Programmers, Deitel and Deitel, Pearson education.
2. Data structures and Algorithms in Java, R.Lafore, Pearson education.
3. Java: The Complete Reference, 8th editon, Herbert Schildt, TMH.
4. Data structures and Algorithms in Java, M.T.Goodrich, R.Tomassia, 3rd edition, Wiley India Edition.
5. Data structures and the Java Collection Frame work,W.J.Collins, Mc Graw Hill.
6. Classic Data structures in Java, T.Budd, Addison-Wesley (Pearson Education).
7. Data structures with Java, Ford and Topp, Pearson Education.
8. Data structures using Java, D.S.Malik and P.S.Nair, Cengage learning.
9. Data structures with Java, J.R.Hubbard and A.Huray, PHI Pvt. Ltd.
10. Data structures and Software Development in an Object-Oriented Domain, J.P.Tremblay and G.A.Cheston, Java edition, Pearson Education.

COURSE COVERAGE
ADVANCED DATA STRUCTURES AND ALGORITHMS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Advance d Data Structures and Algorithms	Data structures, Algorithms and Applications in Java	2,3,4	II,III,IV	S.Sahni	Universities Press	2nd
		Data structures and Algorithms in Java	1	I	Adam Drozdek	Cengage	4th
		Java for Programmers	5	V	Deitel and Deitel	Pearson education	----

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester, February 2016

Advanced Data structures and Algorithms

(Computer Science Engineering)

Roll No:_____

Time: 3 hours **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

*** * * * * ***

SECTION - I

1. a. write a program to merge two linked list one at the end of the other 8M
   b. write a program to transpose the matrix 7M

(Or)

2. a. Explain asymptotic notations 7M
   b. write a program to multiply two matrices 8M

SECTION – II

3. Convert the given infix expression into postfix expression x = (b + (b ^ 2 – 4*a*c)^1/2)/(2*a) and evaluate the postfix expression for the following values(a=1, b=4, c=3) 15M

(Or)

4. a. write a pseudo code to implement a queue using two stacks 8M
   b. construct a max heap for the sequence of the input 24, 12, 2, 13, 32, 42, 7, 9, 41, 65, 1, 18 and 15. 7M

SECTION – III

5. write a program to sort the elements using Quick sort 15M

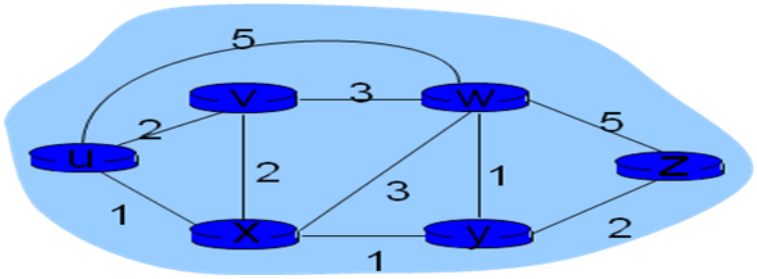
(Or)

6. a. Given two arrays of unordered numbers, check both arrays have same set of numbers using hash tables 8M
   b. Implement binary search tree 7M

SECTION – IV

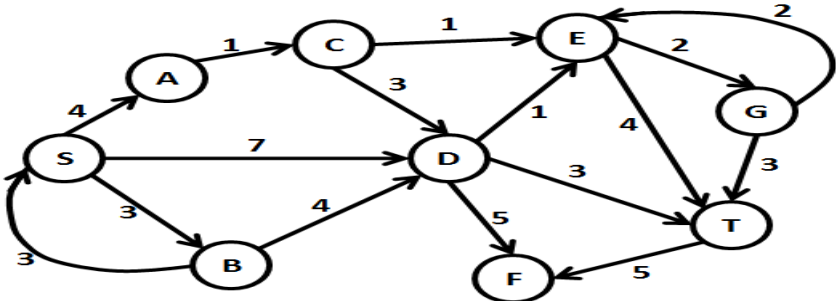
7. a. Draw the binary tree with node labels a, b, c, d, e, f and g for which the inorder and postorder traversals result in the following sequences. inorder: a f b c d g e, postorder: a f c g e d b
8M

b. Find the minimum cost spanning tree using kruskal's algorithm for the given graph
7M



(Or)

8.
Consider the following directed graph. There are a multiple shortest paths between vertices S and T. Which one will be reported by Dijkstra's shortest path algorithm? Write the sequence of vertices and cost of the shortest path from S to T. Assume that, in any iteration the shortest path to a vertex *v* is updated only when a strictly shorter path to *v* is discovered.
15M



SECTION – V

9. Suppose eight characters have a distribution A(1), B(1), C(1), D(2), E(3), F(5), G(5), H(10). Draw a Huffman tree and calculate average number of bits needed for each character.
15M

(Or)

10. Construct a binary search tree by inserting in the following sequence of integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60 and 24. Check whether the BST is balanced or not and if not balanced make it balanced. 15M

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Advanced Data structures and Algorithms)

(CSE)

Roll No	1	5	N	3						

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

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SECTION - I

1. a. Discuss the asymptotic notations. How does one measure the efficiency of the algorithm? 7M

   b. How do you insert the data into and delete data from linked list without traversing the list? Write down the code for the same. 8M

(Or)

2. write a program to construct singly linked list. Also include insertion, deletion and searching operations on it. 15M

SECTION – II

3. a. Implement circular queue using array representation. 7M

   b. Evaluate the postfix expression 6, 2, 3, +, -, 3, 8, 2, /, +, *, 2, ^, 3, + 8M

(Or)

4. a. construct max heap for the following sequence of input: 25 14 16 13 10 7 12. What is the resultant max heap after 2nd delete. 8M

   b. write a recursive function for finding GCD of two integer numbers 7M

SECTION – III

5. a. The Keys 12, 18, 13, 2, 3, 23, 5 and 15 are inserted into an initially empty hash table of length 10 using open addressing with hash function $h(k) = k \bmod 10$ and linear probing. What is the resultant hash table? 7M

   b. write a program to sort the elements using Insertion sort 8M

(Or)

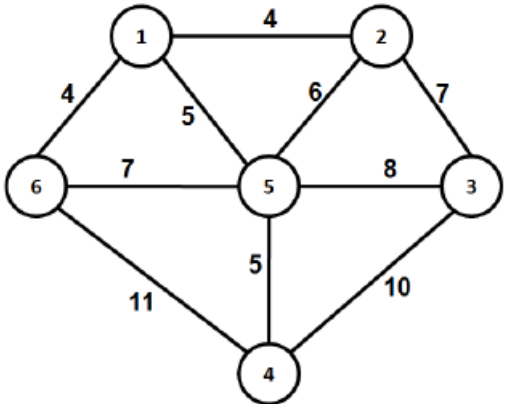
6. a. A natural bubble sort is to be used to sort the file of integers: 12, 30, 36, 9, 5, 7, 50, 40, 42, 90. What is the order of the numbers after 3rd pass. 7M

   b. write a program to sort the elements using merge sort 8M

SECTION – IV

7. Write and explain Kruskal's algorithm for finding the minimum spanning tree. Also find the MST for the following graph

   15M



(Or)

8. a. Discuss the threaded binary tree. What are its applications, advantages and disadvantages over binary tree. 7M

b. explain DFS and BFS with an example 8M

SECTION – V

9. a. Construct AVL tree for the following numbers 14, 8, 12, 36, 23, 5, 67, 78, 20. 8M

b. write a program to find maximum element in the Binary search tree. 7M

(Or)

10. a. What is B-tree? How do you construct the B-tree? Explain with example. 8M

b. Explain KMP Algorithm with example

Code: 9D58101

M. Tech I Semester Regular & Supplementary Examinations, April/May 2013

ADVANCED DATA STRUCTURES & ALGORITHMS

(Common to CSE, CS, SE and CN)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions.

All questions carry equal marks.

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1 (a) What are the applications of stack with an examples?
(b) Explain the linked list representation with a clear example.

2 (a) What are asymptotic notations explain them briefly?
(b) Briefly explain about 'O-notation'.
(c) Define average best and worst case complexities.

3 Write and explain a non recursive algorithm for post order traversal of a binary tree with an example.

4 (a) What do you mean by AVL trees? How do we calculate the height of it? Explain by giving an example.
(b) Explain how an AVL tree can be used to sort a sequence of n elements in $O(n \log n)$ time.

5 (a) What is a red-black tree? Explain about the representation of a red-black tree.
(b) Write the algorithm to search for an element of a red-black tree. What is its complexity?

6 (a) Derive the time complexity of quick sort in average case.
(b) Write a non recursive algorithm for pre order traversal of a tree.

7 (a) What is the time complexity of traversing sales person's problem using dynamic programming?
(b) What is dynamic programming technique? How does it differ from divide & conquer technique.

8 (a) Solve the Knapsack problem by considering the instance n=3, m=6. (1 2 3) =(2 3 4) & (1 2 3) = (1 2 5).
(b) Explain 8 – Queen's problem with an example.

Code: 9D58101

M.Tech - I Semester Supplementary Examinations, November 2012

ADVANCED DATA STRUCTURES & ALGORITHMS

(Common to CSE, CS, SE and CN)

Time: 3 hours Max Marks: 60

Answer any FIVE questions

All questions carry equal marks

*****

1 (a) Write any four applications of a queue justify your answer.

(b) Write an algorithm to evaluate postfix expression using stack. Explain how priorities of the operators are taken care of during the process of conversion of infix to postfix form.

2 (a) Define an AVL tree. Construct a height balanced tree or the following list of elements 4, 6, 12, 8, 4, 2, 15, 7, 3.

(b) Write an algorithm to insert and delete a node in a binary-search tree.

3 (a) Differentiate polynomial and exponential algorithms.

(b) Explain the best case, worst-case, average case complexities using asymptotic notation illustrate.

4 (a) Differentiate BFs and DFs. Write an algorithm for the BFs graph traversal with an example.

(b) Construct a tree from the given preorder traversal preorder ∗ - + EAB + CD

5 (a) Illustrate red-black trees with examples.

(b) Explain hashing techniques. Differentiate hashing and indexing.

6 (a) Explain the Dijksha's algorithm for single source shortest path problem using an example.

(b) Prove that any weighted connected graph with distinct weights has exactly one minimum spanning tree.

7 With a numerical example, explain dynamic:

(a) Programming scheme that can be adopted in solving O/I knapsack problem.

(b) Define merging and purging rule of the above problem and write the O/I knapsack algorithm.

8 (a) Differentiate between dynamic knapsack and branch and bound knapsack problem.

(b) How branch-and-bound methods is efficient in implementation than dynamic programming?

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Model Question Paper

for ADVANCED DATA STRUCTURES AND ALGORITHMS

Time: 3 hours **Max Marks: 60**

Answer any FIVE Questions. All Questions carry equal marks
All parts of the questions must be answered in one place only

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1 Consider the following arithmetic p, written in postfix notation. 12M
P: 12, 7, 3, -, /, 2, 1, 5, +, *, +.
Evaluate it in Infix Expression.

2 a) Which of the given options provides the increasing order of asymptotic complexity of the functions: f_1, f_2, f_3 and f_4? 6M
$f_1(n)=2^n$ $f_2(n)=n^{3/2}$ $f_3(n)=n \log_2 n$ $f4(n)=n^{\log_2 n}$
b) What does the following recurrence relation evaluates to? 6M
T(0)=1, T(n)=T(n-1)+3^n

3 a) A complete *n* array tree is a tree in which each node has *n* children or no children. Let *I* be the number of internal nodes and *L* be the number of leaves in a complete *n* array tree. If *L*=41 and *I*=10, then what is the value of *n*? 4M
b) What is the total number of distinct binary trees with 'n' nodes? Draw all the distinct binary trees with '5' nodes. 4M
c) How many vertices and how many edges are there in complete bipartite graphs $K_{4,7}$ and $K_{7,11}$? If the graph $K_{r,12}$ has 72 edges, what is r? 4M

4 a) A binary search tree is generated by inserting in order of the integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24. What is the total number of nodes in the left sub-tree and the right sub-tree? 4M
b) What is the maximum height of any AVL tree with 7 nodes? Assume that the height of a tree with a single node is 0. 4M
c) The following numbers are inserted into an empty binary search tree in the given order one by one: 15, 32, 20, 9, 3, 25, 12, 1. 4M
   i. Show the final binary search tree after the insertions.
   ii. Draw the binary search tree after deleting 15 from it.

5 a) What is a red black tree? Explain, in detail, its operations and applications. 6M
b) Insert the characteristics of the string: K R P C S N Y T J M into a hash table of size 10. Use the hand function: h(x) = (ord(x) – ord('a')+1) mod 10 and linear probing to resolve collisions. 6M
   i. Which insertions cause collisions?
   ii. Obtain the final hash table.

6 a) Write a short notes on KNAPSACK PROBLEM. 4M
b) Consider the following instances of the Knapsack problem: n=3, m=20, (p_1,p_2,p_3)=(25,24,15) and (w_1,w_2,w_3)=(18,15,10). Find optimal solution. 8M

7 a) What is the average successful search time taken by binary search on a sorted array of 10 data items? 4M

b) Consider a complete undirected graph with vertex set {0, 1, 2, 3, 4}. Entry W_{ij} in the matrix W below is the weight of the edge $\{i, j\}$. 8M

$$W = \begin{bmatrix} 0 & 1 & 8 & 1 & 4 \\ 1 & 0 & 12 & 4 & 9 \\ 8 & 12 & 0 & 7 & 3 \\ 1 & 4 & 7 & 0 & 2 \\ 4 & 9 & 3 & 2 & 0 \end{bmatrix}$$

i. What is the minimum possible weight of a spanning tree T in this graph such that vertex 0 is a leaf node in the tree T?

ii. What is the minimum possible weight of a path P from vertex 1 to vertex 2 in this graph such that P contains at most 3 edges?

8 a) Prove that if G is a connected undirected graph with n vertices and n-1 edges, there is a tree. 6M

b) Explain and describe n-queens problem. 6M

Code: 9D58101

M.TECH - I Semester Regular and Supplementary Examinations, April/May 2012

ADVANCED DATA STRUCTURES AND ALGORITHMS

(Common to CSE, CS, SE and CN)

Time: 3 hours Max Marks: 60

Answer any FIVE questions

All questions carry equal marks

*****

1 (a) Write a procedure to evaluate postfix expression and explain it with an example.
(b) Write a procedure to insert an element into a queue using linked list.

2 (a) Explain with an example, the space complexity of algorithms.
(b) Write short notes on asymptotic notations.

3 (a) Give brief description about the threaded binary trees.
(b) Write the recursive algorithms for the various tree traversal techniques.

4 What re the draw backs of binary search trees? Explain the L-R and R-R rotations of an AVL tree.

5 (a) Write algorithms for insertion and deletion operations on splay trees.
(b) Write short notes on red black trees.

6 (a) Give brief description about the Strassen's matrix multiplication.
(b) Explain the minimum cost spanning trees by using prim's algorithm.

7 (a) Explain the method to solve a 0/1 knapsack problem using dynamic programming technique.
(b) Give brief description about the reliability design.

8 (a) Write about the general method of back tracking technique.
(b) Write the control abstraction for branch and bound.

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MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5802) ADVANCED OPERATING SYSTEMS

Objectives:

- To understand main components of Real time Operating system and their working
- To study the operations performed by OS as a resource manager
- To understand the scheduling policies of DOS To implement the working principles of OS
- To study different OS and compare their features

UNIT I

Real-time operating systems: Design issues, principles and case study.

UNIT II

Distributed operating system: Design issues, features and principles of working, case study.

UNIT III

Network operating system: Design issues, working principles and characteristic features, case study.

UNIT IV

Kernel development: Issues and development principles, case study.

UNIT V

Protection, privacy, access control and security issues, solutions.

TEXT BOOKS:

1. A.Silberschatz - Applied Operating System Concepts, Wiley, 2000.
2. Lubemir F Bic and Alan C. Shaw - Operating System Principles, Pearson Education, 2003.

REFERENCE BOOKS:

1. Operating Systems : Internal and Design Principles - Stallings, 6th ed., PE.
2. Modern Operating Systems, Andrew S Tanenbaum 3rd ed., PE.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 7th ed.,, John Wiley
4. UNIX User Guide – Ritchie & Yates.
5. UNIX Network Programming - W.Richard Stevens ,1998, PHI.
6. The UNIX Programming Environment – Kernighan & Pike, PE.

COURSE COVERAGE
ADVANCED OPERATING SYSTEMS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Advance Operating Systems	Applied Operating System Concepts	1,2,3,5,6	I,II	A.Silberschatz	Wiley, 2000	6th
		Operating System Principles	3,45,6	III,IV	Lubemir F Bic and Alan C. Shaw	Pearson Education	6^{th}
		Modern Operating Systems	5,6,7	V	Andrew S Tanenbaum	Pearson Education	3rd

Code No: R15D5802-151 **R15**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester, February 2016

Sub: Advanced Operating Systems

(Common to CSE & SSP)

Roll No_____

Time: 3 hours **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

SECTION - I

1. (a) Differentiate between RTOS and LINUX with one example to each of the difference.
   (b) Explain design issues for hard bound embedded systems?

(Or)

2. (a) List and explain any 4 different types of embedded OS in detail?.
   (b) Explain how the process to process calls are handled in Vxworks?

SECTION – II

3. (a) What are the issues in implementing Inter Pipe Communication?
   (b) Briefly explain features of embedded UNIX operating System.

(Or)

4. (a) What are the design issues to be addressed in the design of Distributed operating systems? Give justification with your own example?.
   (b) Explain features and principles of various buses used in recent systems design?

SECTION – III

5. (a) What is the importance of unmount service in MACH-OS?.
   (b) What are the services provided by memory management unit of network operating system?

(Or)

6. (a) Differentiate between RTLinux and VXWORKS.
   (b) List and explain features of IBM operating Systems.

SECTION – IV

7. (a) What are the design principles of UNIX kernel?
   (b) Explain types of RTOS calls with example?

(Or)

8. (a) Explain various features of RTOS kernel with examples?
   (b) Explain the life cycle of kernel development?

SECTION – V

9. (a) Explain Multiple Independent Levels of Security (MILS) architecture?
   (b) What is kernel service? Write about its implementation methods

(Or)

10. (a) Explain about Real time scheduler?
    (b) Explain how Real time scheduler helps for the protection of the data?

Code No: R15D5802-151-S

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R15

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Advanced Operating Systems

(COMMON TO CSE, SSP)

Roll No	1	5	N	3						

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

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SECTION - I

1. (a) Differentiate between RTOS and MACH-OS with examples to each?
   (b) Explain design issues for soft time bound embedded systems?

(Or)

2. (a) List and explain at least 4 different types of RTOS in detail?
   (b) Explain how semaphores are implemented in Vxworks?

SECTION – II

3. (a) What are the issues in implementing FTP over RTLinux?
   (b) Briefly explain features of QNX operating System

(Or)

4. (a) What are the design issues to be addressed in the design of eCOS operating systems? Give justification with your own example?
   (b) Explain features and principles of various buses used in RTLinux?

SECTION – III

5. (a) What is the importance of SMTP service in VXWORKS?
   (b) What are the services provided by REMOTE PROCEDURE CALL of network operating system?

(Or)

6. (a) Differentiate between ECOS and QNX operating system
   (b) Explain features of GNU operating Systems

SECTION – IV

7. (a) What are the design principles of ECOS kernel?
   (b) Explain types of RTOS with examples?

(Or)

8. (a) Explain various features of BERTOS kernel with examples?
   (b) Explain the design cycle of kernel development?

SECTION – V

9. (a) Explain COSCOX operating system
   (b) What is RTAI kernel service? Write about its implementation methods

(Or)

10. (a) Explain about Real time process scheduler?
    (b) Explain how it helps for the protection of the data?

M. TECH. COMPUTER SCIENCE ENGINEERING-R13 Regulations

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech – I Year – I Sem. (Computer Science & Engg)

ADVANCED OPERATING SYSTEMS

Objectives:

- To understand main components of Real time Operating system and their working
- To study the operations performed by OS as a resource manager
- To understand the scheduling policies of DOS
- To implement the working principles of OS
- To study different OS and compare their features

UNIT I

Real-time operating systems: Design issues, principles and case study.

UNIT II

Distributed operating system: Design issues, features and principles of working, case study.

UNIT III

Network operating system: Design issues, working principles and characteristic features, case study.

UNIT IV

Kernel development: Issues and development principles, case study.

UNIT V

Protection, privacy, access control and security issues, solutions.

TEXT BOOKS:

1. A. Silberschatz - Applied Operating System Concepts, Wiley, 2000.
2. Lubemir F Bic and Alan C. Shaw - Operating System Principles, Pearson Education, 2003.

REFERENCE BOOKS:

1. Operating Systems : Internal and Design Principles - Stallings, 6th ed., PE.
2. Modern Operating Systems, Andrew S Tanenbaum 3rd ed., PE.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 7th ed.,, John Wiley
4. UNIX User Guide – Ritchie & Yates.
5. UNIX Network Programming - W.Richard Stevens ,1998, PHI.
6. The UNIX Programming Environment – Kernighan & Pike, PE.

R09

Code No: C5510

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY 2012
ADVANCED OPERATING SYSTEMS
(EMBEDDED SYSTEMS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

\- - -

1.a) Explain the objectives of an Operating System.
b) What is meant by Memory Hierarchy?

2.a) What is Filter? Mention any five filters in UNIX and write about any two.
b) Differentiate-Shell and Kernel. Mention and brief the various features of Shell Programming.

3.a) What is a System call? Give its classification. Write about the system calls for Process creation & termination.
b) Compare and contrast IPC mechanisms – FIFOs & Message Queues.

4. With a neat sketch write about Remote procedure call (RPC) mechanism.

5.a) Elaborate the Lamport's Logical Clock Concept giving its merits and demerits.
b) Write about Bully algorithm.

6. Compare and contrast the various algorithms for distributed deadlock detection.

7. Mention and brief the various design issues of Distributed Systems.

8. Write short notes:
a) ATM Networks
b) Atomic Transactions.

NR

Code No: A0608

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012
ADVANCED OPERATING SYSTEMS
(DIGITAL SYSTEMS & COMPUTER ELECTRONICS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

\- - -

1. Explain briefly the significance of a UNIX file, and the relation it has to a process. Why do UNIX systems predominantly use text files?

2.a) What is meant by recursive behaviour of a command? Name four commands, along with suitable example of each that can operate recursively.
b) What is the significance of these commands:
i) mv $HOME/include.
ii) cp – r bar 1 bar 2
iii) mv *,, / bin

3.a) Explain FIFOS in terms of creation, usage.
b) Explain the rules followed by FIFO'S for reading and writing.
c) Explain the significance of O – NDE LAY flag with respect to FIFO reading and writing.

4.a) Explain in detail the system calls: Fork and Wait.
b) Explain which of these process attributes change with a fork and exec:
i) PID ii) PPID iii) Kernel I /O buffers
iv) Pending signals mask.

5. Draw the diagram of a local area network for a typical university campus that houses three different departments on these different floors. Include hosts, repeaters, bridges, routers and gateways. Indicate what equipment (token ring, Ethernet etc) is being used at the physical layer.

6. What are the types of operating systems you have worked with so for and enumerate the advantages and disadvantages of each one of them.

7. Linux runs on a variety of plat forms. What steps must the Linux developers take to excuse that the system is portable to different processors and memory management architectures.

8.a) Explain the Linux porc file system.
b) Explain the input and output devices as per the Linux classipeat of
a) Block devices b) Characteristics devices c) Network devices

****

MODEL PAPER

ADVANCED OPERATING SYSTEM

1. Answer the following
(a) Trap and interrupts
(b) Sockets
(c) Location Transparency
(d) Mutual exclusion
(e) SONET
(f) RUTEX
(g) NFS

2. (a) What is distributed system? Explain with examples.
(b) Narrate the advantages and disadvantages of distributed and centralized systems.

3. (a) Why Omega Network is better than network with cross bar switching.
(b) How hyper cube topology can be extended?

4. (a) Explain ATM reference model.
(b) Write about ATM Switching.

5. Explain Message-passing primitives in client-sever model.

6. (a) Describe RPC operation.
(b) Briefly explain ISIS group communication system.

7. (a) What are logical and physical clocks?
(b) How a distributed algorithm works for mutual exclusion?

8. What are design issues for processor allocation algorithms?

Reg. No. :

Question Paper Code : 31106

M.E./M.Tech. DEGREE EXAMINATION, JUNE 2011.

Common to M.E. – Computer Science and Engineering/M.E. Mobile and Pervasive Computing

Second Semester

241205 — ADVANCED OPERATING SYSTEMS

(Regulation 2010)

Time : Three hours Maximum : 100 marks

Answer All questions.

PART A — (10 × 2 = 20 marks)

1. Mention the functions of operating systems.

2. Why does the interrupt disable method to achieve mutual exclusion not work for multiprocessor systems?

3. State the purpose of control site in completely centralized deadlock detection.

4. How does Lamport's algorithm guarantee mutual exclusion?

5. Sender-initiated algorithms cause system instability at high system loads. Predict analytically at what system load the instability will occur. Assume probe limit is 3, average service requirement of a task is 1 sec, overhead incurred by a processor to poll or to reply to a poll is 3 msec.

6. Why is mapping function required in the central server algorithm?

7. Differentiate between forward-error and backward-error recovery.

8. Define global atomicity. Give an example.

9. List out the issues in preprocessor scheduling that causes performance degradation in multiprocessor systems.

10. Write the difference between tightly coupled system and loosely coupled system with an example.

NR

Code No: A0608

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Regular Examinations March 2010
ADVANCED OPERATING SYSTEMS
(COMMON TO DIGITAL ELECTRONICS & COMMUNICATION SYSTEMS, DIGITAL SYSTEMS & COMPUTER ELECTRONICS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

- - -

1. What is an operating system? What are the functions performed by it? Classify various operating systems.

2. Explain about system kernel of UNIX operating system. What are file permissions? Explain.

3. What is a filter in UNIX O.S? What are different filters? Explain each one with their formats.

4. What system calls are related to file structures? Explain about input and output system calls.

5. Explain about basic client - server IPC in UNIX system. What are message queues and semaphores?

6. Explain clearly about TCP/IP internet protocols.

7. What are various types of editors in LINUX system? Explain clearly each one.

8. Explain clearly about LINUX file system and file management.

****

R09

Code No: C5510

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
ADVANCED OPERATING SYSTEMS
(EMBEDDED SYSTEMS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

\- - -

1. a) Explain about Computer Instruction Cycle with Interrupt.
   b) Explain various I/O Communication Techniques with examples. [12]

2. Explain the following filters:
   a) wc
   b) egrep
   c) fgrep
   d) tr & dd. [12]

3. a) Write an algorithm for creating a file.
   b) How to create a new process in UNIX? Write an algorithm for fork ( ) system call. [12]

4. Explain the following:
   a) Message queues
   b) Semaphores
   c) Shared memory. [12]

5. a) Explain about Multiprocessor Time sharing systems.
   b) Describe about Network Operating System. [12]

6. Explain the working of Remote Procedure Call using a stack. [12]

7. What is Mutual Exclusion? Explain Token ring algorithm to achieve Mutual Exclusion. [12]

8. What is an Atomic Transaction? Explain various Concurrency Control mechanisms. [12]

R09

Code No: C5510

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY 2012
ADVANCED OPERATING SYSTEMS
(EMBEDDED SYSTEMS)

Time: 3hours Max.Marks:60

Answer any five questions
All questions carry equal marks

- - -

1.a) Explain the objectives of an Operating System.
b) What is meant by Memory Hierarchy?

2.a) What is Filter? Mention any five filters in UNIX and write about any two.
b) Differentiate-Shell and Kernel. Mention and brief the various features of Shell Programming.

3.a) What is a System call? Give its classification. Write about the system calls for Process creation & termination.
b) Compare and contrast IPC mechanisms – FIFOs & Message Queues.

4. With a neat sketch write about Remote procedure call (RPC) mechanism.

5.a) Elaborate the Lamport's Logical Clock Concept giving its merits and demerits.
b) Write about Bully algorithm.

6. Compare and contrast the various algorithms for distributed deadlock detection.

7. Mention and brief the various design issues of Distributed Systems.

8. Write short notes:
a) ATM Networks
b) Atomic Transactions.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5803) COMPUTER SYSTEM DESIGN

Objectives:

- To apply the fundamentals of Computer Systems Design and IT in devising IT solutions. To Design, simulate, and analyze digital hardware.
- To Interface between basic hardware and software computing systems. To Simulate and evaluate different computing architectures.

UNIT I

Computer structure – hardware, software, system software, Von-Neumann architecture – case study. IA -32 Pentium: registers and addressing, instructions, assembly language, program flow control, logic and shift/rotate instructions, multiply, divide MMX, SIMD instructions, I/O operations, subroutines.

Input/output organization, interrupts, DMA, Buses, Interface circuits, I/O interfaces, device drivers in windows, interrupt handlers

UNIT II

Processing Unit: Execution of a complete instruction, multiple bus organization, hardwired control, micro programmed control.

Pipelining: data hazards, instruction hazards, influence on instruction sets, data path & control consideration, and RISC architecture introduction.

UNIT – III

Memory: types and hierarchy, model level organization, cache memory, performance considerations, mapping, virtual memory, swapping, paging, segmentation, replacement policies.

UNIT – IV

Processes and Threads: processes, threads, inter process communication, classical IPC problems, Deadlocks.

UNIT – V

File system: Files, directories, Implementation, Unix file system

Security: Threats, intruders, accident data loss, basics of cryptography, user authentication.

TEXT BOOKS:

1. Computer Organization – Car Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson /PHI
2. Morris Mano- Computer System Architecture –3rd Edition-Pearson Education.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
4. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI

COURSE COVERAGE
COMPUTER SYSTEM DESIGN

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Computer System Design	Computer Organization	1,2 ,3,5	I,II	Car Hamacher, Zvonks Vranesic, SafeaZaky	McGraw Hill	Vth Edition
		Modern Operating Systems	3,4,6,7	III,IV	Andrew S Tanenbaum	Weiley India	2nd edition
		Computer Organization and Architecture	5	V	William Stallings	Pearson	6th

Code No: **R15D5803-151-S**

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Computer System Design

(CSE)

Roll No	1	5	N	3						

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

*** * * * * ***

SECTION - I

1. Discuss about I/O operations in IA – 32 and SIMD Instructions.

(Or)

2. Explain about Peripheral Component Interconnect Bus and Universal Serial Bus.

SECTION – II

3. Define Register Transfers. Explain execution of the following instruction with suitable control sequence ADD (R3),R1.

(Or)

4. Explain about Data Hazards and Instruction Hazards.

SECTION – III

5. What is the need of Virtual Memory? Explain Address Translation concept with TLB.

(Or)

6. State and explain Page Replacement Algorithms with an example.

SECTION – IV

7. Discuss about Classical InterProcess Communication Problems.

(Or)

8. Explain Banker's algorithm for Deadlock avoidance with suitable example.

SECTION – V

9. Discuss about file system implementation in detail.

(Or)

10. What is Digital Signature? Write about various user authentication schemes.

Code No: R15D5803-151 **R15**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester, February 2016

Sub: COMPUTER SYSTEM DESIGN

(Computer Science Engineering)

Time: 3 hours **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

*** * * * * ***

SECTION - I

1. Write about IA – 32 Addressing modes with an example program.

(Or)

2. Discuss about Direct Memory Access transfer and Device drivers in windows Operating System.

SECTION – II

3. Explain about Microprogram Sequencing and Wide Branch Addressing with a neat sketch.

(Or)

4. Explain about Pipeline Performance and Superscalar operation.

SECTION – III

5. Write about Cache Memory mapping functions with an example.

(Or)

6. What is Segmentation? Explain Segmentation with paging scheme.

SECTION – IV

7. What is a Semaphore? Explain Producer – Consumer Problem using Semaphores.

(Or)

8. Discuss about Deadlock Detection and Recovery.

SECTION – V

9. Discuss about file system directory structures and UNIX file system.

(Or)

10. Explain in detail how cryptography is used as a security tool.

R09

Code No: C0502, C5802, C4002

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY- 2012
COMPUTER SYSTEM DESIGN
(COMMON TO COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGINEERING, INFORMATION TECHNOLOGY)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

- - -

1.a) Write the three differences between Von-newmann architecture and Harvard architecture.
b) Explain the data transfer procedure handled in DMA.

2.a) Differentiate between the micro program control unit and hardwired control unit.
b) Briefly describe how instruction level parallelism takes place using pipelining technique with examples.

3.a) Illustrate the LRU page replacement policy with example.
b) Describe the direct mapping method in cache memory organization.

4.a) Define process and thread. Write the structure and usage of process control block.
b) Explain the deadlock detection algorithm.

5.a) Describe the structure of files in Unix operating systems.
b) Distinguish between the threats and intruders.

6.a) List the arithmetic and logic instructions and its function in Pentium architectures.
b) What are data hazards? Explain any two types of data hazards with examples.

7.a) Explain the concepts of virtual memory.
b) Describe the inter process communication using semaphores.

8. Write short notes on:
a) Interrupt service routines
b) CISC and RISC processors.

Code: 9D58103

M.Tech - I Semester Regular & Supplementary Examinations, April/May 2013

COMPUTER SYSTEM DESIGN

(Common to CSE and CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions

All questions carry equal marks

*****

1. Explain the organization & architecture of IA32 Pentium Processor.

2. (a) Compare and contrast DMA with interrupt handlers.
   (b) Give an overall view of device drivers in windows.

3. (a) Explain clearly micro programmed control with hardware approach.
   (b) Differentiate between hired wired and micro programmed control units.

4. Explain data hazards and instruction hazards with examples. Explain their influence on instruction sets.

5. (a) Explain any two replacement policies in detail with examples.
   (b) Explain the memory hierarchy with reference to their cost, speed and size.

6. Enumerate and explain any two classical IPC problems and suggest suitable solutions for them with explanation.

7. (a) Give a through account of UNIX file systems.
   (b) Explain how directories will be implemented.

8. (a) Explain the relevant issues and concepts of cryptography.
   (b) Write short notes on threats and intruders.

*****

R09

Code No: D109115802

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Regular Examinations March 2010
COMPUTER SYSTEM DESIGN
(COMMON TO COMPUTER SCIENCE& ENGINEERING, COMPUTER SCIENCE, INFORMATION TECHNOLOGY)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

1.a) What is meant by performance of a machine? Give a reasonable metric for it.
b) Explain various Interface Circuits with examples.

2.a) Compare and contrast Hardwired control and Microprogrammed control.
b) Explain about Address Sequencing capabilities in Microprogrammed control unit.

3. Explain various Data Hazards with necessary examples.

4. Illustrate Associative mapping and Set Associative mapping mechanisms in Cache memory.

5. Explain Paging mechanism using Multilevel Page Table.

6. What is a Semaphore? How the Producer Consumer Problem does solved using semaphores?

7. What is a Dead Lock? Explain Banker's algorithm with a numerical example.

8. What is a Directory? Explain the Hierarchical directory systems and Directory operations.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5804) SOFTWARE PROCESS AND PROJECT MANAGEMENT
(CORE ELECTIVE – I)

Objectives:

- Describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion of project.
- Compare and differentiate organization structures and project structures.
- Implement a project to manage project schedule, expenses and resources with the application of suitable project management tools.

UNIT I

Software Process Maturity

Software maturity Framework**,** Principles of Software Process Change, Software Process Assessment, The Initial Process, The Repeatable Process, The Defined Process, The Managed Process, The Optimizing Process.

Process Reference Models

Capability Maturity Model (CMM)**,** CMMI, PCMM, PSP, TSP.

UNIT II

Software Project Management Renaissance

Conventional Software Management, Evolution of Software Economics, Improving Software Economics, The old way and the new way.

Life-Cycle Phases and Process artifacts

Engineering and Production stages, inception phase, elaboration phase, construction phase, transition phase, artifact sets, management artifacts, engineering artifacts and pragmatic artifacts, model based software architectures.

UNIT III

Workflows and Checkpoints of process

Software process workflows, Iteration workflows, Major milestones, Minor milestones, Periodic status assessments.

Process Planning

Work breakdown structures, Planning guidelines, cost and schedule estimating process, iteration planning process, Pragmatic planning.

UNIT IV

Project Organizations

Line-of- business organizations, project organizations, evolution of organizations, process

automation.

Project Control and process instrumentation

The seven core metrics, management indicators, quality indicators, life-cycle expectations, Pragmatic software metrics, and metrics automation.

UNIT V

CCPDS-R Case Study and Future Software Project Management Practices

Modern Project Profiles, Next-Generation software Economics, Modern Process Transitions.

TEXT BOOKS:

1. Managing the Software Process, *Watts S. Humphrey*, Pearson Education.
2. Software Project Management, *Walker Royce,* Pearson Education.

REFERENCE BOOKS:

1. Effective Project Management: Traditional, Agile, Extreme, Robert Wysocki, Sixth edition, Wiley India, rp2011.
2. An Introduction to the Team Software Process, Watts S. Humphrey, Pearson Education, 2000
3. Process Improvement essentials, James R. Persse, O'Reilly, 2006
4. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, TMH, 2006
5. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O'Reilly, 2006.
6. Head First PMP, Jennifer Greene & Andrew Stellman, O'Reilly, 2007
7. Software Engineering Project Managent, Richard H. Thayer & Edward Yourdon, 2nd edition, Wiley India, 2004.
8. The Art of Project Management, Scott Berkun, SPD, O'Reilly, 2011.
9. Applied Software Project Management, Andrew Stellman & Jennifer Greene, SPD, O'Reilly, rp2011.
10. Agile Project Management, Jim Highsmith, Pearson education, 2004.

COURSE COVERAGE
SOFTWARE PROCESS AND PROJECT MANAGEMENT

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Software Process And Project Management	Managing the Software Process	1,6,13	I,II	*Watts S. Humphrey*	Pearson	2nd
		Software Project Management	6,7,8,9	III,IV	*Walker Royce*	Pearson Education	2nd
		Effective Project Management: Traditional	5	V	Robert Wysocki	Wiley India	6th

Code No: **R15D5804-151-S**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R15

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Software Process and Project Management

(CSE)

Roll No	1	5	N	3						

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

Section-1

1. Explain the characteristics of process maturity levels.

Or

2. What is process assessment explain? What is the need for optimizing process?

Section-2

3. Discuss the model based Architectures

Or

4. What are the management and engineering artifacts? Explain.

Section-3

5. What is a process checkpoint? Explain about various checkpoints in detail

Or

6. Explain the work break down structure

Section-4

7. Explain the Tools for process automation of building blocks.

Or

8. Explain the roles and responsibilities of Line –of – business organizations in detail.

Section-5

9. Explain the modern software management process culture.

Or

10. Explain the modern software economics.

Code No: R15D5804-151 **R15**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester, February 2016

Sub: Software Process and Project Management

(Computer Science Engineering)

Roll No_____

Time: 3 Hours **Max. Marks: 75**

Answer one from each section **one** from the following questions.

Each Question carries **15** marks

Section-1

1. What are process reference models? Explain any two of them.

Or

2. Explain strategy for implementing process change.

Section-2

3. Explain the principles of modern software management it in detail.

Or

4. Explain the various Life-Cycle Phases.

Section-3

5. Discuss about software process work flows.

Or

6. Explain the process planning guidelines.

Section-4

7. Explain the management and quality indicators.

Or

8. Explain the project organization

Section-5

9. Explain the modern software management process culture.

Or

10. Explain the software management best practices.

Code No: B5810 **NR**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, October/November 2011
SOFTWARE PROJECT MANAGEMENT
(COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

- - -

1. What is conventional software management? Explain the principles of it in detail. [12]

2. Explain the significance of automation in software development. How would you improve automation? [12]

3. Explain the activities in various phases of software life cycle. [12]

4. What is an Engineering artifact? Explain about various engineering artifacts in detail. [12]

5. What is a process checkpoint? Explain about various checkpoints in detail. [12]

6. Elaborate on line –of – business organizations in detail. [12]

7. Explain about tailoring the process in detail. [12]

8. Write short notes on the following.
   (a) Water fall model
   (b) Project environment
   (c) Pragmatic planning. [4+4+4]

Code: 9D25106b

M. Tech I Semester Regular & Supplementary Examinations, April/May 2013

SOFTWARE PROJECT MANAGEMENT

(Software Engineering)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions

All questions carry equal marks

*****

1 Explain the conventional software management performance.

2 Explain about improving software processes.

3 (a) Explain the principles of conventional software engineering.
(b) Write about inception phase.

4 (a) Explain life cycle focus on artifact sets.
(b) Write about engineering artifacts.

5 (a) Explain the minor mile stones.
(b) Explain the cost and schedule estimating process.

6 (a) Explain line of business organizations.
(b) Explain change management.

7 (a) Write about the seven core metrics.
(b) Explain pragmatic software metrics.

8 (a) Write about modern software economics.
(b) Explain modern process transitions.

*****

Code No: B5810 **NR**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, October/November 2011
SOFTWARE PROJECT MANAGEMENT
(COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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1. What is conventional software management? Explain the principles of it in detail. [12]

2. Explain the significance of automation in software development. How would you improve automation? [12]

3. Explain the activities in various phases of software life cycle. [12]

4. What is an Engineering artifact? Explain about various engineering artifacts in detail. [12]

5. What is a process checkpoint? Explain about various checkpoints in detail. [12]

6. Elaborate on line –of – business organizations in detail. [12]

7. Explain about tailoring the process in detail. [12]

8. Write short notes on the following.
   (a) Water fall model
   (b) Project environment
   (c) Pragmatic planning. [4+4+4]

Jawaharlal Nehru Technological University Hyderabad

M. Tech I-Semester Supplementary Examinations September-2009

SOFTWARE PROCESS AND PROJECT MANAGEMENT

Time : 3 Hours Max. Marks: 60

Answer Any Five Questions

All Questions Carry Equal Marks

1.a) What are the six basic principles of software process change? Explain.

b) Briefly explain Assessment process in software process Assessment.

2. Write notes on configuration Management Process.

3.a) What are the benefits of SQA?

b) What are the responsibilities of SQA?

c) Write short notes on SQA reporting.

4.a) What are the basic objectives of software Inspections?

b) Write short notes on software tests.

5.a) What are the activities of risk management?

b) Write short notes on software life cycle models.

6. Write notes on project Tracking.

7.a) Briefly explain closure Analysis report.

b) Write short notes on modern process Transitions.

8. Explain briefly the following:

a) Quality Indicators

b) Issue Tracking

c) Reviews and Inspections.

AWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, HYDERABAD

M.Tech. I Semester Regular Examinations, March – 2009

SOFTWARE PROCESS PROJECT MANAGEMENT

Time: 3 hours Max. Marks.60

Answer any Five questions

All questions carry equal marks

1.a) Explain process maturity levels with neat diagram.

b) Write short notes on software commitment process.

2.a) Explain maturity levels in CMM with a neat diagram

b) Write short notes on IDEAL.

3.a) What is the role of SQA?

b) What are the goals of SQA?

c) Write short notes on SQA functions.

4.a) What are the basic principles of soften are Inspection?

b) List the seven types of software tests and explain.

5. Write notes on risk assessment.

6. Explain principles of software defect prevention.

7.a) Explain the role of closure Analysis with a neat diagram.

b) Write short notes on modern project properties.

8. Explain briefly the following:

a) Seven care metrics

b) Status reports

c) Defect analysis.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5805) NATURAL LANGUAGE PROCESSING
(CORE ELECTIVE-I)

Objectives:

- To acquire basic understanding of linguistic concepts and natural language complexity, variability.
- To acquire basic understanding of machine learning techniques as applied to language.
- To implement N-grams Models.

UNIT I

Introduction and Overview What is Natural Language Processing, hands-on demonstrations. Ambiguity and uncertainty in language. The Turing test.

Regular Expressions Chomsky hierarchy, regular languages, and their limitations. Finite-state automata. Practical regular expressions for finding and counting language phenomena. A little morphology. Exploring a large corpus with raged tools. P**rogramming in Python** An introduction to programming in Python. Variables, numbers, strings, arrays, dictionaries, conditionals, iteration. The NLTK (Natural Language Toolkit)

String Edit Distance and Alignment Key algorithmic tool: dynamic programming, a simple example, use in optimal alignment of sequences. String edit operations, edit distance, and examples of use in spelling correction, and machine translation.

UNIT II

Context Free Grammars Constituency, CFG definition, use and limitations. Chomsky Normal Form. Top-down parsing, bottom-up parsing, and the problems with each. The desirability of combining evidence from both directions

Non-probabilistic Parsing Efficient CFG parsing with CYK, another dynamic programming algorithms. Early parser. Designing a little grammar, and parsing with it on some test data.

Probability Introduction to probability theory Joint and conditional probability, marginals, independence, Bayes rule, combining evidence. Examples of applications in natural language.

Information Theory The "Shannon game"--motivated by language! Entropy, cross entropy, information gain. Its application to some language phenomena.

UNIT III

Language modeling and Naive Bayes

Probabilistic language modeling and its applications. Markov models. N-grams. Estimating the probability of a word, and smoothing. Generative models of language. Part of Speech Tagging and Hidden Markov Models**,** Viterbi Algorithm for Finding Most Likely HMM Path Dynamic

programming with Hidden Markov Models, and its use for part-of-speech tagging, Chinese word segmentation, prosody, information extraction, etc.

UNIT IV

Probabilistic Context Free Grammars

Weighted context free grammars. Weighted CYK. Pruning and beam search.

Parsing with PCFGs

A tree bank and what it takes to create one. The probabilistic version of CYK. Also: How do humans parse? Experiments with eye-tracking. Modern parsers.

Maximum Entropy Classifiers

The maximum entropy principle and its relation to maximum likelihood. Maximum entropy classifiers and their application to document classification, sentence segmentation, and other language tasks

UNIT V

Maximum Entropy Markov Models & Conditional Random Fields

Part-of-speech tagging, noun-phrase segmentation and information extraction models that combine maximum entropy and finite-state machines. State-of-the-art models for NLP.

Lexical Semantics Mathematics of Multinomial and Dirichlet distributions, Dirichlet as a smoothing for multinomial's.

Information Extraction & Reference Resolution- Various methods, including HMMs. Models of anaphora resolution. Machine learning methods for co reference.

TEXT BOOKS:

1. "Speech and Language Processing": Jurafsky and Martin, Prentice Hall
2. "Statistical Natural Language Processing"- Manning and Schutze, MIT Press
3. "Natural Language Understanding". James Allen. The Benajmins/Cummings Publishing Company

REFERENCES BOOKS:

1. Cover, T. M. and J. A. Thomas: Elements of Information Theory. Wiley.
2. Charniak, E.: Statistical Language Learning. The MIT Press.
3. Jelinek, F.: Statistical Methods for Speech Recognition. The MIT Press.
4. Lutz and Ascher - "Learning Python", O'Reilly

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5806) INTERNET OF THINGS
(CORE ELECTIVE – I)

Objectives:

- To Introduce the terminology, technology and its applications
- To introduce the concept of M2M (machine to machine) with necessary protocols
- To introduce Python scripting language which is used in many IoT devices
- To introduce Raspberry PI platform, that is widely used in IoT applications.

UNIT I

Introduction to Internet of Things- Definition and Characteristics of IoT, Physical design of IoT- IoT protocols, IoT communication protocols, IoT communication API's. IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big data analytics, Communication protocols, Embedded systems, IoT levels and Templates. Domain specifis IoT's – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle.

UNIT II

IoT and M2M – Software defined networks, network function virtualization, difference between SDN and NFV for IoT Basics of IoT system management with NETCONF, YANG-NETCONF, YANG, SNMP NETOPEER

UNIT III

Introduction to Python – Language features of phython, Data types, data structures, Control of flow, functions, modules, packaging, file handling, date/time operations, classes, exception handling. Python packages – JSON, XML, HTTPLib, URLLib, SMTPLib.

UNIT IV

IoT Physical devices and Endpoints: Introduction to Raspberry PI- Interfaces (Serial, SPI, I2C) programming – Python program with Raspberry PI with focus of interfacing external gadgets, controlling output, reading input from pins.

UNIT V

IoT Physical devices and Cloud offerings – Introduction to Cloud storage models and communication API's Webserver – Web server for IoT, cloud for IoT, Python web application framework. Designing a RESTful web API

TEXT BOOKS:

1. Internet of Things – A hands-on approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Getting started with Raspberry PI , Matt Richardson and Shawn Wallace, O'Relly(SPD), 2014, ISBN:9789350239759

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5807) MACHINE LEARNING
(CORE ELECTIVE –II)

Objectives:

- To be able to formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses.
- To understand the basic theory underlying machine learning.
- To be able to apply machine learning algorithms to solve problems of moderate complexity.
- To be able to read current research papers and understands the issues raised by current research.

UNIT I

INTRODUCTION - Well-posed learning problems, Designing a learning system, Perspectives and issues in machine learning

Concept learning and the general to specific ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias

UNIT II

Decision Tree learning – Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

Artificial Neural Networks – Introduction, Neural network representation, Appropriate problems for neural network learning, Perceptions, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks

Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

UNIT III

Bayesian learning – Introduction, Bayes theorem, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier, Gibs algorithm, Naïve Bayes classifier, An example learning to classify text, Bayesian belief networks The EM algorithm

Computational learning theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning - **Instance-Based Learning**- Introduction, k -Nearest Neighbour Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning

Genetic Algorithms – Motivation, Genetic Algorithms, An illustrative Example, Hypothesis Space Search, Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms

UNIT IV

Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets:
Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL, Induction as Inverted Deduction, Inverting Resolution

Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation-Based Learning, Explanation-Based Learning of Search Control Knowledge

UNIT V

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical Approaches to Learning, Using Prior Knowledge to Initialize the Hypothesis, Using Prior Knowledge to Alter the Search Objective, Using Prior Knowledge to Augment Search Operators,

Reinforcement Learning – Introduction, The Learning Task, Q Learning, Non-Deterministic,
Rewards and Actions, Temporal Difference Learning, Generalizing from Examples, Relationship to Dynamic Programming

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, - MGH
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis (CRC)

REFERENCE BOOKS:

1. Machine Learning Methods in the Environmental Sciences, Neural Networks, William W Hsieh, Cambridge Univ Press.
2. Richard o. Duda, Peter E. Hart and David G. Stork, pattern classification, John Wiley & Sons Inc., 2001
3. Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press, 1995

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5808) SOFTWARE ARCHITECTURE AND DESIGN PATTERNS
(CORE ELECTIVE –II)

Objectives:

After completing this course, the student should be able to:

- To understand the concept of patterns and the Catalog.
- To discuss the Presentation tier design patterns and their affect on: sessions, client access, validation and consistency.
- To understand the variety of implemented bad practices related to the Business and Integration tiers.
- To highlight the evolution of patterns.
- To how to add functionality to designs while minimizing complexity
- To understand what design patterns really are, and are not
- To learn about specific design patterns.
- To learn how to use design patterns to keep code quality high without overdesign.

UNIT I

Envisioning Architecture

The Architecture Business Cycle, What is Software Architecture, Architectural patterns, reference models, reference architectures, architectural structures and views.

Creating an Architecture

Quality Attributes, Achieving qualities, Architectural styles and patterns, designing the Architecture, Documenting software architectures, Reconstructing Software Architecture.

UNIT II

Analyzing Architectures

Architecture Evaluation, Architecture design decision making, ATAM, CBAM.

Moving from one system to many

Software Product Lines, Building systems from off the shelf components, Software architecture infuture.

UNIT III

Patterns

Pattern Description, Organizing catalogs, role in solving design problems, Selection and usage.

Creational and Structural patterns

Abstract factory, builder, factory method, prototype, singleton, adapter, bridge, composite, façade, flyweight.

UNIT IV

Behavioral patterns

Chain of responsibility, command, Interpreter, iterator, mediator, memento, observer, state, strategy, template method, visitor.

UNIT V

Case Studies

A-7E – A case study in utilizing architectural structures, The World Wide Web - a case study in interoperability, Air Traffic Control – a case study in designing for high availability, Celsius Tech – acase study in product line development,

TEXT BOOKS:

1. Software Architecture in Practice, second edition, Len Bass, Paul Clements & Rick Kazman, Pearson Education, 2003.
2. Design Patterns, Erich Gamma, Pearson Education, 1995.

REFERENCE BOOKS:

1. Beyond Software architecture, Luke Hohmann, Addison wesley, 2003.
2. Software architecture, David M. Dikel, David Kane and James R. Wilson, Prentice Hall
1. PTR, 2001
2. Software Design, David Budgen, second edition, Pearson education, 2003
3. Head First Design patterns, Eric Freeman & Elisabeth Freeman, O'REILLY, 2007.
4. Design Patterns in Java, Steven John Metsker & William C. Wake, Pearson education, 2006
5. J2EE Patterns, Deepak Alur, John Crupi & Dan Malks, Pearson education, 2003.
6. Design Patterns in C#, Steven John metsker, Pearson education, 2004.
7. Pattern Oriented Software Architecture, F.Buschmann & others, John Wiley & Sons.

COURSE COVERAGE
SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Software Architecture and Design Pattern	Software Architecture in Practice	2,3,4	I,II	Len Bass, Paul Clements & Rick Kazman	Pearson Education	2003
		Design Patterns	3,4,6	III,IV	Erich Gamma	Pearson Education	1995
		Beyond Software architecture	5,6,7	V	Luke Hohmann	, Addison wesley	2003

Code No: **R15D5808-151-S**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY **R15**

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Software Architecture and Design Patterns

(CSE)

Roll No	1	5	N	3						

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

SECTION - I

1.What is meant by software architecture and what makes good software architecture? Explain why software architecture is important?

(Or)

2.What is reconstructing software architecture? Explain various activities of it?

SECTION – II

3. What is architecture evaluation? Elaborate on ATAM in detail.

(Or)

4.What is meant by Software Product Lines? Explain briefly about software architecture in future?

SECTION – III

5. What is a design pattern? Explain the role of them in solving design problem.

(Or)

6.Explain motivation, applicability, Structure, Participants, Collaborations, Consequences and Implementation of Abstract Factory trend.

SECTION – IV

7.Explain any two behavioral patterns with some applications of them

(Or)

8.Write short notes on the following

Mediator pattern

Template method

Visitor

SECTION – V

9.Describe the three views of Celsius Tech architecture case study.

(Or)

10.Discuss the case study of the World Wide Web in interoperability.

R09

Code No: C5807

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I SEMESTER EXAMINATIONS, APRIL/MAY-2013

SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

(COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours **Max.Marks:60**

Answer any five questions

All questions carry equal marks

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1. What is the significance of Software Architecture? Discuss the activities of software architecture reconstruction.

2. Discuss the most important qualities of good Software Architecture? Discuss various scenarios of a quality attributes in practice.

3.a) Explain the benefits that flow from holding architectural inspections.
b) What are the outputs produced by ATAM based evaluation.

4.a) What makes software product lines work? Describe the steps involved.
b) Describe the methodology for finding the Design Patterns suitable for the required problem.

5. Explain the purpose of Creational Design Patterns and discuss Abstract Factory and Bridge Patterns.

6. With suitable examples, explain the usage of Interpreter Architectural styles.

7. Explain the purpose of Structural Patterns? List all the Structural Patterns and explain any three of them.

8.a) Explain the case study for Air Traffic Control.
b) Discuss the Applicability, Structure and Implementation issues of Mediator, Strategy Patterns.

Code: 9D58206c

M.Tech II Semester Supplementary Examinations, April 2013

DESIGN PATTERNS

(Common to CSE & CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions.
All questions carry equal marks.

*****

1 (a) What are class and object diagrams? Explain their role in design of an application.
(b) List and explain the operations of iterator.
(c) What is a constructor? Write the constructor for listiterator.

2 (a) Explain how to find the appropriate objects for design patterns.
(b) Distinguish between inheritance and composition.

3 (a) How can we define the document? What are its advantages? Explain the lexi's document structure in detail.
(b) What is monoglyph? Explain it in detail.

4 (a) What are the consequences of builder pattern? List and explain the implementation issues of a builder.
(b) List and explain the benefits of prototype pattern.
(c) Draw and explain the structure of singleton pattern.

5 (a) What are the motivational factors for composite pattern? Explain.
(b) Explain the advantages and liabilities of decorator pattern.
(c) Who are participants in adapter pattern? Explain them in detail.

6 (a) Explain the importance of behavioral patterns in design of patterns.
(b) Draw and explain the B Tree structure for font information.

7 (a) Explain in detail about the state pattern.
(b) What are the different methods that are called by the template pattern? Explain them in detail.

8 (a) Explain the role of collaborations in visitor pattern.
(b) Write short notes on decoupling senders and receivers.

M.Tech II Semester Supplementary Examinations, April 2013

DESIGN PATTERNS

(Common to CSE & CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions.

All questions carry equal marks.

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1 (a) What are class and object diagrams? Explain their role in design of an application.
(b) List and explain the operations of iterator.
(c) What is a constructor? Write the constructor for listiterator.

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8 (a) Explain the role of collaborations in visitor pattern.
(b) Write short notes on decoupling senders and receivers.

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M.Tech - II Semester Supplementary April/May 2012 Examinations

(for students admitted in 2009- 10 & 2010-11 only)

SOFTWARE ARCHITECTURE

(Common to CSE, CS & CN)

Time: 3 hours **Max. Marks: 60**

Answer any FIVE Questions

All Questions carry equal marks

*****

1. What is architecture business cycle? Elaborate on it in detail.

2. (a) What are the advantages of interpreter's architecture style?
   (b) Explain with a neat diagram the interpreter's architecture style.

3. (a) Explain how a information will be shared in the architecture structures.
   (b) What is the flow of information and the flow of data shares by the software development environments?

4. Explain the architectural design guidance for world wide web.

5. What is a pattern? Explain briefly the architecture patterns in detail.

6. (a) What is meant by specification?
   (b) Explain how formal models and specifications help in the industry standard computing.

7. (a) Mention some of the architectural description languages (ADL).
   (b) What are the major applications of ADLs in system development?

8. (a) What makes software product lines difficult?
   (b) Explain the future of software architecture system.

M.Tech II Semester Supplementary Examinations, April 2013

SOFTWARE ARCHITECTURE

(Common to CSE & CS)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions.

All questions carry equal marks.

*****

1 (a) Describe the business cycle of software architecture.

(b) What is software architecture? What are the activities involved in creating a software architecture?

2 (a) What is meant by even-based implies invocation? Explain.

(b) Give the list of common architectural styles. Briefly describe each one of them.

3 What are should information systems? Explain the evolution of shared information systems in business data processing.

4 Explain in detail architectural design guidance.

5 Write brief notes on the following:

(a) Creational patterns.

(b) Structural patterns.

(c) Behavioral patterns.

6 Briefly explain CORBA - a case study on computing infrastructure.

7 (a) Describe how to capture architectural information in an ADL.

(b) Describe some examples of ADL.

8 Explain how to reuse architectural assets with in an organization. What are its advantages?

M.Tech - II Semester Supplementary Examinations, April 2013

SOFTWARE ARCHITECTURE & DESIGN PATTERNS

(Software Engineering)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions

All questions carry equal marks

*****

1. (a) What is software architecture? Why is software architecture important?
   (b) Write the difference between reference model and reference architecture.

2. Define tactic. List and explain different tactics.

3. What is architecture evaluation? Explain about ATAM in detail.

4. (a) What makes software product lines difficult?
   (b) Explain what makes software product lines work?

5. (a) What is a design pattern? How design patterns solve design problems?
   (b) Elaborate on organizing catalogs of design patterns.

6. Write short notes on any four creational patterns.

7. (a) Explain template method.
   (b) Describe behavioral pattern and explain any two behavioral patterns.

8. (a) Write the requirements and qualities of A-TE avionics system.
   (b) How to achieve quality goals in the case study of interoperability (world wide web)?

Subject Code: B4004
M.Tech II Semester Supplementary Examinations June 2010
Design Patterns
(CSE-Information Technology)
Time: 3 Hours Max Marks: 60
Answer any FIVE questions All questions carry EQUAL marks

1. a). What is a Design Pattern? Briefly describe the describing of design patterns and catalogue of design patterns.
b). Describe "How to select a design pattern".
2. a). With a case study, describe the structure of a Document.
b). With an example, describe Embellishing the user interface.
3. What is Abstract Factory? What is the purpose of Abstract Factory? With example, describe in detail about Abstract Factory.
4. What is Structural Pattern? With an example, briefly describe Bridge, Composite and Decorator.
5. "Façade pattern hides the complexities of system from the client and provides a simpler interface", with sample code, justify the statement.
6. a). What is Behavioral pattern? What is principle of decoupling? With a simple example, briefly describe chain of responsibility.
b). Briefly describe Command and Interpreter patterns.
7. With code, describe in detail about Mediator, Momento and Observer patterns.

DESIGN PATTERNS JNTU previous years question papers

1. (a) Discuss about implementation issues in builder design pattern.
(b) Explain sample code of builder design pattern. [8+8]

2. (a) Explain the features of structural patterns in detail.
(b) Explain the motivation of adapter design pattern. [8+8]

3. (a) State the di erences between Traversal and Traversal actions.
(b) Explain visitor class and subclasses in detail. [8+8]

4. Explain with a neat diagram the Design Pattern relationships. [16]

5. (a) Explain the Known uses & related patterns of Visitor pattern.
(b) What is the structure & participants of Momento pattern? [8+8]

6. Explain the class design structure of an editor for music scores with suitable design pattern. [16]

7. (a) Explain the motivation of Iterator pattern.
(b) Explain the structure & participants of chain of Responsibility with one example. [8+8]

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5809) PARALLEL AND DISTRIBUTED ALGORITHMS
(CORE ELECTIVE –II)

Objectives:

- To learn parallel and distributed algorithms development techniques for shared memory and message passing models.
- To study the main classes of parallel algorithms.
- To study the complexity and correctness models for parallel algorithms.

UNIT-I

Basic Techniques, Parallel Computers for increase Computation speed, Parallel & Cluster Computing

UNIT-II

Message Passing Technique- Evaluating Parallel programs and debugging, Portioning and Divide and Conquer strategies examples

UNIT-III

Pipelining- Techniques computing platform, pipeline programs examples

UNIT-IV

Synchronous Computations, load balancing, distributed termination examples, programming with shared memory, shared memory multiprocessor constructs for specifying parallelist sharing data parallel programming languages and constructs, open MP

UNIT-V

Distributed shared memory systems and programming achieving constant memory distributed shared memory programming primitives, algorithms – sorting and numerical algorithms.

TEXT BOOK:

1. Parallel Programming, Barry Wilkinson, Michael Allen, Pearson Education, 2nd Edition.

REFERENCE BOOK:

1. Introduction to Parallel algorithms by Jaja from Pearson, 1992.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D9310) ADHOC - WIRELESS NETWORKS
(OPEN ELECTIVE-I)

UNIT -I:
Wireless LANS and PANS: Introduction, Fundamentals of WLANS, IEEE 802.11 Standards, HIPERLAN Standard, Bluetooth, Home RF.
AD HOC Wireless Networks: Introduction, Issues in Ad Hoc Wireless Networks.

UNIT -II:
MAC Protocols: Introduction, Issues in Designing a MAC protocol for Ad Hoc Wireless Networks, Design goals of a MAC Protocol for Ad Hoc Wireless Networks, Classifications of MAC Protocols, Contention - Based Protocols, Contention - Based Protocols with reservation Mechanisms, Contention – Based MAC Protocols with Scheduling Mechanisms, MAC Protocols that use Directional Antennas, Other MAC Protocols.

UNIT -III:
Routing Protocols: Introduction, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classification of Routing Protocols, Table –Driven Routing Protocols, On – Demand Routing Protocols, Hybrid Routing Protocols, Routing Protocols with Efficient Flooding Mechanisms, Hierarchical Routing Protocols, Power – Aware Routing Protocols.

UNIT –IV:
Transport Layer Protocols: Introduction, Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of Transport Layer Solutions, TCP Over Ad Hoc Wireless Networks, Other Transport Layer Protocol for Ad Hoc Wireless Networks.

UNIT –V:
Wireless Sensor Networks: Introduction, Sensor Network Architecture, Data Dissemination, Data Gathering, MAC Protocols for Sensor Networks, Location Discovery, Quality of a Sensor Network, Evolving Standards, Other Issues.

TEXT BOOKS:
1. Ad Hoc Wireless Networks: Architectures and Protocols - C. Siva Ram Murthy and B.S.Manoj, 2004, PHI.
2. Wireless Ad- hoc and Sensor Networks: Protocols, Performance and Control - Jagannathan Sarangapani, CRC Press.
REFERENCE BOOKS:
1. Ad- Hoc Mobile Wireless Networks: Protocols & Systems, C.K. Toh , 1st Ed. Pearson Education.

2. Wireless Sensor Networks - C. S. Raghavendra, Krishna M. Sivalingam, 2004, Springer.

COURSE COVERAGE
ADHOC - WIRELESS NETWORKS

S.No	SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
1	Adhoc Wireless Networks	Ad Hoc Wireless Networks Architectures and Protocols	1,2,3	I,II	C. Siva Ram Murthy and B.S.Manoj,	PHI	2004
		Wireless Ad- hoc and Sensor Networks: Protocols, Performance and Control	2,3,4	III,IV	Jagannathan Sarangapani	CRC Press	----
		Ad- Hoc Mobile Wireless Networks: Protocols & Systems	2,3	V	C.K. Toh	Pearson Education	1st

Code No: R15D9310-151-S

R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester supplementary Examinations, Aug 2016

Adhoc-Wireless Networks

(CSE)

Roll No	1	5	N	3						

Time: 3 hours **Max. Marks: 75**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

SECTION - I

1. a)Discuss the design goals of WLANs [7]
   b) Explain the Bluetooth protocol stack. [8]

(Or)

2. a)Describe the CSMA/CA mechanism in detail. [10]
   b) Discuss the typical deployment scenario of HIPER LAN/2. [5]

SECTION – II

3. a)Explain Busy Tone Multiple Access protocols . [8]
   b) Explain the reservation multiple access with priority assignment. [7]

(Or)

4.a)Describe the Real-Time medium access control protocol. [8]
   b) Discuss the Directional MAC protocols for Ad Hoc wireless networks. [7]

SECTION – III

5. a)Explain the broad classification of Routing protocols for Ad Hoc wireless networks. [7]
   b) Explain the Adhoc- on demand distance vector routing protocol and write advantages and disadvantages. [8]

(Or)

6. a) Describe the route establishment and maintenance in WRP with examples. [8]
   b) Explain the Core Extraction distributed Ad Hoc Routing protocol. [7]

SECTION – IV

7.a)Write the issues in designing a Transport layer protocol for Ad Hoc wireless networks.[7]
   b) Explain the operation of TCP–Bus neat diagram and write advantages and disadvantages. [8]

(Or)

8. a)Discuss the Application Controlled Transport protocol. [8]
b) Explain the Ad Hoc Transport protocol and write advantages and disadvantages. [7]

SECTION – V

9. Explain the Data Dissemination for Wireless Sensor Networks. [15]

(Or)

10.a) Discuss the MAC protocols for Sensor Networks. [8]

b) Explain the coverage problem in Quality of a Sensor Networks. [7]

Code No: R15D9310-151 **R15**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech. I Year - I Semester, February 2016

Sub: ADHOC - WIRELESS NETWORKS

(Computer Science Engineering)

Roll No_____

Time: 3 hours **Max. Marks: 75**

Note: Question paper Consists of 5 SECTIONS (One SECTION for each UNIT) and answer FIVE Questions, Choosing ONE Question from each SECTION. Each Question carries 15 marks.

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SECTION - I

1. a)Explain the services offered by a typical IEEE 802.11 network. [5]

b) Write in detail about HIPERLAN/1 standard. [10]

(Or)

2. a)Explain the basic MAC layer mechanisms. [7]

b) Discuss the Medium Access schemes used in Ad Hoc Wireless networks. [8]

SECTION – II

3. Explain a medium Access protocol for wireless LAN. [15]

(Or)

4. a) Write the design goals of a MAC protocol for Ad Hoc wireless networks. [5]

b) Discuss the Distributed priority scheduling and medium access in Ad hoc networks. [10]

SECTION – III

5. a) Discuss the major challenges in designing a routing protocol for Ad Hoc wireless networks. [7]

b) Explain the hierarchical state routing protocol with example and mention advantages and disadvantages. [8]

(Or)

6. a)Discuss the characteristics of an ideal Routing protocol for Ad Hoc wireless networks.[8]

b).Describe the Zone routing protocol and mention advantages and disadvantages. [7]

SECTION – IV

7. a) Write the design goals of a transport layer protocol for Ad Hoc wireless networks. [7]
   b) Describe the Ad Hoc TCP mechanism with neat illustration. [8]

(Or)

8. a) Explain why does TCP not perform well in Ad Hoc wireless networks. [10]
   b) Write a comparison of TCP solutions for Ad Hoc wireless networks. [5]

SECTION – V

9. a) Write the issues and challenges in designing a Wireless Sensor Network. [7]
   b) Describe the layered architecture of Wireless Sensor Network. [8]

(Or)

10.a)Discuss the Data gathering problem of Sensor Network. [7]
   b) Describe the MAC protocols for Sensor Networks. [8]

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – I Sem(Computer Science & Engg.)
(R15D9302) MULTIMEDIA PROCESSING
(OPEN ELECTIVE-I)

UNIT I - Audio Processing Systems

Digital Signal Processors: Fixed Point DSPs, Floating Point DSPs, Development Tools, Digital Audio Interfaces: Two-Channel AES/EBU Interface, MADI Interface, Single Processor Systems: Peripherals, Control, Multi Processor Systems: Connection via Serial Links, Connection via Parallel Links, Connection via Standard Bus Systems, Scalable Audio System

UNIT II – Equalizers

Recursive Audio Filters: Design, Parametric Filter structures, Quantization Effects, Non-recursive Audio Filters: Fast Convolution, Fast Convolution of Long Sequences, Filter Design by Filter Sampling, Multi-Complementary Filter Bank: Principles, Example: 8-band Multi Complementary Filter Bank

UNIT III - Audio Coding

Audio Coding: Lossless Audio Coding, Lossy Audio Coding, Psycho acoustics, Advanced Audio Coding (MPEG Coding Standards), Spectral Band Replication, Java Applet- Psycho acoustics.

UNIT -IV:

Video Processing: Analog Video, Digital Video. Time-Varying Image Formation models: Three-Dimensional Motion Models, Geometric Image Formation, Photometric Image Formation, Sampling of Video signals, Filtering operations.

UNIT –V:

Motion Estimation: Optical flow, General Methodologies, Pixel Based Motion Estimation Block-Matching Algorithm, Mesh based Motion Estimation, Global Motion Estimation, Region based Motion Estimation, Multi resolution motion estimation, Waveform based coding, Block based transform coding, Predictive coding, Application of motion estimation in Video coding.

TEXT BOOKS:

1. Udo Zolzer, “Digital Audio Signal Processing” 2nd Edition, John Wiley Sons & Pvt Ltd.
2. Digital Image Processing – Gonzaleze and Woods, 3rd Ed., Pearson.
3. Video Processing and Communication – Yao Wang, Joem Ostermann and Ya–quin Zhang. 1st Ed., PH Int.

REFRENCE BOOKS:

1. Digital Image Processing and Analysis-Human and Computer Vision Application with CVIP Tools – Scotte Umbaugh, 2nd Ed, CRC Press, 2011.
2. Digital Video Processing – M. Tekalp, Prentice Hall International.
3. Digital Image Processing – S.Jayaraman, S.Esakkirajan, T.Veera Kumar – TMH, 2009.
4. Multidimentional Signal, Image and Video Processing and Coding – John Woods, 2nd Ed, Elsevier.
5. Digital Image Processing with MATLAB and Labview – Vipula Singh, Elsevier.
6. Video Demystified – A Hand Book for the Digital Engineer – Keith Jack, 5th Ed., Elsevier.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D9303) EMBEDDED SYSTEMS DESIGN

(OPEN ELECTIVE-I)

UNIT –I:

ARM Architecture:

ARM Design Philosophy, Registers, Program Status Register, Instruction Pipeline, Interrupts and Vector Table, Architecture Revision, ARM Processor Families.

UNIT –II:

ARM Programming Model – I:

Instruction Set: Data Processing Instructions, Addressing Modes, Branch, Load, Store Instructions,PSR Instructions, Conditional Instructions.

UNIT –III:

ARM Programming Model – II:

Thumb Instruction Set: Register Usage, Other Branch Instructions, Data Processing Instructions, Single-Register and Multi Register Load-Store Instructions, Stack, Software Interrupt Instructions

UNIT –IV:

ARM Programming:

Simple C Programs using Function Calls, Pointers, Structures, Integer and Floating Point Arithmetic, Assembly Code using Instruction Scheduling, Register Allocation, Conditional Execution and Loops.

UNIT –V:

Memory Management:

Cache Architecture, Polices, Flushing and Caches, MMU, Page Tables, Translation, Access Permissions, Context Switch.

TEXT BOOKS:

1. ARM Systems Developer's Guides- Designing & Optimizing System Software – Andrew N.Sloss, Dominic Symes, Chris Wright, 2008, Elsevier.
2. Professional Embedded ARM development-James A Langbridge, Wiley/Wrox

REFERENCE BOOKS:

1. Embedded Microcomputer Systems, Real Time Interfacing – Jonathan W. Valvano – Brookes/ Cole, 1999, Thomas Learning.
2. ARM System on Chip Architecture, Steve Furber, 2nd Edition, Pearson

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – I Sem(Computer Science & Engg.)

(R15D5881) ADVANCED DATA STRUCTURES AND ALGORITHMS LAB

Objectives:

- The fundamental design, analysis, and implementation of basic data structures.
- Basic concepts in the specification and analysis of programs.
- Principles for good program design, especially the uses of data abstraction.

Sample Problems on Data structures:

1) Write Java programs that use both recursive and non-recursive functions for implementing the following searching methods:
   a) Linear search b) Binary search
2) Write Java programs to implement the following using arrays and linked lists
   a) List ADT
3) Write Java programs to implement the following using an array.
   a) Stack ADT b) Queue ADT
4) Write a Java program that reads an infix expression and converts the expression to postfix form. (Use stack ADT).
5) Write a Java program to implement circular queue ADT using an array.
6) Write a Java program that uses both a stack and a queue to test whether the given string is a palindrome or not.
7) Write Java programs to implement the following using a singly linked list.
   a) Stack ADT b) Queue ADT
8) Write Java programs to implement the deque (double ended queue) ADT using
   a) Array b) Singly linked list c) Doubly linked list.
9) Write a Java program to implement priority queue ADT.
10) Write a Java program to perform the following operations:
    a) Construct a binary search tree of elements.
    b) Search for a key element in the above binary search tree.
    c) Delete an element from the above binary search tree.
11) Write a Java program to implement all the functions of a dictionary (ADT) using Hashing.
12) Write a Java program to implement Dijkstra's algorithm for Single source shortest
13) path problem.
14) Write Java programs that use recursive and non-recursive functions to traverse the
15) given binary tree in
    a) Preorder b) Inorder c) Postorder.
16) Write Java programs for the implementation of bfs and dfs for a given graph.
17) Write Java programs for implementing the following sorting methods:

a) Bubble sort d) Merge sort g) Binary tree sort
b) Insertion sort e) Heap sort
c) Quick sort f) Radix sort

18) Write a Java program to perform the following operations:
a) Insertion into a B-tree b) Searching in a B-tree
19) Write a Java program that implements Kruskal's algorithm to generate minimum cost
20) spanning tree.
21) Write a Java program that implements KMP algorithm for pattern matching

REFERENCE BOOKS:

1. Data Structures and Algorithms in java, 3rd edition, A.Drozdek, Cengage Learning.
2. Data Structures with Java, J.R.Hubbard, 2nd edition, Schaum's Outlines, TMH.
3. Data Structures and algorithms in Java, 2nd Edition, R.Lafore, Pearson Education.
4. Data Structures using Java, D.S.Malik and P.S. Nair, Cengage Learning.
5. Data structures, Algorithms and Applications in java, 2nd Edition, S.Sahani, Universities Press.
6. Design and Analysis of Algorithms, P.H.Dave and H.B.Dave, Pearson education.
7. Data Structures and java collections frame work, W.J.Collins, Mc Graw Hill.
8. Java: the complete reference, 7th editon, Herbert Schildt, TMH.
9. Java for Programmers, P.J.Deitel and H.M.Deitel, Pearson education / Java: How to Program P.J.Deitel and H.M.Deitel , 8th edition, PHI.
10. Java Programming, D.S.Malik,Cengage Learning.
A Practical Guide to Data Structures and Algorithms using Java, S.Goldman & K.Goldman, Chapman & Hall/CRC, Taylor & Francis Group.
(Note: Use packages like java.io, java.util, etc)

II- SEMESTER

M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D5810) ADVANCED NETWORK PROGRAMMING

Objectives:

- Computer network programming involves writing computer programs that enable processes to communicate with each other across a computer network
- **Network programming is client–server programming**
- Interprocess communication, even if it is bidirectional, cannot be implemented in a perfectly symmetric way: to establish a communication channel between two processes, one process must take the initiative, while the other is waiting for it. Therefore, network programming unavoidably assumes a client–server model: The process initiating the communication is a client, and the process waiting for the communication to be initiated is a server. The client and server processes together form a distributed system. In a peer-to-peer communication, the program can act both as a client and a server.

UNIT – I

Linux Utilities- File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking utilities, Filters, Text processing utilities and Backup utilities. Bourne again shell(bash) - Introduction, pipes and redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples. Review of C programming concepts-arrays, strings (library functions), pointers, function pointers, structures, unions, libraries in C.

UNIT - II

Files- File Concept, File types File System Structure, Inodes, File Attributes, file I/O in C using system calls, kernel support for files, file status information-stat family, file and record locking-lockf and fcntl functions, file permissions- chmod, fchmod, file ownership-chown, lchown , fchown, linkssoft links and hard links – symlink, link, unlink. File and Directory management – Directory contents, Scanning Directories- Directory file APIs. Process- Process concept, Kernel support for process, process attributes. Process control – process creation, replacing a process image, waiting for a process, process termination, zombie process, orphan process.

UNIT - III

Signals- Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, unreliable signals, reliable signals, kill, raise , alarm, pause, abort, sleep functions. Interprocess Communication - Introduction to IPC mechanisms, Pipes- creation, IPC between related processes using unnamed pipes, FIFOs-creation, IPC between unrelated processes using FIFOs(Named pipes), differences between unnamed and named pipes, popen and pclose library functions, Introduction to message queues, semaphores and shared memory.

Message Queues- Kernel support for messages, UNIX system V APIs for messages, client/server example. Semaphores-Kernel support for semaphores, UNIX system V APIs for semaphores.

UNIT – IV

Shared Memory- Kernel support for shared memory, UNIX system V APIs for shared memory, client/server example. Network IPC - Introduction to Unix Sockets, IPC over a network, Client-Server model ,Address formats(Unix domain and Internet domain), Socket system calls for Connection Oriented - Communication, Socket system calls for Connectionless-Communication, Example-Client/Server Programs- Single Server-Client connection, Multiple simultaneous clients, Socket options – setsockopt, getsockopt, fcntl.

UNIT-V

Network Programming in Java-Network basics, TCP sockets, UDP sockets (datagram sockets), Server programs that can handle one connection at a time and multiple connections (using multithreaded server), Remote Method Invocation (Java RMI)-Basic RMI Process, Implementation details-Client-Server Application.

TEXT BOOKS:

1. Unix System Programming using C++, T.Chan, PHI.(Units II,III,IV)
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH.(Unit I)
3. An Introduction to Network Programming with Java, Jan Graba, Springer, rp 2010.(Unit V)
4. Unix Network Programming ,W.R. Stevens, PHI.(Units II,III,IV)
5. Java Network Programming,3rd edition, E.R. Harold, SPD, O'Reilly.(Unit V)

REFERENCE BOOKS:

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the UNIX environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. UNIX for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.
4. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones, Wrox, Wiley India Edition.
5. Unix Network Programming The Sockets Networking API, Vol.-I,W.R.Stevens, Bill Fenner, A.M.Rudoff, Pearson Education.
6. Unix Internals, U.Vahalia, Pearson Education.
7. Unix shell Programming, S.G.Kochan and P.Wood, 3rd edition, Pearson Education.
8. C Programming Language, Kernighan and Ritchie, PHI

COURSE COVERAGE

ADVANCED NETWORK PROGRAMMING

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
Advance network programming	Unix system programming using in C++	2,3,4	II,III,IV	T Chan	PHI	2nd
	Unix concepts and applications	1	I	Sumitabha das	TMH	4th
	Java networking programming	5	V	ER Harold,SPD	O'Reilly	----

Code No: 5158K **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, April-2015
ADVANCED NETWORK PROGRAMMING
(Computer Science Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 marks = 20

1.a) Write a short note on pattern matching commands in Linux.
b) What is a shell? Explain how one can change the environment of the working shell?
c) Differentiate between wait() and waitpid() system calls.
d) What is port number? Describe different types of port numbers.
e) Write a short note on InetAddress class.

PART - B

5 × 8 marks = 40

2. Explain various process and Networking utilities in Linux. [8]

OR

3. Write about the different looping and flow control statements available in Bourne shell. [8]

4. Write a short note on the following file and directory management system calls.
a)opendir(). b)readdir(). c)closedir(). d) telldir(). [8]

OR

5. Explain the significance of fork() and wait() system calls in the context of process management. [8]

6. What is a signal? Explain different signal handling mechanisms. [8]

OR

7. What is a message queue? Discuss various structures and APIs for message queues in Unix. [8]

8. Explain any two APIs associated with shared memory. [8]

OR

9. Explain the TCP connection establishment and termination with the help of a state transition diagram. [8]

10. Explain the various methods in TCP/IP server socket class. [8]

OR

11. Write a simple client - server application using java's Datagram sockets. [8]

MallaReddy College Of Engineering & Technology
(UGC Autonomous)
MTECH (I/II Semister)
Advanced Network Programming
(Model Paper-I) Max.Marks:75
Part-A
Answer ALL of the following

1.Draw the OSI seven layred model along with the approximate mapping to the internet protocol ?

2.Expalin TCP suite changes using TCP state transition diagram ?

3.Explain the TCP based client server programming using echo server/client example ?

4.write a program that print the default TCP,UDP, send and receive buffer server ?

5.a).explain the concept of file locking system calls ?
b).explain how semaphore are used to synchronize the access to the shared memory segments ?

6.a).write in detail in with example usage on getsocketopt and setsocketopt system call ?
b).write in details with the example usage on select and poll system call

7.explain the function gethostbyname,gethostbyaddr,getserverbyname, with signature ?

8.Explain the how the terminal line disciplines are used in UNIX ?

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D5811) ADVANCED DATABASES

Objectives:

By the end of the course, you will know:

- How to design a database
- How to convert the design into the appropriate tables
- Handling Keys appropriately
- Enforcing Integrity Constraints to keep the database consistent
- Normalizing the tables to eliminate redundancies
- Querying relational data
- Optimizing and processing the queries
- Storage Strategies for easy retrieval of data through index
- Triggers, Procedures and Cursors ,Transaction Management
- Distributed databases management system concepts and Implementation

UNIT I

Database System Applications, Purpose of Database Systems, View of Data – Data Abstraction, Instances and Schemas, Data Models – the ER Model, Relational Model, Other Models – Database Languages – DDL,DML, Database Access from Applications Programs, Transaction Management, Data Storage and Querying, Database Architecture, Database Users and Administrators, ER diagrams,. Relational Model: Introduction to the Relational Model – Integrity Constraints Over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design, Introduction to Views –Altering Tables and Views, Relational Algebra, Basic SQL Queries, Nested Queries, Complex Integrity Constraints in SQL, Triggers

UNIT II

Introduction to Schema Refinement – Problems Caused by redundancy, Decompositions – Problem related to decomposition, Functional Dependencies - Reasoning about FDS, Normal Forms – FIRST, SECOND, THIRD Normal forms – BCNF –Properties of Decompositions- Loss less- join Decomposition, Dependency preserving Decomposition, Schema Refinement in Data base Design – Multi valued Dependencies – FOURTH Normal Form, Join Dependencies, FIFTH Normal form.

UNIT III

Transaction Management: The ACID Properties, Transactions and Schedules, Concurrent Execution of Transactions – Lock Based Concurrency Control, Deadlocks – Performance of Locking – Transaction Support in SQL. Concurrency Control: Serializability, and recoverability – Introduction to Lock Management – Lock Conversions, Dealing with Dead Locks, Specialized Locking Techniques –

Concurrency Control without Locking. Crash recovery: Introduction to Crash recovery, Introduction to ARIES, the Log, and Other Recovery related Structures, the Write-Ahead Log Protocol, Check pointing, recovering from a System Crash, Media recovery

UNIT IV

Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing –Clustered Indexes, Primary and Secondary Indexes, Index data Structures – Hash Based Indexing, Tree based Indexing Storing data: Disks and Files: -The Memory Hierarchy – Redundant Arrays of Independent Disks. Tree Structured Indexing: Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+ Trees: A Dynamic Index Structure, Search, Insert, Delete. Hash Based Indexing: Static Hashing, Extendable hashing, Linear Hashing, Extendable vs. Linear Hashing.

UNIT V

Distributed databases: Introduction to distributed databases, Distributed DBMS architectures, Storing data in a distributed DBMS, Distributed catalog management, Distributed query processing Updating distributed data, Distributed transactions, Distributed concurrency control, Distributed recovery

TEXT BOOKS:

1. Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, TMH, 3rd Edition,2003.
2. Data base System Concepts, A.Silberschatz, H.F. Korth, S.Sudarshan, McGraw hill, VI edition, 2006.
3. Fundamentals of Database Systems 5th edition. Ramez Elmasri, Shamkant B.Navathe, Pearson Education, 2008.

REFERENCE BOOKS:

1. Introduction to Database Systems, C.J.Date,Pearson Education.
2. Database Management System Oracle SQL and PL/SQL, P.K.Das Gupta, PHI.
3. Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning, 2008.
4. Database Systems, A Practical approach to Design Implementation and Management Fourth edition, Thomas Connolly, Carolyn Begg, Pearson education.
5. Database-Principles, Programming, andPerformance, P.O'Neil&E.O'Neil, 2nd ed., ELSEVIER
6. Fundamentals of Relational Database Management Systems, S.Sumathi, S.Esakkirajan, Springer.
7. Introduction to Database Management, M.L.Gillenson and others, Wiley Student Edition.
8. Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis Group.
9. Distributed Databases Principles & Systems, Stefano Ceri, Giuseppe Pelagatti, TMH.

COURSE COVERAGE
ADVANCE DATABASE

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
ADVANCE DATABASES	Database management system	1,2,3,5,6	I,II	Raghuramakrishanan	TMH	3rd
	Database system concepts	3,45,6	III,IV	A silberschartz,HF korth	TMH	6th
	Fundamentals of database systems	5,6,7	V	Ramesh elmerts	Pearson	8th

MallaReddy College Of Engineering & Technology
(UGC Autonomous)
MTECH (I/II Semister)
Advanced databases
(Model Paper-I) **Max.Marks:75**

Part-A

Answer ALL of the following **5*5=25**

1. (a) What are Agregate functions?
   (b) Explain the difference between Candidate key and Primary key?
   (c) Define Persistent with example.
   (d) What is Serilazability?
   (e) What are the problems caused by data redundency?

Part-B

2. (a) Draw an ERD for Library Managemnet System and explain the various notations used.

   OR (10)

   (b) Define Normaization. Discuss in detail 1NF, 2 NF, 3 NF with example.
3. (a) How are the transactions executed in distributed data bases?

   OR (10)

   (b) Discuss in detail the various techniques that can be used for database recovery form failures in databases.
4. (a) Define a Trigger. Explain how triggers are useful for preserving database intigrity with an example?

   OR (10)

   (b) Why should prefer database instead of storing data in operating system files.
5. (a) Explain Clustered, Primary and Secondary indexes.

   OR (10)

   (b) Explain Hash Based Indexing in detail.
6. (a) Explain ACID properties with examples.

   OR (10)

   (b) Explain Distributed DBMS architecture.

MallaReddy College Of Engineering & Technology

(UGC Autonomous)

MTECH (I/II Semister)

Advanced databases

(Model Paper-II) **Max.Marks:75**

Part-A

Answer ALL of the following **5*5=25**

1. (a) What is Data Inconsistency?
   (b) Define Schema. Write different Schemas in database.
   (c) What is Foreign Key?
   (d) Explain DML Commands.
   (e) What is Recoverable Schedule?

Part-B

2. (a) Explain the structure of DBMS with a neat sketch.

OR (10)

   (b) Explain the Set Comparison Operators with example queries.

3. (a) Define View. Explain DDL, DML on views. How views offer security?

OR (10)

   (b) What is Schema Refinement. Explain BCNF, 3 NF with example.

4. (a) What is Conflict Serilazability? Explain with example schedules.

OR (10)

   (b) Explain Concurrency Control Mechanisms with out locking.

5. (a) Explain ISAM.

OR (10)

   (b) Explain Hash Based Indexing.

6. (a) Explain how query processing in distributed databases.

OR (10)

   (b) Explain Concurrency Control in distributed databases.

MallaReddy College Of Engineering & Technology
(UGC Autonomous)
MTECH (I/II Semister)
Advanced databases
(Model Paper-III) **Max.Marks:75**
Part-A

Answer ALL of the following **5*5=25**

1. (a) Explain ER-Model.
   (b) Explain Database Application Architectures.
   (c) Explain TCL commands.
   (d) What is Lock Conversion?
   (e) What are Conflict Operations?

Part-B

2. (a) Explain the Conceptual Design with ER-Model for Large Enterprise.
   OR (10)
   (b) Explain differences between TRC and DRC.
3. (a) Explain different types of intigrity constraints in Relational Model.
   OR (10)
   (b) What is Data Abstraction? Explain different levels of abtraction offered by DBMS?
4. (a)What is Multi-Valued Dependecy? Explain 4 NF with example.
   OR (10)
   (b) What is Functional Dependency? How to compute clouser for given FD set?
5. (a) Explain Lock Based Concurrency Control with examples.
   OR (10)
   (b) Explain ARIES algorithm.
6. (a) Explain different RAID levels.
   OR (10)
   (b) Explain B+ Trees.

Code No: 5158L **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, April-2015
ADVANCED DATABASES
(Computer Science Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 marks = 20

1.a) List the functionalities of database administrator.
b) Define functional dependency. Give two examples.
c) Discuss wait-die and wound-wait policies.
d) Differentiate between clustered and unclustered indexing.
e) Give Distributed transaction model.

PART - B

5 × 8 marks = 40

2.a) How to access database from application programs?
b) What is a data model? Briefly discuss any two data models. [4+4]

OR

3. What is an Integrity constraint? How to define them on database? How DBMS enforces integrity constraints? [8]

4.a) What are the desirable properties of decomposition? Explain with examples.
b) State second normal form. [4+4]

OR

5. How to compute closure of set of functional dependencies of a database schema? Explain algorithm with illustrations. [8]

6.a) Give the state transition diagram of a database transaction.
b) What is the significance of precedence graph in transaction processing? [4+4]

OR

7. Explain Failure classification. Discuss how ARIES algorithm can handle crash recovery process? [8]

8. What is multilevel indexing? Does multilevel indexing improve query performance? Justify your answer. [8]

OR

9.a) Make a comparison of heap file organization with Hash file organization.
b) Write about linear hashing. [4+4]

10. Define distributed database. Explain distributed database management architecture. [8]

OR

11. How to convert a global query into local queries? Discuss the fragmentation and allocation schema utilization in distributed query processing. [8]

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MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D5812) WEB SERVICES AND SERVICE ORIENTED ARCHITECTURE

Objectives:

- To Understand Web Services and implementation model for SOA
- To Understand the SOA, its Principles and Benefits
- To Understand XML concepts
- To Understand paradigms needed for testing Web Services
- To explore different Test Strategies for SOA-based applications
- To implement functional testing, compliance testing and load testing of Web Services
- To Identify bug-finding ideas in testing Web Services

UNIT I

Evolution and Emergence of Web Services – Evolution of distributed computing. Core distributed computing technologies – client/server, CORBA, JAVA RMI, Micro Soft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA). Introduction to Web Services – The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

UNIT II

Web Service Architecture – Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services. Describing Web Services – WSDL introduction, non functional service description, WSDL1.1 Vs WSDL 2.0, WSDL document, WSDL elements, WSDL binding, WSDL tools, WSDL port type, limitations of WSDL.

UNIT III

Brief Over View of XML – XML Document structure, XML namespaces, Defining structure in XML Documents, Reuse of XML schemes, Document navigation and transformation. SOAP : Simple Object Access Protocol, Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP envelope, Encoding, Service Oriented Architectures, SOA revisited, Service roles in a SOA, Reliable messaging, The enterprise Service Bus, SOA Development Lifecycle, SOAP HTTP binding, SOAP communication model, Error handling in SOAP.

UNIT IV

Registering and Discovering Services : The role of service registries, Service discovery, Universal Description, Discovery, and Integration, UDDI Architecture, UDDI Data Model, Interfaces, UDDI Implementation, UDDI with WSDL, UDDI specification, Service Addressing and Notification, Referencing and addressing Web Services, Web Services Notification.

UNIT V

SOA and web services security considerations, Network-level security mechanisms, Application-level security topologies, XML security standards, Semantics and Web Services, The semantic interoperability problem, The role of metadata, Service metadata, Overview of .NET and J2EE, SOA and Web Service Management, Managing Distributed System, Enterprise management Framework, Standard distributed management frameworks, Web service management, Richer schema languages, WS-Metadata Exchange.

TEXT BOOKS:

1. Web Services & SOA Principles and Technology, Second Edition, Michael P. Papazoglou.
2. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India.
3. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.

REFERENCE BOOKS:

1. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.
2. Building web Services with Java, 2nd Edition, S. Graham and others, Pearson Education.
3. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly, SPD.
4. McGovern, et al., "Java web Services Architecture", Morgan Kaufmann Publishers, 2005.
5. J2EE Wer Services, Richard Monson-Haefel, Pearson Education.

COURSE COVERAGE

WEB SERVICES AND SERVICE ORIENTED ARCHITECTURE

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
WEB SERVICES AND SERVICE ORIENTED ARCHITECTURE	Web Services &SOA principles technology	1,2 ,3,5	I,II	Michael p.papazoglou	PHI	-----
	Developing java web services	3,4,6,7	III,IV	R.Nagappan,R.skoczylas	Weiley India	----
	Developing enterprise web services	5	V	j.webber	Pearson	----

Code No: 5158M **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Examinations, April-2015
WEB SERVICES AND SERVICE ORIENTED ARCHITECTURE
(Computer Science Engineering)

Time: 3 Hours Max. Marks: 60

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 marks = 20

1.a) List out the challenges of distributed computing.
b) Discuss the limitations of WSDL.
c) Write short notes on error handling in Simple Object Access Protocol.
d) Briefly discuss about the concept of service registry.
e) State and explain semantic interoperability problem.

PART - B

5 × 8 marks = 40

2. Explain the tools and technologies used in enabling the web services. [8]

OR

3. Compare and contrast between various core distributed computing technologies. [8]

4. List and explain the basic steps of implementing web services. [8]

OR

5. Describe in detail about WSDL binding, WSDL tools and WSDL port type. [8]

6. With a neat diagram explain service oriented architecture in detail. [8]

OR

7. Explain the concept of Simple Object Access Protocol (SOAP) as a messaging protocol. [8]

8. Explain how to represent technical service information in Universal Description, Discovery, and Integration (UDDI). [8]

OR

9. Describe in detail about Web Services base notification interfaces. [8]

10. Elaborate the concept of Enterprise management Framework. [8]

OR

11. Explain in detail about Network-level security mechanisms. [8]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II - Semester Examinations, March/April 2011
WEB SERVICES
(COMMON TO COMPUTER SCIENCE & ENGINEERING, INFORMATION TECHNOLOGY)
Time: 3hours Max. Marks: 60
Answer any five questions
All questions carry equal marks
- - -

1. a) Define Distributed Computing and explain its evolution.
b) Explain the role of J2EE and XML in distributed computing. [12]

2. Describe the following:
a) CORBA b) RMI c) DCOM d) MOM. [12]

3. a) Explain the benefits and challenges of using Web Services.
b) Write short notes on web services communication. [6+6]

4. a) How can you develop SOAP web services using Java? Explain it?
b) Write short notes on SOAP message exchange Models. [6+6]

5.Describe the WSDL Structure and its life cycle in detail? [12]

6. a) What are the uses of UDDI Registry?
b) How can you ensure interoperability in Web Services? [6+6]

7. a) Explain XML security framework.
b) Write the guidelines for signing XML documents. [6+6]

8. Define the following:
a) Asynchronous RPC.
b) Replications.
c) Processor Consistency. [4+4+4]
*****

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

SERVICE ORIENTED ARCHITECTURE

(Common to CSE and CSSE)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

1 (a) Explain how services relate, communicate, designed and built.

(b) Discuss about the continuing evolution of SOA.

(c)

2 (a) Discuss about the anatomy of service oriented architecture.

(b) What is service layer abstraction? Explain.

(c)

3 (a) Explain service descriptions with WSDL in detail.

(b) What is atomic transaction? How is it related with other parts of SOA? Explain with a neat diagram.

4 (a) What is reliable messaging? Explain in detail.

(b) Discuss about notification and eventing.

5 List and explain service oriented business process design using a case study.

6 How WS-addressing and WS-reliable messaging relates to other WS* specifications? Explain with neat diagrams.

7 (a) Discuss about basic platform building blocks with a neat diagram.

(b) Explain the relationship between SOA layers and technologies with a neat diagram.

8 (a) Discuss about SOA reference architecture.

(d) Explain about .NET support for contemporary SOA.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

SERVICE ORIENTED ARCHITECTURE

(Common to CSE & CSSE)
Time: 3 hours Max. Marks: 70
Answer any FIVE questions
All questions carry equal marks
*****

1 (a) What is primitive SOA? Discuss about the benefits of SOA.
(b) Compare SOA with client-server architecture and hybrid web service architecture.

2 (a) What is service layer abstraction? Explain.
(b) How does service interface layer promote application and business logic?

3 (a) Discuss about the web services framework.
(b) What is orchestration? How is it related to other parts of SOA? Explain with a neat diagram.

4 (a) What are policies? How they relate to other parts of SOA?
(b) Write short notes on RESTFUL services.

5 (a) Explain common WS-BPEL process definition structure.
(b) Explain invoke and receive elements along with their attributes.
6 Discuss in detail about the key elements of WS-reliable messaging language.

7 Discuss about fundamental service technology architecture.

8 (a) How does J2EE support for service orientation principles?
(b) Explain .NET support for primitive SOA.
*****

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year –II Sem(Computer Science & Engg.)

(R15D5813) ADVANCED DATA MINING

(CORE ELECTIVE –III)

Objectives:

- To develop the abilities of critical analysis to data mining systems and applications.
- To implement practical and theoretical understanding of the technologies for data mining
- To understand the strengths and limitations of various data mining models**;**

UNIT-I

Data mining Overview and Advanced Pattern Mining

Data mining tasks – mining frequent patterns, associations and correlations, classification and regression for predictive analysis, cluster analysis , outlier analysis; advanced pattern mining in multilevel, multidimensional space – mining multilevel associations, mining multidimensional associations, mining quantitative association rules, mining rare patterns and negative patterns.

UNIT-II

Advance Classification

Classification by back propagation, support vector machines, classification using frequent patterns, other classification methods – genetic algorithms, roughest approach, fuzz>set approach;

UNIT-III

Advance Clustering

Density - based methods –DBSCAN, OPTICS, DENCLUE; Grid-Based methods – STING, CLIQUE;
Exception – maximization algorithm; clustering High- Dimensional Data; Clustering Graph and Network Data.

UNIT-IV

Web and Text Mining

Introduction, web mining, web content mining, web structure mining, we usage mining, Text mining – unstructured text, episode rule discovery for texts, hierarchy of categories, text clustering.

UNIT-V

Temporal and Spatial Data Mining

Introduction; Temporal Data Mining – Temporal Association Rules, Sequence Mining, GSP algorithm, SPADE, SPIRIT Episode Discovery, Time Series Analysis, Spatial Mining – Spatial Mining Tasks, Spatial Clustering. Data Mining Applications.

TEXT BOOKS:

1. Data Mining Concepts and Techniques, Jiawei Hang Micheline Kamber, Jian pei, Morgan Kaufmannn.
2. Data Mining Techniques – Arun K pujari, Universities Press.

REFERENCE BOOKS:

1. Introduction to Data Mining – Pang-Ning Tan, Vipin kumar, Michael Steinbach, Pearson.
2. Data Mining Principles & Applications – T.V Sveresh Kumar, B.Esware Reddy, Jagadish S Kalimani, Elsevier.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)
(R15D5814) STORAGE AREA NETWORKS
(CORE ELECTIVE-III)

Objectives:

- To understand Storage Area Networks characteristics and components.
- To become familiar with the SAN vendors and their products
- To learn Fibre Channel protocols and how SAN components use them to communicate with each other
- To become familiar with Cisco MDS 9000 Multilayer Directors and Fabric Switches
- Thoroughly learn Cisco SAN-OS features.
- To understand the use of all SAN-OS commands. Practice variations of SANOS features

UNIT I: Introduction to Storage Technology

Review data creation and the amount of data being created and understand the value of data to a business, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities

UNIT II: Storage Systems Architecture

Hardware and software components of the host environment, Key protocols and concepts used by each component ,Physical and logical components of a connectivity environment ,Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications, Concept of RAID and its components , Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Compare and contrast integrated and modular storage systems ,High-level architecture and working of an intelligent storage system

UNIT III: Introduction to Networked Storage

Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, and IPSAN, Benefits of the different networked storage options, understand the need for long-term archiving solutions and describe how CAS fulfills the need, understand the appropriateness of the different networked storage options for different application environments

UNIT IV: Information Availability & Monitoring & Managing Datacenter

List reasons for planned/unplanned outages and the impact of downtime, Impact of downtime, Differentiate between business continuity (BC) and disaster recovery (DR) ,RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures, Architecture of backup/recovery and the different backup/recovery topologies , replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their

role in providing disaster recovery and business continuity capabilities Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure, Key management tasks in a data center

UNIT V: Securing Storage and Storage Virtualization

Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain, Virtualization technologies, block-level and filelevel virtualization technologies and processes

Case Studies

The technologies described in the course are reinforced with EMC examples of actual solutions. Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

TEXT BOOK:

1. EMC Corporation, Information Storage and Management, Wiley.

REFERENCE BOOKS:

1. Robert Spalding, “Storage Networks: The Complete Reference“, Tata McGraw Hill, Osborne, 2003.
2. Marc Farley, “Building Storage Networks”, Tata McGraw Hill ,Osborne, 2001.
3. Meeta Gupta, Storage Area Network Fundamentals, Pearson Education Limited, 2002.

COURSE COVERAGE

STORAGE AREA NETWORKS

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
STORAGE AREA NETWORKS	Storage Networks: The Complete Reference	2,3,4	I,II	Robert Spalding	Tata McGraw Hill	2003
	Building Storage Networks	3,4,6	III,IV	Marc Farley	Tata McGraw Hill	2002
	Storage Area Network Fundamentals	5,6,7	V	Meeta Gupta	, Pearson Education Limited	2001

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Regular Examinations September 2010
STORAGE AREA NETWORK

1. Explain storage centric IT architecture and its advantages

2. Discuss about replacing server with storage networks

3.a)write about architecture intelligent disk sub system

b).explain about hard disk and internal I/O channel

4. a)write about just a bunch of disk

b).discuss about storage virtualization using RAID

5.a)explain about shared disk file systems

b)comparison between fiber channel SAN, FCoE SAN, iSCSI SAN and SAN

6. Storage virtualization on block or file level

7. Draw and discuss about San architecture and hardware devices

Code No: C2510 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April 2011
STORAGE AREA NETWORKS
(SOFTWARE ENGINEERING)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

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1. a. Discuss the Client/Server storage model.
   b. Mention the core elements of a data center infrastructure. Explain the role of each element. [12]

2. a. Briefly explain different levels of RAID.
   b. Discuss fundamental laws to govern disk performance. [12]

3. a. Compare and contrast Integrated and Modular storage systems.
   b. Explain physical and logical components of a storage environment. [12]

4. a. Explain Fiber Channel architecture. Discuss any one Fiber channel topologies.
   b. List the components of NAS. Discuss the factors affecting NAS performance and availability. [12]

5. a. Explain about Replication technologies and their role in ensuring information availability and business continuity.
   b. Explain about local and remote replication technologies. [12]

6. a. Discuss key metrics to monitor for different components in a storage infrastructure.
   b. Discuss key management tasks in a data center. [12]

7. a. Explain Security implementations in Storage networking.
   b. Discuss Critical Security attributes for information systems. [12]

8. Explain block-level and file-level Virtualization technologies. [12]

*****

R09

Code No: C6209

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
STORAGE AREA NETWORKS
(WEB TECHNOLOGIES)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

- - -

1. a) Describe the challenges in data storage and management.
   b) Discuss the overview of database server configuration. [12]

2. a) Mention the components of a Storage system environment and explain.
   b) What is RAID? Explain the implementation of RAID. [12]

3. a) Explain High-level architecture and working of an intelligent storage system.
   b) Write a short note on Intelligent Storage Array. [12]

4. a) Explain the architecture of SAN and its components.
   b) Distinguish General purpose Servers and NAS devices. [12]

5. a) Distinguish between business continuity (BC) and disaster recovery (DR).
   b) Explain single points of failure in a Storage infrastructure and list solutions to mitigate these failures. [12]

6. a) Identify key areas to monitor in a data center.
   b) Explain the architecture of backup/recovery. Discuss backup granularity. [12]

7. Explain Storage security framework and storage security domains. List and analyze the common threats in each domain. [12]

8. a) What is a Storage Virtualization? Explain different type of storage Virtualizations.
   b) Write short notes on SNIA storage virtualization taxonomy. [12]

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06CS833

Eighth Semester B.E. Degree Examination, December 2010
Storage Area Networks

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain server centric and storage centric IT architecture, with neat diagrams. **(12 Marks)**
b. Explain the benefits of storage networks on business applications. **(08 Marks)**

2 a. With a neat diagram, explain the architecture of intelligent disk subsystem. **(05 Marks)**
b. With a neat diagram, explain the different ways of connecting I/O channels to internal hard disks in a disk subaystem. **(08 Marks)**
c. Explain raid 4 and raid 5. **(07 Marks)**

3 a. Explain :
i) Cache on hard disk
ii) Write cache in controller of disk
iii) Read cache in raid controller. **(06 Marks)**
b. Explain remote mirroring. What is the advantage of remote mirroring? **(05 Marks)**
c. Briefly explain the physical I/O path from CPU to storage system. **(05 Marks)**
d. What is SCSI? How SCSI addresses its devices? **(04 Marks)**

4 a. Explain the service classes in fibre channel. **(08 Marks)**
b. What are exchange, sequence and frame? Explain with an example. **(06 Marks)**
c. Explain :
i) Addressing in fibre channel.
ii) Fibre channel frame format. **(06 Marks)**

PART – B

5 a. Explain : i) Journaling ; ii) Snapshots ; iii) Volume manager. **(06 Marks)**
b. Explain network attached server. **(08 Marks)**
c. Compare NAS and fibre channel SAN. **(06 Marks)**

6 a. What is storage virtualization? Briefly explain the implementation considerations. **(10 Marks)**
b. Briefly explain storage virtualization on block or file level. **(05 Marks)**
c. Briefly explain symmetric storage virtualization. **(05 Marks)**

7 a. Explain fibre channel switch and HBA. **(12 Marks)**
b. Explain switch's operating system. **(08 Marks)**

8 Write short notes on :
a. IP storage
b. Asymmetric storage virtualization
c. NAS hardware architecture
d. Device drivers. **(20 Marks)**

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MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D5815) DATABASE SECURITY

(CORE ELECTIVE-III)

Objectives:

- To learn the security of databases
- To learn the design techniques of database security
- To learn the secure software design

UNIT I

Introduction

Introduction to Databases Security Problems in Databases Security Controls Conclusions

Security Models -1

Introduction Access Matrix Model Take-Grant Model Acten Model PN Model Hartson and Hsiao's Model Fernandez's Model Bussolati and Martella's Model for Distributed databases

UNIT II

Security Models -2

Bell and LaPadula's Model Biba's Model Dion's Model Sea View Model Jajodia and Sandhu's Model The Lattice Model for the Flow Control conclusion.

Security Mechanisms

Introduction User Identification/Authentication Memory Protection Resource Protection Control Flow Mechanisms Isolation Security Functionalities in Some Operating Systems Trusted Computer System Evaluation Criteria

UNIT III

Security Software Design

Introduction A Methodological Approach to Security Software Design Secure Operating System Design Secure DBMS Design Security Packages Database Security Design

UNIT IV

Statistical Database Protection & **Intrusion Detection Systems**

Introduction Statistics Concepts and Definitions Types of Attacks Inference Controls evaluation Criteria for Control Comparison .Introduction IDES System RETISS System ASES System Discovery

UNIT V

Models For The Protection Of New Generation Database Systems -1

Introduction A Model for the Protection of Frame Based Systems A Model for the Protection of Object-Oriented Systems SORION Model for the Protection of Object-Oriented Databases

Models For The Protection Of New Generation Database Systems -2

A Model for the Protection of New Generation Database Systems: the Orion Model Jajodia and Kogan's Model A Model for the Protection of Active Databases Conclusions

TEXT BOOKS:

1. Database Security and Auditing, Hassan A. Afyouni, India Edition, CENGAGE Learning, 2009.
2. Database Security, *Castano,* Second edition, Pearson Education.

REFERENCE BOOK:

1. Database security by alfred basta, melissa zgola, CENGAGE learning.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D5816) GRID AND CLOUD COMPUTING

(CORE ELECTIVE-IV)

Objectives:

- To implement Basics, techniques and tools for Grid & Cloud Computing
- To understand any kind of heterogeneous resources over a network using open standards
- To implement the Service models

UNIT-I

System models for advanced computing –clusters of cooperative computing, grid computing and cloud computing; software systems for advanced computing-service oriented software and parallel and distributed programming models with introductory details, Features of grid and cloud platform.

UNIT-II

Cloud Computing services models and features in Saas, Paas and Iaas. Service oriented architecture and web services; Features of cloud computing architectures and simple case studies.

UNIT-III

Virtualization- Characteristic features, Taxonomy Hypervisor, Virtualization and Cloud Computing, Pros and Cons of Cloud Computing, Technology Examples/Case Studies.

UNIT-IV

Cloud programming Environmental- Map Reduce Hadoop Library from Apache, Open Source Cloud Software Systems –Eucalyptus.

UNIT-V

Grid Architecture and Service modeling, Grid resource management, Grid Application trends.

TEXT BOOKS:

1. Distributed and Cloud Computing, Kaittwang Geoffrey C.Fox and Jack J Dongrra, Elsevier India 2012.
2. Mastering Cloud Computing- Raj Kumar Buyya, Christian Vecchiola and S.Tanurai Selvi, TMH, 2012.

REFERENCE BOOKS:

1. Cloud Computing, John W. Ritting House and James F Ramsome, CRC Press, 2012.
2. Enterprise Cloud Computing, Gautam Shroff, Cambridge University Press, 2012.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)
(R15D5817) WIRELESS NETWORKS AND MOBILE COMPUTING
(CORE ELECTIVE –IV)

Objectives:

The main objective of this course is to provide the students with the competences required for understanding and using the communications component of an universal communications environment. Students will be provided, in particular, with the knowledge required to understand

- Emerging communications networks,
- Their computational demands,
- The classes of distributed services and applications enabled by these networks, and
- The computational means required to create the new networks and the new applications.

UNIT I

WIRELESS NETWORKS: Wireless Network, Wireless Network Architecture, Wireless Switching Technology, Wireless Communication problem, Wireless Network Reference Model, Wireless Networking Issues & Standards. **MOBILE COMPUTING:** Mobile communication, Mobile computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Mobility Management

UNIT II

WIRELESS LAN: Infra red Vs radio transmission, Infrastructure and Ad-hoc Network, IEEE 802.11: System Architecture, Protocol Architecture, 802.11b, 802.11a, Newer Developments, HIPERLAN 1, HIPERLAN 2, Bluetooth : User Scenarios, Architecture.

UNIT III

GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS (GSM): Mobile Services, System Architecture, Protocols, Localization & Calling, Handover, Security. **GPRS:** GPRS System
Architecture, **UMTS**: UMTS System Architecture. **LTE**: Long Term Evolution

UNIT IV

MOBILE NETWORK LAYER: Mobile IP: Goals, Assumptions, Entities and Terminology, IP Packet Delivery, Agent Discovery, Registration, Tunneling and Encapsulation, Optimizations, Dynamic Host Configuration Protocol (DHCP)

UNIT V

MOBILE TRANSPORT LAYER: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP, TCP over 2.5G/3G Wireless Networks.

TEXT BOOKS:

1. Jochen Schiller, “Mobile Communications”, Pearson Education, Second Edition, 2008.
2. Dr. Sunilkumar, et al “Wireless and Mobile Networks: Concepts and Protocols”, Wiley India.
3. Raj Kamal, “Mobile Computing”, OXFORD UNIVERSITY PRESS.

REFERENCE BOOKS:

1. Asoke K Talukder, et al, “Mobile Computing”, Tata McGraw Hill, 2008.
2. Matthew S.Gast, “802.11 Wireless Networks”, SPD O’REILLY.
3. Ivan Stojmenovic, “Handbook of Wireless Networks and Mobile Computing”, Wiley, 2007.
4. Kumkum Garg, “Mobile Computing”, Pearson.
5. Handbook of Security of Networks, Yang Xiao, Frank H Li, Hui Chen, World Scientific, 2011.

COURSE COVERAGE

WIRELESS NETWORK AND MOBILE COMPUTING

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
WIRELESS NETWORK AND MOBILE COMPUTING	Mobile communications	1,6,13	I,II	Johen schiller	Pearson	2nd
	Wireless and mobile networks	6,7,8,9	III,IV	Dr.sunil kumar	Wiley india	----
	Mobile computing	5	V	Raj kamal	Tata Mcgraw hill	2nd

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Regular Examinations March/April 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

- - ---

1. a) What is Mobile Computing? Describe the characteristics, limitations, and applications of Mobile Computing?
b) What is the main difference between Infrastructure based Network and Adhoc Network?

2. a) Explain GSM Architecture with neat sketches.
b) What is Handover? Why it is required? Explain the types of handovers used in GSM Network.

3. a) What is tunneling? Why is it used in Mobile IP? Justify your answer.
b) What is Mobile IP Optimization? Why it is required?

4. a) Explain the principle of DSR routing algorithm in MANETs.
b) What is DHCP? Explain the applications and limitations of DHCP.

5. a) What is the difference between Indirect TCP and Snooping TCP?
b) What is fast retransmit and fast Recovery? Why does it occur?
6. a) What is Multimedia object transfer protocol?
b) Explain the application of Digital Video Broadcasting in the Internet.

7. a) With neat sketch diagram explain WAP Architecture.
b) What is Bluetooth? Explain the Architecture of Bluetooth Network.

8. a) Explain different types of security threats in wireless mobile environments.
b) Describe about WDP and WTLS.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Regular Examinations September 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

- - ---

1. Explain the different generations of wireless networks?

2.a) Enumerate the differences between wired and wireless networks?
b) Explain the following characteristics of wireless medium
i) radio propagation mechanics
ii) path-loss modeling and signal coverage

3. In wireless networks, explain the following
a) Spread spectrum transmissions
b) Fixed-assignment medium access for voice-oriented networks
c) UWB pulse transmission

4.a) Explain cellular network architecture and operation?
b) Discuss the constraints and features related to network planning for CDMA systems?

6. Discuss about the mobility management issues in wireless network operation?

6.a) Explain design and principles of operation of Wireless Application Protocol (WAP)?
b) Give the WTLS specifications?

7.a) What are features of Bluetooth?
b) Explain the logical link control protocol in Bluetooth technology?

8.a) List out the benefits of WLANs?
b) Explain the features and different versions of IEEE802.11 standards?

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Supplementary Examinations March 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

- - ---

1.a) Discuss about different generations of wireless networks?
b) Explain channel measurement and modeling techniques.

2.a) What is spread spectrum? Explain about high-speed modems supporting spread spectrum technology.
c) Give an overview and comparison of modulation schemes.

3. Explain about wireless medium access methods for voice and data-oriented networks.

4.a) What is Signal to noise Ratio? How is it calculated in wireless network?
b) Explain about network planning for CDMA systems.

5. Write short notes on the following:
a) Mobility management
b) Power management in wireless networks.

6.a) Write about WAE Model.
b) Explain about WAP Architecture and protocol stack.

7.a) What is Picoret? Explain Blue tooth principle of operation?
b) List and explain functions of various layers, protocols in Bluetooth stack.

8.a) List the applications and types of WCANs?
b) Write short notes on IEEE 802.11.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II - Semester Regular Examinations September, 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

- - ----------

1. a) What is Mobile Computing? Describe the characteristics, limitations, and architecture of Mobile Computing?
   b) Explain the design issues for Mobile Computing.

2. a) Explain the GSM Architecture with neat diagram.
b) What type of security services are provided by GSM?

3. a) What are the requirements for Mobile IP?
b) What is Mobile IP Optimization? Why it is required?

4. a) What is cyclical repetition of data?
b) What is multimedia object transfer protocol?

5. a) Explain the architecture of Bluetooth network.
b) What is IPV6? How is it different from IPV4?

6. What is the difference between packet switched and circuit switched Network? Is GPRS a packet switched network? Explain the architecture and operations of GPRS Network

7. a) With neat sketch diagram explain the WAP Architecture.
b) What is fast retransmitting and fast recovery?

8. a) How indirect TCP is different from traditional TCP?
b) What is timeout freezing? Explain it with suitable example.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II - Semester Regular Examinations September, 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

- - ---

1.(a) Define Mobile computing? Explain the architecture of Mobile computing.
(b) What are the pros and cons of mobile computing?

2.(a) Explain handover scenarios in GSM.
(b) Security issues In GSM.

3.(a) Explain any two classes of transaction services offered by Wireless transmission protocol.
(b) Explain the Dynamic Host Configuration protocol.

4.(a) Explain about caching mechanisms.
(b) State the advantages of Mobile TCP.

5. Explain about pull-based and pull-back mechanisms.

7. Discuss the properties of MANETS and explain about routing algorithms.

7.(a) Discuss WAP security issues.
(b) Write about Bluetooth protocol.

8. Write a short note on the following
i) SDMA
ii) MAC layer
iii) IEEE 802.11
iv) J2ME.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Supplementary Examinations March/April 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

- - ---

1. a. What are the features and applications of Mobile Computing? (4M)
b. Explain the similarities between HIPERLAN and IEEE 802.11? (4M)
c. Why are so many different identifiers/addresses (e.g. MSISDN, TMSI, IMSI) needed in GSM? Give reasons and distinguish between user- related and system related identifiers. (4M)

2. a. Explain about the motivation for a specialized MAC? (6M)
b. Discuss about CDMA? (6M)

3. a. The goal of mobile IP is supporting end system mobility while maintaining scalability, efficiency, and compatibility in all respects with existing applications and internet protocols. Explain? (6M)
b. Explain DHCP? (6M)

4. How and why does I-TCP isolate problems on the wireless link? Explain the working of I-TCP? What are the main drawbacks of this solution? (12M)

5. a. Discuss about power-aware and context-aware computing? (6M)
b. What are hoarding techniques? Explain about them? (6M)

6. a. Explain the selective tunning techniques? (8M)
b. Explain the communications asymmetry? (4M)

7. a. What is MANET? How is it different from cellular system? (2M)
b. Explain the spectrum of MANET applications? (2M)
c. Explain a classification of routing algorithms? Explain the AODV routing algorithm? (8M)

8. Write short notes on
a. Wireless Application Protocol (6M)
b. J2ME (6M)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II Semester Regular Examinations September, 2010
WIRELESS NETWORKS AND MOBILE COMPUTING

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

- - ---

1. Explain the three-tier architecture of mobile computing. [12]

2.a) Explain the applications and limitations of GPRS system.
b) Describe the frame format of IPV6. [12]

3.a) What are the advantages of wireless LAN?
b) Describe the steps involved in telecom call setup. [12]

4. Describe the palm OS architecture. [12]

5.a) Differentiate between H.323 and SIP.
b) Explain about the digital watermark. [12]

6. Describe about the architecture of GSM. [12]

7.a) Explain the standards of IEEE 802.11
b) Explain the design issues of user Interface. [12]

8.a) Explain about the security frameworks for mobile environment.
b) Explain the Novel application of mobile computing. [12]

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)
(R15D5818) INFORMATION RETRIEVAL SYSTEMS
(CORE ELECTIVE –IV)

Objectives:

On completion of this course you should have gained a good understanding of the foundation concepts of information retrieval techniques and be able to apply these concepts into practice. Specifically, you should be able to: To use different information retrieval techniques in various application areas

- To apply IR principles to locate relevant information large collections of data
- To analyze performance of retrieval systems when dealing with unmanaged data sources
- To implement retrieval systems for web search tasks.

UNIT I

Boolean retrieval. The term vocabulary and postings lists. Dictionaries and tolerant retrieval. Index construction. Index compression.

UNIT II

Scoring, term weighting and the vector space model. Computing scores in a complete search system. Evaluation in information retrieval. Relevance feedback and query expansion.

UNIT III

XML retrieval. Probabilistic information retrieval. Language models for information retrieval. Text classification. Vector space classification.

UNIT IV

Support vector machines and machine learning on documents, Flat clustering, Hierarchical clustering, Matrix decompositions and latent semantic indexing.

UNIT V

Web search basics. Web crawling and indexes, Link analysis.

TEXT BOOK:

1. Introduction to Information Retrieval , Christopher D. Manning and Prabhakar Raghavan and Hinrich Schütze, Cambridge University Press, 2008.

REFERENCE BOOKS:

1. Information Storage and Retrieval Systems: Theory and Implementation, Kowalski, Gerald, Mark T Maybury, Springer.
2. Modern Information Retrieval, Ricardo Baeza-Yates, Pearson Education, 2007.
3. Information Retrieval: Algorithms and Heuristics, David A Grossman and Ophir Frieder, 2nd Edition, Springer, 2004.
4. Information Retrieval Data Structures and Algorithms, William B Frakes, Ricardo BaezaYates, Pearson Education, 1992.
5. Information Storage & Retieval, Robert Korfhage, John Wiley & Sons.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)
(R15D9314) EMBEDDED REAL TIME OPERATING SYSTEMS
(OPEN ELECTIVE -II)

UNIT –I:
Introduction: Introduction to UNIX/LINUX, Overview of Commands, File I/O,(open, create, close, lseek, read, write), Process Control (fork, vfork, exit, wait, waitpid, exec.

UNIT -II:
Real Time Operating Systems: Brief History of OS, Defining RTOS, The Scheduler, Objects,Services, Characteristics of RTOS, Defining a Task, asks States and Scheduling, Task Operations, Structure, Synchronization, Communication and Concurrency. Defining Semaphores, Operations and Use, Defining Message Queue, States, Content, Storage,
Operations and Use

UNIT -III:
Objects, Services and I/O: Pipes, Event Registers, Signals, Other Building Blocks, Component Configuration, Basic I/O Concepts, I/O Subsystem

UNIT -IV:
Exceptions, Interrupts and Timers: Exceptions, Interrupts, Applications, Processing of Exceptions and Spurious Interrupts, Real Time Clocks, Programmable Timers, Timer Interrupt Service Routines (ISR), Soft Timers, Operations.

UNIT -V:
Case Studies of RTOS: RT Linux, MicroC/OS-II, Vx Works, Embedded Linux, Tiny OS and Android OS.

TEXT BOOKS:
1. Real Time Concepts for Embedded Systems – Qing Li, Elsevier, 2011.

REFERENCE BOOKS:
1. Embedded Systems- Architecture, Programming and Design - Rajkamal, 2007, TMH.
2. Advanced UNIX Programming - Richard Stevens.
3. Embedded Linux: Hardware, Software and Interfacing – Dr. Craig Hollabaugh..

COURSE COVERAGE

EMBEDDED REAL TIME OPERATING SYSTEMS

SUBJECT	TEXT BOOK TITLE	Chapters in Text Book	Units / Topics Covered	AUTHOR	PUBLISHERS	EDITION
EMBEDDED REAL TIME OPERATING SYSTEMS	Embedded Systems-Architecture Programming and Design			Rajkamal	TMH.	2007
	Advanced UNIX Programming			Richard Stevens	TMH	----
	Embedded Linux: Hardware, Software and Interfacing			Dr. Craig Hollabaugh	-----	----

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

R09

Code No: C3810, C7010

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
EMBEDDED REAL TIME OPERATING SYSTEMS
(COMMON TO DIGITAL ELECTRONICS & COMMUNICATION SYSTEMS, ELECTRONICS & COMMUNICATION)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

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1. Write about fork, vfork, wait, waitpid. [12]

2. a) Write about precedence graph and task graph.

   b) Explain periodic task model. [12]

3. a) Explain priority – Driven scheduling approach for real –time systems with an example. [8]

   b) Write the distinctions function, ISR and task. [4]

4. a) Write about the Kernel services in an OS. [6]

   b) Explain I/o subsystem in atypical I/o system in an OS. [6]

5. a) Write about basic features of V_x works. [6]

   b) Write about system – level functions of MUCOS. [6]

6. Write the basic design principles when using an RTOS to design an embedded system. [12]

7. Write about the embedded system design process for a smart card in detail. [12]

8. a) What is Laxity type and Laxity Function? Explain. [6]

   b) What is preemptively of jobs and criticality of jobs? Explain [6]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
EMBEDDED REAL TIME OPERATING SYSTEMS
(COMMON TO DIGITAL ELECTRONICS & COMMUNICATION SYSTEMS, ELECTRONICS & COMMUNICATION)
Time: 3hours Max.Marks:60
Answer any five questions
All questions carry equal marks
- - -

1. Write the function of the following

   i)lseek ii) vfork iii) waitpid iv) pend v) fwrite vi) OSSemPost

1. a) What is RTOS? Give one practical example where RTOS is used.
   b)Briefly describe the Hard Real Time Systems

2. (a) Write about the Periodic Task model?
   (b) Describe the scheduling Hierarchy of Real Time Systems

3. (a) Differentiate the weighted Round Robin and Priority
   (b) Explain the inter-process communication of RTOS

5 . (a) Describe the Hardware and Software interrupt priorities
   (b) Distinguish between the features of MUCOS and Vx Works RTOS.

6. (a) List the layers between application and hardware of
   (b) Give examples of IO subsystems. Explain the use of asynchronous

7 (a) Explain off line and online scheduling policies.
   (b) Describe Memory allocation related functions of MUCOS

8. Explain the case study of an ES design for a Smart Card.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D9313) HARDWARE- SOFTWARE CO- DESIGN

(OPEN ELECTIVE -II)

UNIT –I

CO- DESIGN ISSUES

Co- Design Models, Architectures, Languages, A Generic Co-design Methodology.

CO- SYNTHESIS ALGORITHMS : Hardware software synthesis algorithms: hardware – software partitioning distributed system cosynthesis.

UNIT –II

PROTOTYPING AND EMULATION:

Prototyping and emulation techniques, prototyping and emulation environments, future developments in emulation and prototyping architecture specialization techniques, system communication infrastructure

TARGET ARCHITECTURES:

Architecture Specialization techniques, System Communication infrastructure, Target Architecture and Application System classes, Architecture for control dominated systems (8051-Architectures for High performance control), Architecture for Data dominated systems (ADSP21060, TMS320C60), Mixed Systems.

UNIT – III

COMPILATION TECHNIQUES AND TOOLS FOR EMBEDDED PROCESSOR ARCHITECTURES: Modern embedded architectures, embedded software development needs, compilation technologies practical consideration in a compiler development environment.

UNIT – IV

DESIGN SPECIFICATION AND VERIFICATION:

Design, co-design, the co-design computational model, concurrency coordinating concurrent computations, interfacing components, design verification, implementation verification, verification tools, interface verification

UNIT – V

LANGUAGES FOR SYSTEM – LEVEL SPECIFICATION AND DESIGN-I

System – level specification, design representation for system level synthesis, system level specification languages,

LANGUAGES FOR SYSTEM – LEVEL SPECIFICATION AND DESIGN-II

Heterogeneous specifications and multi language co-simulation the cosyma system and lycos system.

TEXT BOOKS :

1. Hardware / software co- design Principles and Practice – Jorgen Staunstrup, Wayne Wolf – 2009, Springer.
2. Hardware / software co- design Principles and Practice, 2002, kluwer academic publishers

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)
(R15D9316) MOBILE COMPUTING TECHNOLOGIES
(OPEN ELECTIVE -II)

Unit – I: Introduction to Mobile Computing Architecture
Mobile Computing – Dialog Control – Networks – Middleware and Gateways – Application and Services – Developing Mobile Computing Applications – Security in Mobile Computing – Architecture for Mobile Computing – Three Tier Architecture – Design considerations for Mobile Computing – Mobile Computing through Internet – Making existing Applications Mobile Enabled.

Unit – II: Cellular Technologies: GSM, GPS, GPRS, CDMA and 3G
Bluetooth – Radio Frequency Identification – Wireless Broadband – Mobile IP – Internet Protocol Version 6 (IPv6) – Java Card – GSM Architecture – GSM Entities – Call Routing in GSM – PLMN Interfaces – GSM addresses and Identifiers – Network aspects in GSM – Authentication and Security – Mobile computing over SMS – GPRS and Packet Data Network – GPRS Network Architecture – GPRS Network Operations – Data Services in GPRS – Applications for GPRS – Limitations of GPRS – Spread Spectrum technology – Is-95 – CDMA Versus GSM – Wireless Data – Third Generation Networks – Applications on 3G

Unit – III: Wireless Application Protocol (WAP) and Wireless LAN
WAP – MMS – Wireless LAN Advantages – IEEE 802.11 Standards – Wireless LAN Architecture – Mobility in wireless LAN
Intelligent Networks and Interworking
Introduction – Fundamentals of Call processing – Intelligence in the Networks – SS#7 Signaling – IN Conceptual Model (INCM) – softswitch – Programmable Networks – Technologies and Interfaces for IN

Unit – IV: Client Programming, Palm OS,Symbian OS, Win CE Architecture
Introduction – Moving beyond the Desktop – A Peek under the Hood: Hardware Overview – Mobile phones – PDA – Design Constraints in Applications for Handheld Devices – Palm OS architecture – Application Development – Multimedia – Symbian OS Architecture – Applications for Symbian, Different flavors of Windows CE -Windows CE Architecture **J2ME**
JAVA in the Handset – The Three-prong approach to JAVA Everywhere – JAVA 2 Micro Edition (J2ME) technology – Programming for CLDC – GUI in MIDP – UI Design Issues – Multimedia – Record Management System – Communication in MIDP – Security considerations in MIDP – Optional Packages

Unit – V: Voice over Internet Protocol and Convergence
Voice over IP- H.323 Framework for Voice over IP – Session Initiation Protocol – Comparision between H.323 and SIP – Real Time protocols – Convergence Technologies – Call Routing – Voice over IP Applications – IP multimedia subsystem (IMS) – Mobile VoIP

Security Issues in Mobile Computing

Introduction – Information Security – Security Techniques and Algorithms – Security Protocols – Public Key Infrastructure – Trust – Security Models – Security frameworks for Mobile
Environment

TEXT BOOKS:

1. Mobile Computing – Technology, Applications and Service Creation – Asoke K Talukder, Roopa R Yavagal, 2009, TATA McGraw Hill
2. Mobile Communications – Jochen Schiller – 2nd Edition – Pearson Education

REFERENCES:

1. The CDMA 2000 System for Mobile Communications – Vieri Vaughi, Alexander Damn Jaonvic – Pearson
2. ADALESTEIN : Fundamentals of Mobile & Parvasive Computing, 2008, TMH

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY
M.Tech – I Year – II Sem(Computer Science & Engg.)

(R15D5882) WEB SERVICES LAB

Objectives:

- To implement the technologies like WSDL, UDDI.
- To learn how to implement and deploy web service client and server

List of Programs:

1. Write a program to implement WSDL Service (Hello Service . WSDL File)
2. Write a program the service provider can be implement a single get price(), static bind() and get product operation.
3. Write a program to implement the operation can receive request and will return a response in two ways.
    a. One-Way operation
    b. Request - Response
4. Write a program to implement to create a simple web service that converts the temperature from Fahrenheit to Celsius (using HTTP Post Protocol)
5. Write a program to implement business UDDI Registry entry
6. Write a program to implement
    a. Web based service consumer
    b. Windows application based web service consumer